

IFSC 7399 Data Fundamentals – Summer 2025

IFSC 7399	Lecture Instructor: <i>Ningning Wu</i> nxwu@ualr.edu	Class Location & Time: <i>EIT room 220 or via live webcast.</i> <i>Class Day – Mon, Wed, Thu,</i> <i>Time – 9:00am-12:00pm.</i> <i>Note: All class Sessions will be recorded for later viewing.</i>	Office Hours: <i>Wed. 12pm-1:30pm or by appointments (meet in the office or online)</i>
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Course Resources

- *Python Tutorial.*
 - <https://docs.python.org/3/tutorial/index.html>
 - <https://www.tutorialspoint.com/python/index.htm>
- *Pandas Tutorial*
 - <https://www.w3schools.com/python/pandas/default.asp>
 - *10 Minutes to Pandas* (https://pandas.pydata.org/docs/user_guide/10min.html)
 - https://pandas.pydata.org/docs/user_guide/10min.html
- *Machine Learning with Python Tutorial*
 - *Machine Learning with python and Scikit-Learn – Full Course from freeCodeCamp.org* (<https://www.youtube.com/watch?v=hDKCxebp88A>)
 - *Scikit-learn Documentation* (<https://scikit-learn.org/stable/>)
 - *Scikit Learn Tutorial* (https://www.tutorialspoint.com/scikit_learn/index.htm)
 - *Pytorch Documentation* (<https://docs.pytorch.org/docs/stable/index.html>)
 - *Pytorch Tutorial* (<https://docs.pytorch.org/tutorials/>)
 - *Pytorch Tutorial* (<https://github.com/yunjey/pytorch-tutorial>)

Course Overview

In this course, we will explore a range of machine learning (ML) and deep learning (DL) techniques and their applications to real-world data. Topics will include key stages of a typical ML project: data preprocessing, profiling, transformation, exploratory data analysis, supervised and unsupervised learning, ensemble models, hyperparameter tuning, and model evaluation and comparison. We will also address important considerations such as managing biased datasets and detecting model overfitting.

Throughout the course, we will work with popular Python libraries such as **Pandas, scikit-learn, PyTorch, and Fastai**. Real-world datasets will be used extensively to provide hands-on experience with the core components of data science and ML/DL workflows.

Additionally, we will emphasize best practices for selecting appropriate models and interpreting their outputs effectively.

By the end of the course, you will feel more confident and equipped to work with data and apply machine learning techniques in practical settings.

Topics covered:

- Overview of Python Programming

- Overview of Database Programming
- Overview of Pandas Programming
- Data Preprocessing, Profiling, and Transformation
- Supervised Learning
- Unsupervised Learning
- Model Evaluation and Hyperparameter Tuning
- Introduction of Deep Learning

Learning Objectives and Topics

Through examinations, graded homework, and laboratory exercises, students will demonstrate:

1. Understand the fundamentals of data preprocessing and exploratory data analysis
2. Understand the fundamentals of machine learning and deep learning
3. Understand the fundamentals of python programming and Pandas programming
4. Understand the key steps of machine learning process and how to interpret and evaluate the machine learning results.

Course Format / Instructor Presence

This course will be project-based. We will explore machine learning techniques and key data analytics processes by working through a variety of data science problems. Active class participation and attendance are essential for a productive learning experience. Please bring your laptop to every class, as we will solve different problems using Python programming.

Attendance Expectations

Classroom attendance expectations depend upon the section in which the student is enrolled. The instructor will conduct the class on-campus according to schedule in the designated classroom.

1. Students enrolled in INFQ 7399-H01 are expected to attend the on-campus class in-person during the in-person session.
2. Students enrolled in INFQ 7399-9U1 have the option to attend in-person, online in real time as the class is being webcast and participating by audio, video, and chat, or viewing recording of the class webcast

Communication Expectations for Regular and Substantive Interactions

In addition to the class sessions, the instructor will have their weekly office hours posted in the Blackboard course shell. Course communications will be done via the Blackboard Announcements and the UALR email system. Students must use their UALR email when contacting their instructors. On weekdays, a student can expect a response to their email or phone message within twenty-four hours, and forty-eight hours on the weekends. Instructors also will initiate contact with the student, so it is essential that the student monitor their UALR emails daily, review comments and feedback on assignments, and remain actively engaged no less than several times a week in their course(s). The student's grade in the course depends on their attentiveness to the instructions and directions given by the instructor. The student is responsible for knowing the syllabus, deadlines on assignments, school policies, and all communication from the instructors to him/her individually and to the class as a whole.

Standard Credit Hour Expectations

This course will adhere to the standard credit hour policy. For a 3-credit course, students can expect 2.5 hours per week of direct faculty instruction including in-class assessment and exams (midterms and final) and 5 hours per week of out-of-class time (e.g., studying, reading, completing assignments, working on projects, etc.).

Grading and Assessment

GRADE SCALE:	A:	[90 – 100]
	B:	[80 – 90)
	C:	[70 – 80)
	D:	[60 – 70)
	F:	below 60

ASSESSMENT:

Assignments	70%
Project	30%

Please note that the final grade of this course is the **weighted average** of assignments, quiz, and exams.

Important note: I reserve the right to change this grading system as the course progresses and various circumstances develop.

Late Assignment Submission Policy

Unless otherwise specified in class, assignments will be given through Blackboard and will be due on the day and at the time (due date) given in the Blackboard assignment. All Blackboard assignments have a due date and a closing day and time (closing date). Typically, the due date is the start of a scheduled class meeting, and the closing date is the beginning of the next consecutive class meeting. Assignments submitted after the due date and before the closing date will be accepted but will incur a penalty of 20%. After the assignment closing date, submissions will not be accepted, and the student will not receive credit for the assignment.

UA Little Rock Plagiarism/Academic Policies/Complaints

Plagiarism on any assignment will at a minimum result in 0 points for the assignment. We reserve the right to pursue further disciplinary action if appropriate (e.g. any student caught cheating on an assignment/assessment will receive an “F” for the course, and we may pursue action with the Committee on Academic Integrity). Plagiarism includes copying someone else’s work and claiming it as your own, or collaborating excessively with another person or persons and claiming the work as solely your own. It is strongly recommended that students maintain a record of the preparation of their major assignments. For more information on academic offenses, please refer to the following websites:

- Academic Integrity and Grievance Policy - <https://ualr.edu/deanofstudents/section-vii-administration/academic-integrity-grievance-policy/>
- Academic Offenses: <https://ualr.edu/deanofstudents/section-vii-administration/academic-offenses/>

- Other Issues: Students are encouraged to seek informal resolution at the department level when possible. If that does not result in a satisfactory resolution, student should consult with the Office of the Dean of Students - <https://ualr.edu/deanofstudents/student-complaints/> for additional resources for resolving issues.

Inclement Weather Policy

During inclement weather, UA Little Rock will make a decision whether or not to close based on all available information. The chancellor will decide whether or not conditions warrant canceling classes and activities and closing the campus or whether classes and activities will be canceled but with specified campus offices open. Online or web-enhanced classes will continue as scheduled at the discretion of the faculty member. The UA Little Rock website, UA Little Rock email, the university's main telephone number (501.569.3000), and the Rave campus alert notification system are the official means of communicating information concerning weather-related closings. When necessary, the university will announce a separate decision about canceling night classes (those classes starting at 4:20 p.m. or later) by 2 p.m., if possible. For further information, please review the Inclement Weather Policy available at <https://ualr.edu/policy/home/admin/weather/>.

UA Little Rock Disability Policy

Students with Disabilities: Your success in this class is important to me, and it is the policy and practice of the University of Arkansas at Little Rock to create inclusive learning environments consistent with federal and state law. If you have a documented disability (or need to document a disability) and need an accommodation, please contact me privately as soon as possible so that we can discuss with the Disability Resource Center (DRC) how to meet your specific needs and the requirements of the course. The DRC offers resources and coordinates reasonable accommodations for students with disabilities. Reasonable accommodations are established through an interactive process among you, your instructor(s) and the DRC. Thus, if you have a disability, please contact me and/or the DRC, at 501-569-3143 (V/TTY) or 501-683-7629 (VP). For more information, please visit the DRC website at <https://ualr.edu/disability/>. (UA Little Rock Policy 404.9)

Tentative Class Schedule

Week 1	Review of Python Programming
Week 2	Review of Pandas Programming
Week 3	Introduction to Machine Learning
Week 4	Introduction to Machine Learning
Week 5	Introduction to Deep Learning