CSC 401 – Introduction to Programming

Course Instructor: Christopher Hield

Course Email: chield@depaul.edu / christopher.hield@gmail.com

Summary of Course

This course is an introduction to programming with a focus on problem solving, structured programming and algorithm design with a gentle introduction to efficiency. Concepts covered include data types, expressions, variables, assignments, conditional and iterative structures, functions, file input/output, exceptions, namespaces and recursion. PREREQUISITE(S): None.

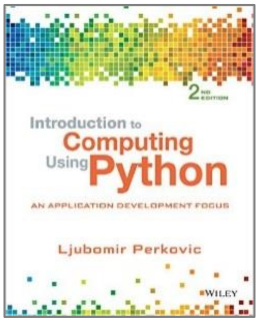
This is a first programming course for students who have never had a term of programming or its equivalent. We assume that students have no prior experience with any programming language. We will use the Python language in this course.

Upon completion of this course, the student will be able to:

- Develop algorithmic solutions for basic computational problems.
- Understand fundamental Python programming structures such as expressions, assignments, decision and iteration structures, functions, modules, strings, lists, dictionaries and recursion.
- Develop and test simple programs in Python.
- Access and utilize the Python Standard Library (API)
- Articulate in writing basic functionalities of Python's fundamental constructs.

Textbook Resources

- **Required Course Textbook:**
    - *Introduction to Computing Using Python, 2nd edition* (eBook), Ljubomir Perkovic, Wiley, 2015.
    - ISBN (eBook): 978-1-118-89105-6 or ISBN (eBook): 978-1-118-89088-2
    - We will be using the "ebook" version if this text, not the print copy.



Grading Policy

Course Grade Evaluation:

Assignments	45%	Midterm Exam	25%	Final Exam	30%

Grading Scale

A:	100 > total >= 93	B-:	83 > total >= 80	D+:	70 > total >= 67
A-:	93 > total >= 90	C+:	80 > total >= 77	D :	67 > total >= 63
B+:	90 > total >= 87	C :	77 > total >= 73	D-:	63 > total >= 60
B :	87 > total >= 83	C-:	73 > total >= 70	F :	60 > total

Course Attendance

Live-class students are expected to attend every class session. DL students are expected to view the recording of the class *as soon as possible*, within 1-3 Days of the in-class meeting.

Be advised that a significant amount of assignment and exam information is given in class/on recordings, and missing that assistance can severely compromise your ability to perform adequately in this course.

Materials and Software

All you need running on your laptop/desktop is Python, version 3.6 or higher is fine. Python is available as a free download and comes with a simple development environment called IDLE https://www.python.org/downloads/. We will also discuss the use of other interactive Python development environments.

D2L (Desire2Learn)

The web site used for this course is Desire2Learn (D2L) https://d2l.depaul.edu/. Log on using your Campus Connect ID and password. Here you will find:

- Assignments
- Lecture notes
- Examples and all other materials used in the course
- Announcements
- Links to class session recordings
- Other materials as the need arises

To take full advantage of D2L, it is IMPERATIVE that you have a correct e-mail address on file with Campus Connection. You are responsible for anything and everything posted to D2L and communicated via email.

I will use News announcements on D2L to post information, as well as relevant updates and clarifications, on lectures, assignments and exams.

Course Structure

Course structure

The course has two main components:

- Class lectures via recordings and lecture notes
- Homework

In both components you are expected to take an active role in your learning. Class is intended to be an exploration of new concepts with the guidance of your instructor. We will work on exercises that at times you may find frustrating and confusing. Asking questions about the lecture notes, readings and assignments can greatly improve your understanding. Use your instructor and peers as resources.

Homework is intended as an opportunity to solve problems independently. It is strongly recommended that you work on your assignments on your own. You should expect to spend 10 hours a week on this class (some will spend much less and some will spend more). You cannot expect to learn how to program if you do not spend a considerable amount of time doing it.

Assignments

- Each week you will have an assignment that will typically contain a required reading in preparation of the upcoming class a set of Programming Problems.
- Assignments will be posted on D2L and are due the following week by class time.
- Assignments need to be submitted electronically on D2L. No emailed assignments will be accepted. No exceptions.
- Assignments are intended as INDIVIDUAL exercises. They are meant to be challenging and will integrate/extend what we have learned in the classroom. You are required to work on assignments on your own.
- All programming problems are designed based on material covered in class. If you submit solutions that use material not yet covered in class, you must explain in your program AND your instructor reserves the right to have you explain orally the details of your submitted solution.
- No late assignments are accepted for any reason. Your lowest assignment score will be dropped in the calculation of your course grade.
- Think before doing anything that may jeopardize your success in this class: If you can find code written by someone else online (i.e., plagiarism), your instructor can as well.

CDM Tutoring

Free tutoring services are available. More information can be found at CDM Tutoring.

Communication

All communication will be done in one of three ways:

- Announcements in class. You are responsible for anything and everything I say in class.
- Email from me.
- Announcements on the D2L website.

Email is the primary means of communication between faculty and students enrolled in this course outside of class time. Make sure your email is listed under “demographic information” at Campus Connect is correct.

When you send me email, three requirements:

- Please begin subject line with CSC 401
- Ensure your full name appears somewhere in the message.
- When asking about code, please send the .py file to me as an email attachment (not copied into the message body). In the body of the email explain the problem you are having and what you have tried.

Graduate Student Expectations

While this is an introductory programming course, it is still a graduate level course. You are expected to take ownership and responsibility for your own learning and experiences. You are expected to work hard outside the classroom and ask for help when needed. You are expected to READ the syllabus and understand requirements, expectations and important dates. You are expected to look at your work schedule and learning style, and decide if this class is a good fit BEFORE the deadlines for swapping or dropping classes without penalty. If emergencies arise, we will deal with those on a case by case basis.

Course Performance Requirements

Course grades are *solely* based upon the student's academic performance. This means a student's grade is based *only* upon their performance on the Midterm Exam, Assignments, and Final Exam. No other factors will be considered. *THIS POLICY WILL BE STRICTLY ENFORCED. If you are not comfortable with this policy, please drop the class now.*

The dates/deadlines assigned to the various assignments and exams in this course are firm, and will not be changed. There are too many students in the course to tailor the schedule to each student's desires. There will be no make-up exams nor unadvertised extra credit assignments - please don't ask. If there is an extreme emergency and you must miss an exam, you must notify me and provide documented evidence of the emergency. *If you are not comfortable with this policy, please drop the class now.*

Instructor

Christopher Hield has been at the Chicago Board Options Exchange (CBOE) since 2001, and is currently the Director of Software Development & Testing. As director of Software Development & Testing for CBOE's electronic financial trading system, he is responsible for the design, development and maintenance of the multi-tiered, serviced-based software used within the Systems Development Department.

Before joining CBOE, Christopher spent time working as a Senior Software Engineer and Business Consultant the Marketing, Systems and Development Division (MSD) of Hitachi Computer Products America. There he was involved in the design and development of object-based data mining and data exploration tools for the health care industry.

Prior to his position at Hitachi, Christopher spent 13 years in the Decision and Information Sciences Division at Argonne National Laboratory, where he served as Senior Software Engineer and Technical Lead in the Information Systems Section. His duties included the development of a variety of object-based information systems, as well as object-oriented frameworks to support distributed, multidisciplinary modeling, simulation, and visualization applications.

Since 1995, he has been teaching various courses in software analysis, design, development, testing, and project management concepts at the Illinois Institute of Technology, Northwestern University, and DePaul University.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at http://academicintegrity.depaul.edu/.

The university and school policy on plagiarism can be summarized as follows: Students in this course should be aware of the strong sanctions that can be imposed against someone guilty of plagiarism. If proven, a charge of plagiarism could result in an automatic F in the course and possible expulsion. The strongest of sanctions will be imposed on anyone who submits as his/her own work any assignment which has been prepared by someone else. If you have any questions or doubts about what plagiarism entails or how to properly acknowledge source materials, consult the instructor.

All assignment submissions to D2L are subjected to automated plagiarism analysis tools.

Schedule of Topics

NOTE: Topic order and appearance are subject to change based upon actual class performance and instructor discretion.

Week 1 (3/28)

- Python interpreter
- Variables, expressions and assignments
- Basic data types (numbers, strings, lists, boolean)
- Implicit/Explicit type conversion
- Math module
- *Reading: Chapters 1 & 2*
- *Homework 1*

Week 2 (4/4)

- Basic control flow
- One and two-way conditional statements
- For Each iteration through list, string, range
- Functions and parameter passing
- *Reading: Chapter 3*
- *Homework 2*

Week 3 (4/11)

- String processing
- Reading/writing files
- Formatted output
- Errors, exceptions
- Debugging
- *Reading: Chapter 4*
- *Homework 3*

Week 4 (4/18)

- If/elif/else
- Iteration patterns
  - For each/Iteration loop
  - Indexed loop
  - Accumulator loop
  - Nested loops
- While loops
  - Basic while loop
  - Infinite loop
  - Loop and a half
  - Modifying loop control: break, continue, pass
- *Reading: Chapter 5*
- *Homework 4*
- Midterm Review

Week 5 (4/25)

- **MIDTERM EXAM**

Week 6 (5/2)

- Containers: Dictionaries, tuples, sets
- Random module
- Using while loops to read/parse file information
- Store file date in contained data types
- *Reading: Chapter 6*
- *Homework 5*

Week 7 (5/9)

- ASCII & Unicode Characters
- Namespaces, scoping rules, global/local variables
- Modules
- Exceptions for control flow
- *Reading: Chapter 7*
- *Homework 6*

Week 8 (5/16)

- Recursion
- Automated Basic examples
- Divide & conquer
- *Reading: Chapter 10*
- *Homework 7*

Week 9 (5/23)

- More recursion
- Bug Efficiency (recursive versus iterative Fibonacci)
- Running time analysis, binary search
- Objects and classes
- *Reading: Chapter 10*
- *Homework 8*

Week 10 (5/30)

- Objects and classes (cont.)
- Randomness
- String encodings
- *Reading: Chapter 8*

Final Exam: 6/6

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.

To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class) and make sure that you have contacted the Center for Students with Disabilities (CSD) at either location:

- Loop Campus – Lewis Center #1420 – (312) 362-8002
- Lincoln Park Campus – Student Center #370 – (773) 325-1677

Online Teaching Evaluation

Instructor and course evaluations allow students to provide valuable feedback regarding the instructor and the course. They are a requirement of the course and key in continuing to provide you with the highest quality of teaching. The results are more useful when there is a greater level of participation. As students, you are in a unique position to view the instructor over time. Your comments, about what works and what does not, enable the instructor to build on the elements of the course that are strong and improve those that are weak.

As you experience this course and material, think about how your learning is impacted. Your honest opinions about your experience in and commitment to the course and learning may help improve some components of the course for the next group of students. The evaluation of the instructor and course provides you an opportunity to make your voice heard on an important issue – the quality of teaching at DePaul. Do not miss this opportunity to provide feedback!

Incomplete

An incomplete grade is given only for an exceptional reason such as, for example, a death in the family or a serious illness. Any such reason must be documented. Any incomplete request must be made at least two weeks before the final and approved by the Dean of the College of Computing and Digital Media. Any consequences resulting from a poor grade for the course will not be considered as valid reasons for such a request.

Withdrawal and Retroactive Withdrawal

Information on the withdrawal policy can be found at Withdrawal Policy.
Information on the retroactive withdrawal policy can be found at Retroactive Withdrawal Policy.