Department of Computer Science and Engineering

University of Notre Dame

**Syllabus**

CSE 10101/CDT 30391: Script-Based Programming I

Pilot Offering: Spring 2015

TR 2:00-3:15, 125 DBRT

Instructor: Prof. Flynn, 631-8803, flynn@nd.edu, @ProfFlynn; OH: MTW 11:00-noon

Graduate TA: Nicole Shaffer, nshaffe1@nd.edu; OH: TBA

Undergraduate TA: Shuyang Li; OH: TBA

**Prerequisites:** None.

**Textbook:** *Python for Informatics: Exploring Information* by Charles Severance; the book is freely available online in multiple formats at [**http://goo.gl/gJLbPN**](http://goo.gl/gJLbPN) . Much of Severance’s book (and almost all of the material we will cover in CSE 10101) is a remix of *Think Python* by Downey *et al*., also freely available at [**http://goo.gl/oJxDu**](http://goo.gl/oJxDu) .

**Description:** Introduction to programming. Programming structures suitable for basic and intermediate computation. Elements of computer organization and networking. Development of programming skills including data manipulation, multimedia programming, and networking. Standards for exchange and presentation of data. Comprehensive programming experience using Python.

This course is required of all students in the new Computers and Digital Technologies (CDT) minor/supplemental major programs, and is an elective for the Computer Applications (CAPP) program which is being phased out. No prior programming experience is required. Students with significant or extensive programming experience should not take this course. The course is not intended to familiarize experienced programmers with a new language.

**Topics (high level)**

1. Elements of computer organization: processing, storage, networking, and application structure.
2. Basic computations and language syntax
3. Using libraries and APIs.
4. Web services.
5. Basic techniques for obtaining/generating data, computing with data, and visualization of data.

**Environment:** This course will employ the Python scripting language and its associated ecosystem, including IPython, to present language elements and provide a notebook capability for script development. The IPython notebooks run entirely within a web browser. **Students are required to bring a laptop computer so that programming work can be done during the class meetings.**  If some sort of hardship prevents you from bringing a laptop, please contact the professor so that alternate arrangements can be made. From time to time, students will be asked to screencast their notebooks so that we can solve problems and learn new things together.

Evaluation: grades will be based on student performance on the following items:

1. Assignments (some daily, some longer-term) (45%)
2. Comprehensive midterm exam (25%), to be held Tuesday March 3.
3. Comprehensive final exam (25%), to be held Thursday, May 7, 10:30-12:30.
4. Attendance (5%). Excused absences are handled following University policies (you need a documented, acceptable excuse). After one freebie absence, each additional absence will reduce the attendance component of the grade by one point, with a total deduction of 5 points. Attendance may not be taken every class meeting.

Assignments will encourage and require the acquisition of programming knowledge and its application to well-defined computing problems of increasing complexity. Later assignments will encourage creativity in solutions and evaluation.

Academic Honor Code: You signed this pledge as a condition of admission to the University:

*As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty.* **(http://honorcode.nd.edu/)**

Hence, the fundamental instruction on academic dishonesty is “Don’t claim credit for other people’s work; don’t allow your work to be used as someone else’s claim for credit; and don’t tolerate instances of such theft that come to your attention.” In this class, discussion of assignments is encouraged, but do not work together on the software that implements your solution. **There are no opportunities for group work in this class.** Although there is a gray area, you run a risk if **you** define its boundaries. If you are uncertain whether a specific approach to your work is allowable under the Honor Code and the expectations in this class, it is **always** better to talk to the professor about it. The TAs will not be allowed to rule on academic honesty matters so please don’t ask them to do so.

Weekly topics (subject to change)

1/13 & 1/15: Intro, overview, example, data types (Ch 1, 2)

1/20 & 1/22 (Nicole will lecture): data types, variables (Ch 2)

1/27 & 1/29: variables, conditionals, iteration (Ch 2, 3)

2/3 & 2/5: conditionals, functions (Ch 3, 4)

2/10 & 2/12: Functions and more iteration (Ch 4, 5)

2/17 & 2/19: Iteration and strings (Ch 5, 6)

2/24 & 2/26: Strings (Ch 6) (guest lecture from Prof. Wilkens on 2/26)

3/3: midterm exam; 3/5: recap.

3/17 & 3/19: File I/O (Ch 7)

3/24 & 3/26: File I/O and lists (Ch 7, 8)

3/31 & 4/2: Lists and dictionaries (Ch 8, 9)

4/7 & 4/9: Dictionaries, tuples, (Ch 9, 10) (guest lecture from Prof. Villano, 4/7, tentative).

4/14 & 4/16: Standard libraries: text processing (Ch 11, 12)

4/21 & 4/23: Standard libraries: web services (Ch 13, 14) (guest lecture from Prof. Bualuan 4/23)

4/28: wrap up.

5/7: Final exam, 10:30am-12:30pm