Northeastern
College of Engineering

INFO 5002: Introduction to Python for Informaiton Systems

Course Information
Course Title: **Introduction to Python for Information Systems**
Course Number:INFO5002
Term and Year: Fall 2024
Credit Hour: 4
Course Format: On Ground, Toronto Campus

Instructor Information
Full Name: Ramsha Bukhari
Email Address: Click or tap here to enter text.
Office Hours: By Appointment

Instructor Biography
Ramsha Bukhari is a software engineer with 7 years of industry experience, alongside 9 years of teaching. Her work as a software engineer with a research and development focus has allowed her to transform raw data into valuable business insights for high-volume companies. Her passion lies in automating operations to ensure the right data reaches the right people, while continuously advancing in cutting-edge technologies.In addition to her industry experience,she has been committed to bridging the gap between academia and industry by transmitting her knowledge to students. Her teaching approach emphasizes real-world relevance and practical skills, helping students build the confidence to excel in both technical and analytical fields.

Teaching Assistant Information
Full Name: Click or tap here to enter text.
Email Address:Click or tap here to enter text.
Office Hours:Click or tap here to enter text.

Course Prerequisites
Students are expected to have basic problem-solving and critical thinking skills, along with a willingness to explore how coding and systems work. While prior programming experience is not required, a curiosity and readiness to engage with new concepts are essential for success in this course

Course Description

Unlock the power of Python and take your first steps toward mastering information systems! This course is designed to inspire and empower students with non-technical backgrounds to confidently dive into the

world of programming. Through hands-on projects and real-world examples, you'll learn Python from the ground up, building practical skills that connect directly to today's digital challenges.

From coding basics to leveraging Python's powerful libraries, this course makes it easy for you to apply your knowledge to dynamic data processing, information systems, and beyond. Whether you're aiming to enhance your problem-solving skills or looking to bring ideas to life through code, this course offers the supportive, engaging environment you need to thrive.

Prepare to embark on a rewarding journey where creativity meets technology, and where each lesson brings you one step closer to becoming a proficient and adaptable information systems professional.

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. **"Python Crash Course" by Eric Matthes**
   Description: This is a beginner-friendly book that provides a solid introduction to Python programming. It covers all essential topics, from basic syntax to more advanced concepts like file handling and simple object-oriented programming. The practical examples and projects make it an ideal textbook for students with limited prior experience.
2. **"Automate the Boring Stuff with Python" by Al Sweigart**
   Description: This book is perfect for learning practical programming skills. It focuses on using Python for automating everyday tasks and is well-suited for students who want to see real-world applications of their skills early on.
3. **"Python Programming: An Introduction to Computer Science" by John Zelle**
   Description: This book offers a clear introduction to Python, emphasizing problem-solving, critical thinking, and fundamental concepts. It's designed for students new to both programming and Python.

Additional Resources:

1. **Python Documentation:**
   The official Python documentation is an essential resource for students to familiarize themselves with Python's extensive libraries and tools.
   Link: https://docs.python.org/3/
2. **Real Python (Website):**
   Real Python offers high-quality tutorials and articles ranging from beginner to advanced topics. The hands-on approach and real-world examples align well with course outcomes.
   Link: https://realpython.com/

Required Tools:

1. **Python 3.x**
   Description: Students will need to have Python 3 installed on their computers. Python 3 is the core tool for the course, allowing students to write, test, and execute their code.

   Download Link: https://www.python.org/downloads/

2. **Integrated Development Environment (IDE):**
   Students can use any of the following IDEs to write and run their Python code. These options are beginner-friendly and widely used:
   - **PyCharm (Community Edition):** A popular IDE with excellent code management and debugging tools.
     Download Link: https://www.jetbrains.com/pycharm/download/#section=windows
   - **VS Code:** A lightweight, versatile code editor with extensive Python support.
     Download Link: https://code.visualstudio.com/Download
   - **Jupyter Notebook:** An interactive tool that combines code, text, and visuals, making it ideal for exploring and learning Python concepts.
     Installation Guide: https://jupyter.org/install

3. **Version Control System: Git**
   Description: Git is essential for tracking code changes and collaborating on projects. Students should have Git installed along with access to GitHub for version control and project management.

   Download Link: https://git-scm.com/downloads

4. **Anaconda (Optional, but Recommended):**
   Description: Anaconda is a Python distribution that comes pre-packaged with popular libraries and Jupyter Notebooks. It's a convenient way to set up a Python environment for students, especially for data processing and analysis.

Download Link: https://www.anaconda.com/products/individual

5. **Command Line Interface (CLI):**
   Description: Basic familiarity with the command line (Terminal for macOS/Linux or Command Prompt/PowerShell for Windows) will be needed for installing libraries, running scripts, and using Git.
6. **Libraries and Packages:**
   The course will cover some basic Python libraries that students should be familiar with:
   - **NumPy:** For numerical operations and basic data processing.
   - **Pandas:** For handling and processing data files.
   - **Requests:** For web requests and data fetching.

   Note: Students will learn how to install these libraries using pip or conda (if using Anaconda).

Course Schedule/Topics Covered

Week	Date	In Class Topic	Assignment Due
1	09/04	Introduction to Python Programming and Problem-Solving Strategies	
2	09/11	Data Types, Variables, and Expressions	
3	09/18	Control Structures: Conditional Statements	
4	09/25	Loops and Iteration	Test 1
5	10/2	Functions and Modularity	Assignment 1
6	10/9	Introduction to Object-Oriented Programming (OOP) in Python	
7	10/16	Advanced OOP: Inheritance and Polymorphism	MidTerm Exam
8	10/23	Working with Python Libraries for Information Systems Development	
9	10/30	File Handling: Reading and Writing Files	Test 2
10	11/6	Error Handling and Exception Management	Assignment 2
11	11/13	Regular Expressions for Pattern Matching and Data Validation	
12	11/20	Data Parsing and Manipulation	
13	11/27	Working with APIs and External Data Sources	
14	12/4	Code Optimization and Best Practices	
15	12/11	Building Simple Python Applications	
16	12/18	Course Review	Final Exam

Assignment Grading

- Attendance – 10%
- Assignment 1 – 10%
- Assignment 2 – 10%
- Test 1 – 10%
- Test 2 – 10 %
- Midterm Exam – 20%
- Final Exam – 30%

This distribution emphasizes consistent engagement and performance throughout the course while giving substantial weight to the midterm and final exams, which cover a broader range of topics aligned with the learning outcomes.

Grading Scale

	87-89.9% B+	77-79.9% C+	
95-100% A	84-86.9% B	74-76.9% C	
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*.