MIS 740: Software Concepts
Fall 2019

Class Times:	5:30 – 6:45 PM, Tuesdays and Thursdays
Class Venue:	CBC C125
Prerequisites:	Admission to the MS MIS program
Instructor:	Han-fen Hu
Office:	BEH 333
Email:	han-fen.hu@unlv.edu
Phone:	(702)895-3796
Office Hours:	4:00 – 5:30 PM, Mondays and Wednesdays (or By Appointments)

Textbook**:**
1. **Automate the Boring Stuff with Python, Edition: 15**
   ISBN: 9781593275990   (Referred to as **AS** henceforth)
   Al Sweigart, No Starch Press
2. **Python: Black-Belt Advice on Deployment, Scalability, Testing, and More**
   ISBN: 9781593278786   (Referred to as **JD** henceforth)
   Julien Danjou, No Starch Press
3. **Python Data Science Handbook, Edition: 17**
   ISBN: 9781491912058   (Referred to as **JV** henceforth)
   Jake VanderPlas, O'Reilly Media

Supplemental Materials: Other articles and/or books may be assigned

Course Description

First course in programming for non-programmers aimed at developing a proficiency in designing and writing programs using a high-level programming language. Topics include standard programming constructs (conditionals, loops, etc.), concept of an algorithm, and fundamental data types (numbers, strings, arrays, etc.).

Learning Objectives:

The course is designed to provide graduate students with an in-depth understanding of the software design and development concepts. By the time the students finish the course, they should be able to:

- Understand the concept of an algorithm and the software development methods.
- Understand the fundamental data types (numbers, strings, arrays, etc.), standard programming constructs (conditionals, loops, etc.), data processing (files and databases), and advanced programming skills (using functions and modules, etc.)
- Design, develop and present a software solution for business, using a high-level programming language.

WebCampus

Course information including the syllabus, class assignments, and notes will be posted on WebCampus (https://www.it.unlv.edu/webcampus). Students will also submit their assignments electronically using WebCampus.

Classroom Conduct

- Respect the computer equipment and use such equipment for class-related activities only.

- Electronic recording and/or photographing of lectures is prohibited unless receiving prior approval from the instructor. Approval will be granted only for self-study purposes.

- One point will be deducted from your grade each time your mobile phone rings or you talk on a telephone during class.

Grading Scale

92% and over	A		72%	C
90%	A-		70%	C-
88%	B+		68%	D+
82%	B		62%	D
80%	B-		60%	D-
78%	C+		Below 60%	F

Grading

The following is a breakdown of the point assignments.

Assignments (5 total)	25 % (5 % per assignment)
Midterm Exam	20 %
Final Exam	25 %
Project	25 %
Class Participation	2 %
Professional Participation	3 %
Total points	**100%**

- **Assignment**: There will be 5 assignments which <u>must be of individual efforts.</u> Everyone is expected to write their own solutions and programs. <u>Do NOT show, give, trade, or copy code from anyone</u>; otherwise, the assignment will be assigned a zero (0) mark. If you have difficulties with the assignments, please see the instructor during the office hours or make arrangements outside the office hours. All assignments should be submitted via WebCampus. <u>Late assignments will NOT be accepted.</u> All the assignments should be submitted via WebCampus.

- **Exam**: The midterm and final exams are in-class. The final exams will be cumulative and include a programming test. Make-up exams will be given ONLY in extreme and pre-approved circumstances. Students must adhere to the published examination schedule; absence for travel is not an adequate reason to re-schedule an exam. Academic dishonesty will result in an "F" for the course. All required lecture/lab/text materials and individual assignments will be sources of examination questions.

- **Project**: You are expected to form <u>a group of 6</u> to conduct a project during the semester. In this project, you are required to design and implement a software system, using the programming principles and methods discussed in the class. A group grade will be assigned on the basis of the quality of the system design, the implemented system, and documentation. Each group will give two presentations: (1) project design, and (2) final system. The projects will be reviewed by the whole class. Every student is expected to provide constructive comments toward each group's design and system. Constructive comments comprise criticism and suggestions for improvement. Students will also rank all the final system by other groups, and provide their reasons for the ranking.

- **Class Participation**: You are encouraged to actively participate during lectures and class discussions. There will be random in-class exercises/ exit passes. Turning in every in-class exercise/exit pass will only guarantee a participation grade of 1. Students need to actively participate in class discussions in order to receive a higher grade. Active participation involves such action as

  - Applying conceptual material from the readings or the lectures;
  - Doing outside research and connect it to the assigned reading or lecture;
  - Giving constructive comments to other students' opinions and work.

- **Professional Participation**: It is important that during your program you begin the process of entering into industry and establish your own professional network. To this end, this requirement in the course will help to motivate that participation in networking, professional training, student-IS events, and internship opportunities during your academic program. To earn full credit for this program, you would need to attend events during the semester, as part of your participation in required courses, following the structure below:

  - One course: 5 events
  - Two courses: 8 events
  - Three or more: 10 events

  Such events will include:

  - MIS Society Workshops
  - MIS Society networking events (Held once per semester)
  - MIS, LBS or UNLV internship and job fairs
  - MIS sponsored speaking events
  - Student competition (double points are awarded for successfully placing in a national competition)
  - MIS Society leadership involvement
  - Other events as announced

  At sponsored, on-campus events, you will be asked to sign in to such events, or swipe your card, and this information will be provided to faculty at the end of the semester so that your participation can be awarded. If you have any question about whether an event can count towards this participation, please consult with your professor.

  Exemption: If you currently work full-time within the technology profession and have more than 3 years' experience, then your requirement is limited to only 2 maximum events. We would strongly encourage that you attend the networking events as it not only serves to bolster your networking opportunities, but as a working professional, you can help to expand the network of your classmates.

Study Hints

- Learning to program requires lots of hands-on practice. It is extremely important that you spend sufficient time familiarizing yourself with the basics in the first few weeks, so as to be able to grasp more advanced concepts later in the course.
- As in the real world, prioritizing your time and implementing your work timely is the key factor in determining your success in this class.
- My role as the instructor goes beyond teaching and evaluating your performance; I am here to provide all the necessary support to ensure your success in this class. I am available during office hours, via email, or most times by appointment. However, it is your responsibility to come prepared for class, ask questions, and seek help as required.
- **Computing Resources**: We will be using Anaconda for Python 3.7 version and Jupyter Notebook particularly to demonstrate the programs in this class. It is available in the computer labs at BEH and the Graduate Common (Lied Library). You may install Anaconda on your home computer if you wish; instructions will be provided in class. You are free to use other editors if you wish but support for other editors is on your own.

Disclaimer

If required, the course content and schedule may be changed at the instructor's discretion. Announcements made in class will over-ride any statement made here.

Class Schedule (subject to change)

Date	Topics	Chapters	Due Date
Aug 27	Introduction and Class Overview		
Aug 29	Introduction to Anaconda and Jupyter Notebook Installing Modules Introduction to Programming Languages	JV Ch 1 AS Appendix. A Supp. Materials (1)	
Sep 3	Algorithm and Flow Chart	Supp. Materials (2)	
Sep 5	Python Basics (1)	AS Ch 1	
Sep 10	Python Basics (2)	AS Ch 1	
Sep 12	Flow Control (1)	AS Ch 2	
Sep 17	Flow Control (2)	AS Ch 2	Assignment 1
Sep 19	Functions	AS Ch 3	Project Proposal
Sep 24	Lists (1)	AS Ch 4	
Sep 26	Lists (2)	AS Ch 4	Assignment 2
Oct 1	Dictionaries and Structuring Data	AS Ch 5	
Oct 3	Manipulating Strings	AS Ch 6	
Oct 8	Using Databases and SQL	Supp. Materials (3) JD Ch 12	
Oct 10	**Mid-term Exam**		
Oct 15	Project Design Presentation		Project Design
Oct 17	Pattern Matching	AS Ch 7	
Oct 22	Reading and Writing Files	AS Ch 8	
Oct 24	CSV Files and JSON Data	AS Ch14	Assignment 3
Oct 29	Managing Projects Modules and Libraries	JD Ch 1 JD Ch 2	
Oct 31	Distribution Unit Testing	JD Ch 5 JD Ch 6	
Nov 5	NumPy (1)	JV Ch 2	Assignment 4
Nov 7	NumPy (2)	JV Ch 2	
Nov 12	Pandas (1)	JV Ch 3	
Nov 14	Pandas (2)	JV Ch 3	
Nov 19	Matplotlib (1)	JV Ch 4	
Nov 21	Matplotlib (2)	JV Ch 4	Assignment 5
Nov 26	Performance and Optimization Scaling	JD Ch 10 JD Ch 11	
Nov 28	**Thanksgiving Recess (No Class)**		
Dec 3	(Study Week) Project Prototype System Presentation		Final Project
Dec 5	(Study Week) Project Prototype System Presentation Review for Final Exam		
Dec 12	**Final Exam: 6 – 8 pm**		

UNLV Policies

can be found at https://www.unlv.edu/sites/default/files/page_files/27/EVPP-SyllabiContent-MinimumCriteria-2019-2020.pdf