

CS595/DASC 600 Syllabus Dr. Sarah Hosni

Programming Foundations for Data Science

Course Overview: CS595/DASC600 is a graduate Data Science Course introducing the fundamental programming skills necessary for data science with Python and R. The aim of the course is to equip students with the ability to manipulate data, perform basic analyses, and create visualizations using these two key programming languages. The course emphasizes practical skills and best practices in coding, ensuring students can write clean, efficient, and reproducible code.

Note for CS graduate students: DASC600 is cross-referenced with CS595 but it does not count toward the CS MS degree.

Course Objectives: By the end of this course, students will:

1. Understand the basics of Python and R programming.
2. Perform basic data manipulation and analysis using Python and R.
3. Create basic data visualizations with Python and R.
4. Write reproducible code following best practices in research coding.

Course Readings: There is no required textbook. All the key course content will be in Canvas Modules. You may find some of the optional textbooks helpful, **though none are required:**

- **"R for Data Science: Import, Tidy, Transform, Visualize, and Model Data" (2e)** by Hadley Wickham and Garrett Grolemund, O'Reilly Media.
- **"Python Data Science Handbook: Essential Tools for Working with Data"** by Jake VanderPlas, 2nd edition, O'Reilly Media

Course Structure:

The course is structured into 7 modules. Each module may take one or more weeks to complete, depending on the complexity of the topic and the pace of the class. The structure is as follows:

Module 1: Introduction to Programming for Python and Data Science

Module 2: Programming Fundamentals

Module 3: Data Structures

Module 4: Data Handling and Manipulation

Module 5: Data Visualization

Module 6: Foundation of Programming in R for Data Science

Module 7: Reproducible Research, Reporting, and Best Practices

Course Activities:

- **Attending Lectures: Based on the Course teaching mode. (Online, synchronous)** Participate in online synchronous Zoom meetings, which will be available later as recorded videos for those who cannot attend live sessions. For (Live) sections, you need to attend live lectures on-campus.
- **Reading Instruction Material:** Engage with the reading materials or lecture notes provided in Canvas Modules
- **Assignments:** Submit weekly Coding Activities, Lab exercises and Programming Assignments
- **Quizzes:** Regular quizzes to consolidate understanding of the material
- **Submitting Work:** Ensure all required work is submitted on time.
- **Examinations:** Formal assessments, including a Midterm and Final exam, to evaluate student progress and understanding. Details on the structure of the exam will be provided in class.

Grading Criteria

Graded Assignments	Percentage
Midterm Exam	20%
Final Exam	20%

Quizzes	20%
Programming Assignments	20%
Coding Activities	20%
Total	100%

Grading Scale:

A 93 – 100%

A- 90 – 92%

B+ 87 – 89%

B 83 – 86%

B- 80 – 82%

C+ 77 – 79%

C 73 – 76%

C- 70 – 72%

F 0 – 69%

There is no separate grading scale for PhD students, but PhD students will typically be held to a higher standard.

Student Responsibilities

Course Policies

Attendance

Attendance is not mandatory; however, it is highly encouraged. Students are responsible for watching the recorded lectures that will be made available for those who cannot attend the weekly Zoom meetings.

Online Classroom Conduct (Netiquette)

Students are expected to follow good Netiquette rules. Netiquette is the accepted behavior for online participation. The following is a list of general guidelines for this course:

- Check your grammar and spelling
- Keep your comments focused on the topic
- Strive to write succinctly and clearly
- Share your knowledge and include supportive evidence for your comments
- Do not use all capital letters as that is viewed as shouting
- Avoid flaming—disrespectful language is unacceptable

Select the link to find more information on [Netiquette](#)

Contact Policy

All email related to this course should have the phrase **DASC 600/CS 595** in the subject line. This flags your message in my mailbox for faster attention.

Email is my favorite mode of communication with students. Don't hesitate to email me your questions, I would be happy to provide guidance when needed. I will respond to emails within 24 hours on weekdays, 48 hours on Weekends and holidays. For any course-related communication, please use your ODU email, as I will not respond to non-ODU emails.

Office Hours

I plan to use Zoom for my office hours twice a week: Tuesdays: 3:00 -4:00 PM and Fridays: 11:00 AM-12:00 PM

My office hours are typically 15-30 minute Zoom meetings. *Please email me (shosni@odu.edu) to schedule a time slot when needed. I am also available for office hours in-person if preferred, but you need to schedule with me in advance.*

Tests and Make-ups

There will be no makeup for homework assignments or class activities. Individual accommodations will be discussed if you have a valid medical excuse or an unexpected situation that requires your time and attention. Please notify the instructor 24 hours before the scheduled due date. The same information for homework will apply for tests

NOTICE/disclaimer: This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. These plans may change depending on factors outside of the faculty member's control. **The instructor reserves the right to modify, supplement and make changes as course needs arise.**

Class Conduct

The following standards are intended to define acceptable behavior that preserves academic integrity and ensures that students have optimum environmental conditions for effective learning. Instructions can vary based on whether the class is in-person, synchronous (online, or asynchronous).

1. Students should notify instructors in advance when falling behind. In the event of an emergency that might affect the progress in the course, instructors must be notified as soon as possible.
2. Students will activate their Old Dominion email accounts and check them before each class. If the student chooses to have his/her messages forwarded to another account, it is the student's responsibility to take the necessary steps to have them forwarded.
3. Offensive language, gestures and the like are disrespectful and disruptive to the teaching-learning process.
4. Students should notify instructors in advance when a class will be missed. In the event of an emergency that causes a class to be missed, instructors must be notified as soon as possible.
5. Instructors may require that cell phones and other electronic devices be left on their desks during tests or examinations.

Academic Honesty

Old Dominion University is committed to students' personal and academic success. In order to achieve this vision, students, faculty, and staff work together to create an environment that provides the best opportunity for academic inquiry and learning. All students must be honest and forthright in their academic studies. Your work in this course and classroom behavior must align with the expectations outlined in the Code of Student Conduct, which can be found at www.odu.edu/oscai. The following behaviors along with classroom disruptions violate this policy, corrupt the educational process, and will not be tolerated.

- **Cheating:** Using unauthorized assistance, materials, study aids, or other information in any academic exercise.
- **Plagiarism:** Using someone else's language, ideas, or other original material without acknowledging its source in any academic exercise.
- **Fabrication:** Inventing, altering or falsifying any data, citation or information in any academic exercise.
- **Facilitation:** Helping another student commit, or attempt to commit, any Academic Integrity violation, or failure to report suspected Academic Integrity violations to a faculty member.

Academic dishonesty will be reported to the Office of Student Conduct & Academic Integrity and may result in sanctions up to and including expulsion from the University.

The instructor reserves the right to question a student orally or in writing and to use his evaluation of the student's understanding of the assignment and of the submitted solution as evidence of cheating. Violations will be reported to the Office of Student Conduct & Academic Integrity for consideration for possible punitive action.

Students are not allowed to solicit aid from other humans, but they may use material they have found on the internet, subject to the rules:

1. If you paraphrase materials from elsewhere, cite the Source.
2. If you use material verbatim from elsewhere, mark it as quoted and cite the course.
3. Use of ChatGPT or similar AI-enhanced search engines is prohibited in this course unless explicitly allowed by the instructor. In cases where instructor allows it, students must retain a precise copy of the prompt material supplied to the AI engine and must supply that prompt upon request by the instructor.

Plagiarism

No plagiarism will be tolerated under any circumstances. As faculty, I am bound to report any instances of plagiarism. All cases are heard before the honor council. If found guilty, the student automatically receives a failing grade in the course, and a notice is entered into the permanent record for a period of time.

Honor Code

The Old Dominion University Honor Code will be strictly enforced. By attending Old Dominion University, you have signed a pledge accepting the responsibility to abide by the following Honor Code found at [Office of Student Conduct and Academic Integrity](#).

We, the students of Old Dominion University, aspire to be honest and forthright in our academic endeavors. Therefore, we will practice honesty and integrity and be guided by the tenets of the Monarch Creed. We will meet the challenge to be beyond reproach in our actions and our words. We will conduct ourselves in a manner that commands the dignity and respect that we also give to others.

ODU Honor Code

This is an institutional policy approved by the Board of Visitors. The University Honor Code applies to all assignments.

Honor Pledge

I pledge to support the honor system of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member of the academic community, it is my responsibility to turn in all suspected violators of the honor system. I will report to Honor Council hearings if summoned.

By attending Old Dominion University you have accepted the responsibility to abide by this code. This is an institutional policy approved by the Board of Visitors. For more information, please visit [Policies and Student Responsibilities](#).

Educational Accessibility

In compliance with PL94-142 and more recent federal legislation affirming the rights of disabled individuals, provisions will be made for students with special needs on an individual basis. The student must be identified by the university and provide a letter from the Office of Educational Accessibility (OEA), located at 1021 Student Success Center. Any accommodations will be based upon written guidelines from the Office of

Educational Accessibility (OEA). All students are expected to fulfill all course requirements.

Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you experience a disability which will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you.
- If you feel that you will experience barriers to your ability to learn and/or testing in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary.

The Office of Educational Accessibility is located at 1021 Student Success Center and their phone number is (757)683-4655. Additional information is available at the [OEA Website](#).

University Policies

COVID-19 Response

If you are experiencing any symptoms of a possible COVID-19 infection or have come into contact with someone with COVID-19, please do not come to class. In addition, you **must** report your symptoms using the COVID-19 daily check-in text app. If you show symptoms, immediately self-isolate and follow appropriate guidance on when and where to seek medical care. Take every precaution to mitigate potential spread to fellow students, ODU faculty, staff, and others in the community.

If you need to quarantine or isolate, please inform your instructor so that he or she can adjust assignments and provide the level of support necessary to help you succeed in class. Your professor will make accommodations to help you learn the course material and succeed in the class if you are unable to attend due to Covid-19. If necessary, your instructor will suspend in-person classes for a 14-day period to reduce the possibility of community spread. If the instructor shows signs of COVID-19 infection and needs to quarantine or isolate, class will be immediately moved online for a minimum of 14 days. Instruction will continue online until the quarantine/isolation period has ended and/or conditions warrant a return to in-person instruction.

Your best action, as a Monarch, is to protect your peers! If in doubt, immediately isolate and report symptoms of COVID-19.

Incomplete

Documented illnesses, deaths in family, car accidents, or other traumatic occurrences call for flexibility and good judgment on the part of the student and instructor. These situations are rare and are handled individually. Should such a situation occur, students **MUST** contact [Student Outreach & Support](#). Email oducares@odu.edu or by phone 757-683-3442 to acquire the necessary documentation. An incomplete grade will only be given under the following circumstances

1. The student has completed $\frac{1}{2}$ or more of the course requirements with a C or better
2. There is legitimate deficiency due to the illness or emergencies deemed acceptable to the instructor
3. There is not neglect on the student's part.

Withdrawal

A syllabus constitutes an agreement between the student and the course instructor about course requirements. Participation in this course indicates your acceptance of its teaching focus, requirements, and policies. Please review the syllabus and the course requirements as soon as possible. If you believe that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved - or if you anticipate that the class meetings, assignment deadlines or abiding by the course policies will constitute an unacceptable hardship for you - you should drop the class by the drop/add deadline, which is located in the ODU Schedule of Classes. For more information, please visit the [Office of the Registrar](#).

Student Acknowledgement

"I, _____, have completely read this syllabus and understand and agree to the course requirements".