

College of Arts and Sciences

Oceanography

OCNG 669 Syllabus

Section 775 (51727)
Python for Geosciences
Spring 2026 - College Station



Course Information

Meeting Times: Meeting Type: LEC

Meeting Days:

Start Time: N/A

End Time: N/A

Start Date: 01/12/2026

End Date: 03/06/2026

Meeting Location: ONLINE ONLINE

Credit Hours: 3

Instructor Details



Leila Belabbassi

Email: leila-belabbassi@tamu.edu

Office Location: Online - Zoom meeting

Phone: 7139629834

Office Hours

<https://canvas.tamu.edu/courses/434406/pages/office-hours-2>

Preferred Contact Method

leila-belabbassi@tamu.edu

Biography

<https://canvas.tamu.edu/courses/434406/pages/dr-leila-belabbassi-2>

Socials

LinkedIn

Catalog Description

Python for Geosciences. (3-0). Credit 3. Core language Python programming; scientific programming analysis methods; analysis of large geophysical data sets; plotting geophysical data; interpolation. Prerequisite: Graduate classification.

Course Prerequisites

Prerequisite/Corequisite(s): Graduate classification.

Course Learning Outcomes

Students will understand the basic concepts of programming. In particular, they will understand basic Python programming as typically used in the geosciences, that is, for one- and two-dimensional geospatial analysis for scientific applications.

1. Read and write data using standard formats,
2. Utilize modern programming techniques including object-oriented programming,
3. Use Jupyter Notebook as a modern coding environment for data analysis,
4. Conduct data cleaning and exploratory analysis,
5. Perform common geospatial data manipulation and analysis tasks,
6. Employ best practices in data visualization,
7. Design and execute a programming project.

Special Course Designation

None

Textbook and/or Resource Materials

This material Is: Optional

Learning Python

Authors: Mark Lutz

URL for Resource: <http://library.tamu.edu/>

Notes:

Course Material is provided by the instructor.

Grading Policy

Grading Items –

Percent Grade Per Item

Percent Grade Per Item				
Assignments 70%	Participation 5%	Project 25%	Extra Credits 2%	Total

Graded Class Assignments – Earn credits for completing and creating Jupyter notebooks with executable blocks of code.

Graded Class Participation – Earn credits for completing quizzes, answering video questions, and/or responding to discussion topics posted during the course.

Final Projects - Earn credits for completing the course project. The project serves as an assignment to apply the skills learned in the course, offering an opportunity for practical application and exploration.

Grading Letter –

Percent Grade Interval Per Letter

A 90 -100%	B 80- 89%	C 70-79%	D 60-69%	F <60
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Late Work Policy

Work submitted by a student as makeup work for an excused absence is not considered late work and is exempt from the late work policy ([Student Rule 7](#)).

Course Specific Late Work Policy

Absences – University-excused absences do not relieve students from the obligation to inform and provide documentation for their absence. Failure to comply may lead to the absence being considered unexcused.

Deliverables – Deliverables submitted three days after the deadline will be excused with prior permission; however, submissions delayed beyond three days will incur a penalty of 5 points per day, emphasizing the importance of communication to minimize grade impact.

IMPORTANT

Due Dates and Time Zones – Course times listed, including those in printed materials, typically reflect the US Central time zone. While Canvas displays dates and times in the course's time zone by default, you can adjust settings to show your local time zone. This feature can aid in staying current with assignments, especially if your local time zone differs significantly from the course's.

Course Schedule

The course consists of an introductory module, 5 core modules, and a final project over an 8-week term. Each module comprises approximately 10 days of material: **IMPORTANT**

Module Introduction - Week 1 Jupyter Notebook, Python, Colab, VOAL, Course Material, Assignments, Coding Level Survey.

Module 1 - Week 2 Python Basics Part I: Variables, standard data containers (lists, tuples, dictionaries, etc.).

Module 2 - Week 3 Python Basics Part I: if statement, for and while loops, and lists comprehensions.

Module 3 - Week 4 Python Basics Part III: Importing packages, working with arguments, and objects as containers for data and associated functions.

Module 4 - Week 5 Numerical Python: Numpy package, vector operations, data types, and array broadcasting.

Module 5 - Week 6 Basic Plotting in Python with Matplotlib: 1D (line plots, histograms), 2D (contours, pcolor).

Final Project - Weeks 7 & 8 Identify a dataset and test and utilize the skills taught in this course.

List of assignments - Please check the Syllabus tab in Canvas for the exact due dates of assignments.

Students are encouraged to use their own data sets for trying out methods in the class.

Additional Course Information

Time Expectation

CLICK Time Management in Online Courses If you are new to online instruction and/or graduate school, you may not realize how many hours you should expect to spend.

How much time you will need to commit to this course? – You will need to schedule time for various learning activities. For example, 3 hours doing the related reading and processing content, 3 hours completing the assignments, and 1 hour participating in discussions or watching videos.

How much you need to study always varies of course! – Start by developing a plan to tackle the work. Create a schedule on your weekly calendar and mark your calendar with due dates. Develop a work plan: where will you work? when will you have time? what will you accomplish?

How to move along with the class? – Beware this course is not self-paced. The course is structured to move the students through the class at approximately the same pace *to foster interactions in the class*.

AI Statement

The use of AI in this course is permissible to help you explore the field and enhance your understanding. To adhere to academic excellence and ethical responsibility in navigating the intersection of Data Quality and Artificial Intelligence the following policies are to be followed:

- ▶ Documenting and Validating: A portion of your term grade will evaluate your documentation of AI use throughout the course. You are fully responsible for AI-generated materials as if you produced them yourself. Ideas must be attributed, and facts must be true. This ensures your use of AI is not jeopardizing your learning.
- ▶ Passing the Course: AI-generated submissions cannot achieve a passing grade. This ensures your competence to surpass generative AI in future academic, research, workplace, or societal domains.
- ▶ Continuous Learning: Recognizing that AI is an evolving field, developments around generative AI are in flux. Rules expressed in this course may need to change on short notice,

impacting the content of assignments and their evaluation. **IMPORTANT**

Technology Support

Technology Services (IT) - Main Campus

Hours: 24/7

Phone: (979) 845-8300

Email: helpdesk@tamu.edu

Call/Chat/Email/visit: <https://it.tamu.edu/help>

Canvas LMS Technical Support

Hours: 24/7/365

Phone: (877) 354-4821

Email: support@instructure.com

Support is available by clicking the Help button at the far left in the Canvas global navigation menu.

Canvas Resources are also linked on the home page of every Canvas course.

Technology Requirements

Information regarding accessing technology resources is available in the Canvas courses:

[COMU-172-CAAG](#) & [COMU-171-CAAG](#).

Learning Resources

This online course utilizes the [Canvas Learning Management System](#). You will use your NetID and password to log in to the system. Please be sure you have enrolled in [Duo Authentication](#). If at any time, you need help contact CANVAS help desk at 1(844)802-4049.

College and Department Policies

Texas A&M University Student Services – Texas A&M University offers a variety of student services to on-campus and online students. For more information visit: <http://distance.tamu.edu/Student-Services>.

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University Policies

This section outlines the university-level policies that must be included in each course syllabus. The TAMU Faculty Advisory Council established the wording of these policies.

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, [Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

University Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Course Specific Attendance Policy

Attendance in this online course is measured by completion of assigned activities. Students are expected to log in at least three times per week and actively contribute to discussions and assignments.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. ([See Student Rule 24](#).)

Course Specific Makeup Work Policy

Deliverables submitted up to three days after the deadline may be excused with prior permission. Submissions delayed beyond three days will incur a penalty of 5 points per day. It is important to communicate promptly with the instructor to minimize any impact on your grade.

Notice of Nondiscrimination

Texas A&M University is committed to providing safe and non-discriminatory learning, living, and work environments for all members of the University

community. The University provides equal opportunity to all employees, students, applicants for employment or admission, and the public, regardless of race, color, sex (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, or veteran status.

Texas A&M University will promptly, thoroughly, and fairly investigate and resolve all complaints of discrimination, harassment (including sexual harassment), complicity, and related retaliation based on a protected class in accordance with [System Regulation 08.01.01](#), [University Rule 08.01.01.M1](#), [Standard Administrative Procedure \(SAP\) 08.01.01.M1.01](#), and applicable federal and state laws. In accordance with Title IX and its implementing regulations, Texas A&M does not discriminate on the basis of sex in any educational program or activity, including admissions and employment.

The following person has been designated to handle inquiries and complaints regarding the non-discrimination policies: Jennifer M. Smith, TAMU Associate VP & Title IX Coordinator at YMCA Ste 108, College Station, TX 77843, 979-458-8407, or email civilrights@tamu.edu. For other reporting options, visit the [U.S. Department of Education Office for Civil Rights Complaint Assessment System](#) to locate the address and phone number of the office that serves your area, or call 1-800-421-3481.

Civil Rights, Free Speech, and Title IX Policies

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit discrimination and harassment based on an individual's race, color, sex, (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, veteran status, or any other legally protected characteristic. This includes forms of sex-based violence, such as sexual assault, sexual harassment, sexual exploitation, dating/domestic violence, and stalking.

Students can report discrimination/harassment, access supportive resources, or learn more about their options for resolving complaints on the [University's Civil Rights & Title IX webpage](#).

Students should be aware that all university employees (except medical or mental health providers) are mandatory reporters, which means that if they observe, experience or become aware of an incident that they reasonably believe to be discrimination/harassment alleged to have been committed by or against a person who was a student or employee at the time of the incident, the employee must report the incident to the university.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Resources and their instructors as soon as possible.

To request academic accommodations, contact the designated ADA office based on your location:

- Texas A&M University, College of Nursing, College of Dentistry, Irma Lerma Rangel College of Pharmacy College Station, College of Medicine, School of Public Health, Institute of Biosciences and Technology, EnMed Program, Bush School in Washington DC, Mays Business School – CityCentre, TAMU Engineering Academies, Texas A&M University Higher Education Center at McAllen and Texas A&M University at Galveston should contact Disability Resources at (979) 845-1637 or disability@tamu.edu.
- Texas A&M University School of Law should contact the Office of Student Affairs at (817) 212-4111 or law-disability@law.tamu.edu to request accommodations.
- Irma Lerma Rangel College of Pharmacy in Kingsville should contact the Disability Resource Center at Texas A&M University-Kingsville at (361) 593-3024 or drc.center@tamuk.edu to request accommodations.

- Texas A&M University College of Veterinary Medicine & Biomedical Sciences in Canyon should contact the Office of Student Accessibility at West Texas A&M University – Canyon at (806) 651-2335 or osa@wtamu.edu.

If you are experiencing difficulties with your approved accommodations, contact the office responsible for approving your accommodations or the Texas A&M ADA Coordinator Julie Kuder at ADA.Coordinator@tamu.edu or (979) 458-8407.

Pregnancy Accommodations

Texas A&M provides reasonable accommodations to students due to pregnancy and/or related conditions, such as childbirth, recovery, and lactation. Students should contact the University's [Pregnancy Coordinator](#) as soon as they become aware of the need for accommodation. Depending on the circumstances, accommodations could include extended time to complete assignments or exams, changes in course sequence, or modifications to the physical classroom environment.

Texas A&M will also allow a voluntary leave of absence, ensure the availability of lactation space, and maintain grievance procedures to provide for the prompt and equitable resolution of complaints of sex discrimination. For information regarding pregnancy accommodations, email TIX.Pregnancy@tamu.edu.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors influencing a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care practices by utilizing the resources and services available through [University Health Services](#). The [TELUS Health Student Support app](#) provides access to professional counseling in multiple languages anytime, anywhere by phone or chat, and the 988 Suicide & Crisis Lifeline offers 24-hour emergency support at 988 or 988lifeline.org.

Texas A&M College Station

Students needing a listening ear can contact University Health Services at 979.458.4584. Call 911 or visit your nearest emergency room if you are currently experiencing a life-threatening situation or if your safety is at risk. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at 988lifeline.org.

Statement on the Family Educational Rights and Privacy Act (FERPA)

FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings.

Currently enrolled students wishing to withhold any or all directory information items can do so within howdy.tamu.edu using the Directory Information Withholding Form. The complete [FERPA Notice to Students](#) and the student records policy is available on the Office of the Registrar webpage.

Items that can never be identified as public information are a student's social security number, citizenship, gender, grades, GPR, or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

Directory items include name, UIN, local address, permanent address, email address, local telephone number, permanent telephone number, dates of attendance, program of study (college, major, campus), classification, previous institutions attended, degrees, honors and awards received, participation in officially recognized activities and sports, medical residence location, and medical residence specialization.

Free Speech and Civil Discourse

Texas A&M recognizes that the pursuit of truth through open and robust discourse is critical to academic inquiry. However, as a community of scholars, the university

has an aspirational expectation that such discourse will be conducted in accordance with Aggie Core Values. In this “marketplace of ideas,” we encourage civil dialogue creating an environment that allows individuals to express their ideas and to have their ideas challenged in respectful and responsible ways. Students can learn more about Freedom of Expression and Free Speech on the [University's website](#) about the First Amendment. **INTERESTING/UNCLEAR**