



THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

# **SYLLABUS: STAT 5740**

## **INTRODUCTION TO SAS SOFTWARE**

### **AUTUMN 2023**

## **Course overview**

### **Instructor**

**Instructor:** Dr. Nicole Kelbick

**Email address:** [kelbick.1@osu.edu](mailto:kelbick.1@osu.edu)

**Course website:** <https://osu.instructure.com/courses/152084>

**Office hours:** Virtual Hours via Carmen Zoom. Days, times and zoom links will be available in Carmen on the Syllabus page.

### **Prerequisites**

STAT 3202 or STAT 4202 or STAT 5301, or permission of instructor.

### **Teaching Assistant**

The teaching assistant will hold “Open Coding Hours” via Zoom. See the Syllabus page on Carmen for updated days and times as well as contact information. You are welcome to visit the TA’s Zoom room with specific questions or hang out there while you code and ask questions as you plan or debug your code. The link to the Zoom room will be posted on Carmen.

### **Course description**

The course will introduce the audience to the SAS Software. Students will learn how to utilize SAS for importing, exporting, merging, manipulating and summarizing data. In addition, basic statistical analyses, graphical representations of data, macro programming language and the output delivery system (ODS) will be illustrated.

## Course learning outcomes

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

- describe data graphically and numerically using SAS;
- perform basic exploratory data analyses using SAS;
- use the SAS macro programming language for simple statistical analyses.

## How this online course works

**Mode of delivery:** This course is 100% online. There are no required sessions when you must be logged into Carmen at a scheduled time.

**Pace of online activities:** This course is divided into **weekly modules** that are released approximately one week ahead of time. Students are expected to keep pace with weekly deadlines (typically Friday, Sunday and Tuesday) but may schedule their efforts freely within that time frame.

**Credit hours and work expectations:** This is a **2-credit-hour course**. According to Ohio State policy ([go.osu.edu/credithours](http://go.osu.edu/credithours)), students should expect around 2 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 4 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average.

**Attendance and participation requirements:** Because this is an online course, your attendance is based on your online activity and participation. The following is a summary of students' expected participation:

- **Participating in online activities for attendance: AT LEAST ONCE PER WEEK**  
You are expected to log in to the course in Carmen every week. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible*.
- **Office hours and live sessions: OPTIONAL**  
All live, scheduled events for the course, including my office hours, are optional.
- **Participating in discussion forums: 2+ TIMES PER WEEK**  
As part of your participation, each week you can expect to post at least twice as part of our substantive class discussion on the week's topics.

## Course materials

### Required

The Little SAS Book, 6th Edition by Lora D. Delwiche and Susan J. Slaughter; SAS Institute; 2019. ISBN: 9781642953435 (available in print or electronically)

- No cost access is available to those who set up an O'Reilly account linked to their Ohio State email address. To create an account and access the text, go to:
  - Go to: <https://learning.oreilly.com/library/view/-/9781642953435/?ar>
  - In the "Select your institution" drop-down, choose the first option: "Not listed? Click here."
  - If you already have an O'Reilly account, click "Already a user? Click here."
  - If you do not have an O'Reilly account, enter your Ohio State email address (name.#@osu.edu)
  - If desired, download the O'Reilly app for your iOS or Android device.

### Optional materials

SAS Essentials: Mastering SAS for Data Analytics, (2nd edition) by Alan C. Elliott and Wayne A. Woodward (available in print or electronically)

- No cost access is available to those who set up an O'Reilly account linked to their Ohio State email address. See the required materials section for detailed instructions after going to:
 

<https://www.oreilly.com/library/view/sas-essentials-mastering/9781119042167/?ar>

## Course technology

For help with your password, university e-mail, Carmen, or other university-related technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** [8help@osu.edu](mailto:8help@osu.edu)
- **TDD:** 614-688-8743

### Baseline technical skills necessary for online courses

#### Technology skills needed for this course

- Basic computer and web-browsing skills
- Navigating Carmen <https://go.osu.edu/canvasstudent>
- CarmenZoom virtual meetings <https://go.osu.edu/zoom-meetings>

- Recording, editing, and uploading video ([go.osu.edu/video-assignment-guide](http://go.osu.edu/video-assignment-guide))

### Required equipment

- Computer or tablet with high-speed internet connection and browser for which Carmen is fully functional and SAS Studio within SAS OnDemand is fully functional ([https://support.sas.com/ondemand/caq\\_swe.html](https://support.sas.com/ondemand/caq_swe.html))
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

### Recommended equipment

- Keyboard for use with your computer or tablet
- Webcam: built-in or external webcam, fully installed and tested

### Required software

- This class requires you to use the SAS statistical software package (<http://www.sas.com/>). There are many versions of the SAS software, including a free academic version that utilizes the SAS Studio browser-based interface called SAS OnDemand for Academics. **SAS OnDemand for Academics** is accessed entirely via the internet, and requires stable high-speed internet and a computer or tablet with the current version of a major web browser (Safari, Firefox or Chrome). Instructions for accessing this software are provided on the Carmen course. For technical assistance accessing SAS OnDemand for Academics, follow the three steps listed on this website: <https://support.sas.com/en/software/ondemand-for-academics-support.html#get-help>

Accessing this free version **requires you to create a SAS profile** using your Ohio State email; instructions for doing so are on the Carmen course. When creating a SAS profile, you must accept the SAS terms of use and conditions. SAS collects user information that includes data you provide when creating your profile and automated data extraction via your internet connection. SAS uses data internally and shares it with other companies. You can learn more by reading the SAS terms and conditions ([https://www.sas.com/en\\_us/legal/copyright.html](https://www.sas.com/en_us/legal/copyright.html)) and privacy statement ([https://www.sas.com/en\\_us/legal/privacy.html](https://www.sas.com/en_us/legal/privacy.html)).

The SAS programming language is the same for all versions of SAS (including paid licensed versions) use the same SAS programming language, which is the focus of this course. Course content (videos and instruction) will be based on SAS Studio, and materials will give instructions on using **either free** version. If you are not planning to use SAS Studio, please contact the instructor as soon as possible.

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at [go.osu.edu/office365help](http://go.osu.edu/office365help).

## Carmen access

You will need to use BuckeyePass ([buckeyepass.osu.edu](https://buckeyepass.osu.edu)) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions ([go.osu.edu/add-device](https://go.osu.edu/add-device)).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application ([go.osu.edu/install-duo](https://go.osu.edu/install-duo)) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

## Grading and faculty response

### How your grade is calculated

Assignment or category	Percentage
Check-In Quizzes	5
Homework	60
Discussion/Group Assignments	10
Final Project	25
Total	100

*See course schedule, below, for due dates*

All grades will be stored in Carmen. Students are responsible for regularly checking the grade entries in Carmen. Any grade disputes should be emailed to the instructor within 7 days of the grade assignment.



## Descriptions of major course assignments

### Check-In Quizzes

There will be many, many quizzes. Most instructional activities (e.g., videos) will be followed by a quiz question. Quizzes are auto-graded for accuracy, and there is typically no partial credit given for any single question. Because there are many, many quizzes, each question response does not contribute very much to your final grade. Also because there are many, many quizzes, the Carmen gradebook can appear quite long and disorganized. I have attempted to organize the grades so that homework, group discussion and project grades are most prominent.

### Homework

Homework will be due most weeks. Students will upload up to three files per assignment.

1. **Main file:** Answers to the homework questions, nicely formatted (MS Word is recommended) and including only **relevant** code snippets, log snippets or output subsets. Unedited code, log files or output are unacceptable in a main file. Tables and figures should be numbered and referred to in written answers by number. A table or figure without any accompanying text is unacceptable. The submitted file must be in PDF format. This file must be named **HWX\_main\_name.number.pdf**, where you replace "X" with the appropriate homework number. **Questions that should be answered in the main file are highlighted in green.**
2. **Code file:** Raw executable SAS code. Code should follow coding conventions discussed in the class and be appropriately commented. Comments should indicate correspondence between homework questions and presented code. The instructor or grader should be able to run the code after making any appropriate file path changes. All code snippets presented in the main file must be contained in this file, and all log and output content contained in the main file must be produced by running this SAS code file. This file must be named **HWX\_code\_name.number.sas**, where you replace "X" with the appropriate homework number. If you are using SAS OnDemand, you can download this file using the "download" button (  ) in the Server Files and Folders explorer. **Questions that should be answered in the code file are highlighted in yellow.**
3. **Results file:** The raw output produced by running the SAS code file, saved in PDF format. This file must be named **HWX\_results\_name.number.pdf**, where you replace "X" with the appropriate homework number. If you are using SAS OnDemand, you can create this file using the "download results as a pdf file" button (  ) in the menu available in the RESULTS tab. **Questions that should be answered in the results file are highlighted in pink.**

Not all assignments will require all three file types. Keep an eye out for the color coding so you are sure to submit all required files. Each homework assignment will be accompanied by a grading rubric to help you understand the assignment expectations. However, after the assignment is due, the course grader will only assess student work for a subset of the rubric,

and the total homework score will be pro-rated by the number of points assessed by the grader.

## Discussion/Group Assignments

Working programs are often improved by talking to other programmers. In this class, you will talk to other programmers as a class or in small groups, using the Carmen discussion boards.

During the first part of the course, the instructor will post a discussion prompt each week. Each student is expected to post a message responding to that prompt either for the whole class or for their assigned group, as specified in the instructions. This post will be graded for completion (i.e., a reasonable answer will get full credit). For many assignments, there will be a follow-up prompt to consider and synthesize student responses. While students are encouraged to post responses to the follow-up prompt, these will not be graded.

During the second part of the course, students will work together in small groups to complete a project. Weekly group assignments will keep groups on track to complete the final report in a timely manner. Some weeks these assignments will require individual submissions; others will require group submissions. These submissions will be graded for completion (i.e., a reasonable submission will get full credit).

## Final project

This course has a final project. (There is no final exam.) Details about the final project will be posted on Carmen. You will be given ample time in which to work in groups to complete the project.

## Late assignments

Assignments are provided well in advance. Students should plan ahead, pay attention to planned SAS outages, prepare for internet slowness, and be sure to leave extra time to upload files. Late assignment grades will be deducted 5% for each day late. If you experience an emergency or other unplaned circumstance that prevents your submitting an assignment on time, please contact the instructor as soon as possible.

## Grading scale

A	93 - 100	C+	77 – 79.9999
A-	90 – 92.9999	C	73 – 76.9999
B+	87 – 89.9999	C-	70 – 72.9999
B	83 – 86.9999	D+	67 – 69.9999
B-	80 – 82.9999	D	60 – 66.9999
		E	Below 60

## Instructor feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

### Grading and feedback

For large weekly assignments, you can generally expect feedback within **7 days**.

### E-mail

I plan to reply to e-mails within **48 hours on days when class is in session at the university**.

### Discussion board

I plan to check and reply to messages in the discussion boards within **48 hours on school days**.

## Other course policies

### Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

### Student academic services

Student academic services offered on the OSU main campus

<http://advising.osu.edu/welcome.shtml>.



## Student support services

Student support services offered on the OSU main campus <http://ssc.osu.edu>.

## Academic integrity policy

### Policies for this online course

- **Quizzes:** You must complete the quizzes yourself, without any external help or communication. You may refer to course materials (e.g., textbook and video) during the quiz.
- **Written assignments:** Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow a standard reference style (e.g. APA or Chicago) to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.
- **Reusing past work:** In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results:** All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review:** The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.
- **Group projects:** This course includes group projects, which can be stressful for students when it comes to dividing work, taking credit, and receiving grades and feedback. I have attempted to make the guidelines for group work as clear as possible for each activity and assignment, but please let me know if you have any questions.

### Ohio State's academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

**If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.** If

COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page ([go.osu.edu/coam](http://go.osu.edu/coam))
- *Ten Suggestions for Preserving Academic Integrity* ([go.osu.edu/ten-suggestions](http://go.osu.edu/ten-suggestions))

## Copyright for instructional materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

## Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at [titleix@osu.edu](mailto:titleix@osu.edu)

## Commitment to a diverse and inclusive learning environment

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

## Religious Accommodations

It is Ohio State's policy to reasonably accommodate the sincerely held religious beliefs and practices of all students. The policy permits a student to be absent for up to three days each academic semester for reasons of faith or religious or spiritual belief.

Students planning to use religious beliefs or practices accommodations for course requirements must inform the instructor in writing no later than 14 days after the course begins. The instructor is then responsible for scheduling an alternative time and date for the course requirement, which may be before or after the original time and date of the course requirement. These alternative accommodations will remain confidential. It is the student's responsibility to ensure that all course assignments are completed.

## Land Acknowledgement

We would like to acknowledge the land that The Ohio State University occupies is the ancestral and contemporary territory of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, Ojibwe and Cherokee peoples. Specifically, the university resides on land ceded in the 1795 Treaty of Greeneville and the forced removal of tribes through the Indian Removal Act of 1830. I/We want to honor the resiliency of these tribal nations and recognize the historical contexts that has and continues to affect the Indigenous peoples of this land.

More information on OSU's land acknowledgement can be found here:

<https://mcc.osu.edu/about-us/land-acknowledgement>

## Your mental health

As a student you may experience a range of issues that can cause barriers to learn, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand resources are available at [go.osu.edu/ccsondemand](https://go.osu.edu/ccsondemand). You can reach an on-call counselor when CCS is closed at 614-292-5766, and 24-hour emergency help is also available through the 24/7 National Prevention Hotline at 1-800-273-TALK or at [suicidepreventionlifeline.org](https://suicidepreventionlifeline.org). The Ohio State Wellness app is also a great resource available at [go.osu.edu/wellnessapp](https://go.osu.edu/wellnessapp).

# Accessibility accommodations for students with disabilities

## Requesting accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; 098 Baker Hall, 113 W. 12<sup>th</sup> Avenue.

## Accessibility of course technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Canvas accessibility ([go.osu.edu/canvas-accessibility](https://go.osu.edu/canvas-accessibility))
- Streaming audio and video
- CarmenZoom accessibility ([go.osu.edu/zoom-accessibility](https://go.osu.edu/zoom-accessibility))
- Collaborative course tools

## Disclaimers

This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular we reserve the right to change due dates or the methods of grading and/or assessment if necessary. Any changes will be communicated to you through official course announcements.

Video and audio recordings of class lectures including student participation will be part of the classroom activity. The video and audio recording is used for educational use/purposes and may be made available to all students presently enrolled in the course.

**See course schedule on next page.**

## Course schedule (tentative)

See Carmen for details on assignments. Readings are from the textbook, *The Little SAS Book*, 6<sup>th</sup> Edition.

Week	Dates	Topics, Readings	Readings
1	8/22-8/27	SAS and SAS Studio overview	Chapters 1/2
2	8/28-9/3	Reading data	Chapters 1/2
3	9/4-9/10 (M 9/4 Labor Day)	Manipulating data	Chapter 3
4	9/11-9/17	Summarizing data	Chapter 4
5	9/18-9/24	Output Delivery System (ODS)	Chapter 5
6	9/25-10/1	Customizing Output	Chapter 5
7	10/2-10/8	Combining datasets	Chapter 6
8	10/9-10/15 (RF Autumn Break)	Macros	Chapter 7
9	10/16-10/22	More macros	Chapter 7
10	10/23-10/29	Visualizing Data	Chapter 8
11	10/30-11/5	Basic Statistical Procedures	Chapter 9
12	11/6-11/12 (F Veterans Day)	More Statistical Procedures	Chapter 9
13	11/13-11/19	Exporting Data	Chapter 10
14	11/20-11/26 (WRF Thanksgiving Break)	Putting it all together	
15	11/27-12/3	PROC SQL (if time allows)	