INFO 5002: Introduction to Python for Information Systems

Course Information
Course Title: Introduction to Python for Information Systems
Course Number:INFO 5002
Term and Year: Fall 2024
Credit Hour: 4 credits
CRN: 16372
Course Format: On the ground

Instructor Information
Full Name: Ramkumar Hariharan
Email Address: rmhariharan123@gmail.com
Office Hours: TBD

Instructor Biography
Ramkumar Hariharan is Program Director and Data Science Engineering Faculty at Northeastern, Seattle. He is also Senior Scientist at Northeastern's Institute for Experiential AI (EAI). Previously, he has led multiple high-impact data-driven projects at some of the leading institutes in Seattle. These include Fred Hutch, University of Washington (UW), and the Institute for Systems Biology. His areas of focus include data analyses, data visualization, and predictive analytics of both structured and unstructured data.Ram has a 17-year history of developing and delivering more than 20 computational, biomedical, and data science courses at a variety of levels. His courses, lectures, online teaching, and motivational talks have been overwhelmingly well-received in Seattle, Japan and in India. Ram has been on Television in India and in the US. Ram serves as affiliate of UW e-sciences institute, bootcamp leader at General Assembly, and mentor with Springboard. He has also led education and training programs for Fred Hutch. He specializes in using powerful, yet simple analogies to explain seemingly complex computational and data science concepts and math.Ram's teaching philosophy is grounded in one strong belief: there is no one size fits all approach to teach, or to learn a new concept.

Teaching Assistant Information
Full Name: Beena Chauhan
Email Address:chauhan.be@northeastern.edu
Office Hours:TBD

Course Prerequisites
Please review academic course catalog

Course Description
Is your secret wish to become a proficient data analyst? Or perhaps you have an exciting background in the arts, humanities, or accounting and want to explore computer programming and data science? If you answered yes to any of these questions, then INFO 5002 is the course for you.

INFO 5002 stands out because it provides a welcoming and engaging introduction to programming for complete beginners, with a particular emphasis on data analysis. Learning to code teaches you how to break down complex problems into manageable parts and to reformulate them in a way that can be solved using a computer.

In this course, we use the Python programming language for two main reasons. Firstly, Python is a high-level language that is almost as readable as English. Secondly, it allows you to accomplish a lot with just a few lines of code.

Additionally, INFO 5002 integrates experiential learning with a focus on financial technology and new chatbot AI technology, providing students with hands-on experience in applying their coding skills to real-world financial data and developing intelligent conversational agents. This unique approach not only builds technical proficiency but also prepares students for the dynamic fields of business, fintech and AI.

Course Learning Outcomes
1) Develop Proficiency in Core Python Concepts: Students will acquire the fundamentals for Python programming concepts, including variables, data types, operators, control structures, functions, and basic object-oriented programming.
2) Employ Python Tools and Libraries for Information Systems Development: Students will possess the ability to use Python's extensive ecosystem of tools, libraries, and environments to craft robust applications tailored for information systems.
3) Implement File Handling and Data Processing Techniques: Students will be able to read from and write to files, handle exceptions, and use regular expressions in Python. They will have the ability to download, parse, and manipulate data files, thereby applying Python to practical data processing and information systems tasks.

Required Tools and Course Textbooks.
1. Head First Python: A Brain-Friendly Guide, Paul Barry, O'Reilly, 2nd or New Edition
2. Python Crash Course, 3rd edition: A Hands-On , Project-Based Introduction to Python, Eric Matthes, No Starch Press
3. Python for Everybody: Exploring Data in Python 3, Charles Russell Severance, CreateSpace Independent Publishing Platform

Course Schedule/Topics Covered

Week	Date	In Class Topic	Assignment Due
1	09/09	Course overview, Introduction & Jupyter Demo	
2	09/16	Python Variables of the scalar kind	Problem Set I Released
3	09/23	Lists, Tuples and A Loop Called For	Project Title, Theme Due
4	09/30	Of Python Dictionaries & Functions	Problem Set I Due
5	10/07	Crunching Data with Pandas	Problem Set II Released
6	10/14	Indigenous People's Day: No Classes	
7	10/21	Cruching (More) Data with Pandas	Problem Set II Due
8	10/28	Data visualization with Seaborn	
9	11/04	Scape & Win Web Content, Regular Expressions	Problem Set III Released

10	11/11	Veteran's Day : No Classes	
11	11/18	Machine Learning with Scikit-Learn Part I	Problem Set III Due
12	11/25	Machine Learning with Scikit-Learn Part II	Project Submission Due
13	12/02	Touchy but Cool Data Viz with Bokeh, SciPy	
14	12/09	Final Project Presentation	

Assignment Grading

Please insert all assignment grades and weights for the course. Example below:
- Attendance – See Guidelines Below
- Assignment 1 – 25%
- Assignment 2 – 25%
- Assignment 3 – 25%
- Final Project – 25%

Grading Scale

	87-89.9% B+	77-79.9% C+	
	84-86.9% B	74-76.9% C	
95-100% A			
90-94.9% A-	80-83.9%B-	70-73.9% C-	69.9% or below F

Attendance/Late Work Policy

Attendance Policy

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed **a maximum of 2 absences per course, with 3 or more absences resulting in an automatic 'F' for that course.** Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor (coe-mgen-gradadvising@northeastern.edu) to learn more about the Medical Leave of Absence. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave in accordance with the University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded.

End-of-Course Evaluation Surveys
Your feedback regarding your educational experience in this class is particularly important to the College of Engineering. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at **https://neu.evaluationkit.com**. Your survey responses are **completely anonymous and confidential**. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end

of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your Northeastern University Mail account notifying you when surveys are available.

Academic Integrity
A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to http://www.northeastern.edu/osccr/academic-integrity-policy/ to access the full academic integrity policy.

MGEN Student Feedback
Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey: https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaw0Ki

University Health and Counseling Services
As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit https://www.northeastern.edu/uhcs.

Student Accommodations
Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.

For more information, visit https://drc.sites.northeastern.edu.

Library Services
The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit https://library.northeastern.edu

Network Campus Library Services: Northeastern University Library Global Campus Portals

24/7 Canvas Technical Help
For immediate technical support for Canvas, call 617-373-4357 or email help@northeastern.edu

Canvas Student Resources: https://canvas.northeastern.edu/student-resources/

For assistance with my Northeastern e-mail, and basic technical support:
Visit ITS at https://its.northeastern.edu
Email: help@northeastern.edu
ITS Customer Service Desk: 617-373-4357

Diversity and Inclusion
Northeastern University is committed to equal opportunity, affirmative action, diversity, and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration, and an awareness of global perspectives on social justice.

Please visit http://www.northeastern.edu/oidi/ for complete information on Diversity and Inclusion

Title IX
Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.

Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty, and staff.

In case of an emergency, please call 911.

*Please visit **https://www.northeastern.edu/ouec** for a complete list of reporting options and resources both on- and off-campus.*