
Ω	COMP 401	Senior Seminar	Ω
	M-W	Seminar/Lecture – 12:30-1:50	

Who: Michael Gousie
Where: Science Center 1325
When: Mon, Wed 3:30-4:30; Tue 11:00-12:30; Fri 10:30-11:30
and by appointment
E-mail: mgousie (at) wheatoncollege (dot) edu
Web: <http://cs.wheatoncollege.edu/mgousie>

Recommended Texts:

Patrick J. Lynch and Sarah Horton. *Web Style Guide*, 4th Ed., Yale University Press, 2016. [Online]

Course References:

We will look at excerpts from the following sources:

Tsui and Orlando, *Essentials of Software Engineering* (Jones and Bartlett, 2007).

Tufte, *The Cognitive Style of PowerPoint* (Graphics Press, 2003). [In library]

Doumont, *The Cognitive Style of PowerPoint: Slides Are Not All Evil*. In *Technical Communication*, vol 52, no 1, 2005. [In library]

Various software engineering texts/web sites and scientific journal/conference articles.

Course Content

Seminar \Sem‘i*nar”, n. [G. See Seminary, n.]

A group of students engaged, under the guidance of an instructor, in original research in a particular line of study, and in the exposition of the results by theses, lectures, etc.; – formerly called also seminary, now seldom used in this sense.

Much of this course will follow the definition of a seminar, under the general topic of image/topographic processing and the use of different data formats. You will work on a research project as part of a team. The project involves manipulating and displaying image data in a comprehensive system. The project will be defined by an outside “client,” who will visit the class and describe the problem to be solved. Your team will work with the client on the details of the system and create a prototype. You will then “pitch” your prototype to the client. After gathering responses to your ideas, your team will implement the system and present the finished product at the end of the semester. Along the way, we will investigate and practice some software engineering principles, consider various image/topographical problems, and discuss some relevant research papers.

Grading:

There will be various types of assignments in this course; four of these will be programming projects. The first will be an OOP project to refresh your C++ skills. The course will then switch to Python because of the availability of suitable libraries/APIs for our research problem. You will write three Python applications dealing with image/topographical problems, the last of which being the large team project. As part of the project, the group will write multiple versions of a Detailed Functional Specification (DFS). The group will do a formal presentation of its final project in front of the client and the general public. Each student is

also responsible for two individual in-class presentations. In the first of these, you will discuss a particular problem in the topographic/GIS (Geographic Information Science) field, and in the second you will disseminate the complexities of a research paper. You are expected to contribute to all in-class discussions and to complete additional in-class and out-of-class assignments. The breakdown of points follows; note that there are times when assignments overlap.

What	Weight	Due Date (Subject to change)
Sem 1 (pair)	5%	February 8
Sem 2 (individual)	5%	February 19
Detailed Functional Specification (DFS) v1.0 (group)	5%	February 22
Project proposal presentation with client (group)	15%	March 1
DFS v2.0 (group)	5%	March 8
Sem 3 (individual)	10%	March 9
Lightning talk (individual)	4%	March 29
Project mock up/prototype with client (group)	5%	April 3
Research paper presentation (individual)	6%	April 10/12
Working portions of project (group)	–	April 19
Final project (Sem 4) presentation with client (group)	40%	May 3

Grades will be assigned according to the following scale:

A = 93-100, A- = 90-92, B+ = 87-89, B = 83-86, B- = 80-82, etc.

Course Policies:

- You are responsible for all material covered in class.
- You are responsible for all reading assignments as assigned/handed out in class.
- The projects will be implemented using various Python libraries and APIs. You may use any platform for development. All code must be standard Python 3 and work on any OS.
- All reports and papers must be word processed or formatted using \LaTeX , as well as checked for spelling and grammar.
- Individual grades on group projects will be decided by team members splitting the total points received as they see fit (up to a high of 100 each).
- Assignment due dates are FIRM.
 - All programming projects must be submitted electronically by 11:59:59 PM on the due date unless otherwise noted. Projects submitted on the following day will receive a 15% penalty. Anything turned in later will receive a 0. Hard copy, if required, must be submitted at the beginning of the next class, or as instructed on the specification sheet.
 - Written homeworks/papers must be submitted at the beginning of class on the due date. There is no provision for late homework.
- You are expected to adhere to the Honor Code.

- Although *discussion* of assignments is encouraged, the *implementation* of programs is to be the result of your, or your group's, own work. Any copying of programs or portions of programs that is not fully documented and discussed as such will result in a 0 for that assignment or failure of the course.
- Written homework/papers should absolutely be your own work. Copying of homeworks will result in a 0 for the homework portion of the grade or failure of the course.
- You will be required to write and **sign** the Honor Code pledge on all work turned in: *I have abided by the Wheaton Honor Code in this work.*
- **The use of a laptop or other computer/pad is not allowed during lecture or discussion**, unless the day's lesson requires it. Special arrangements can be made if necessary.
- The use of cell phones, iPods, iPads, iPhones, iPlops, iFlops, and other personal electronic devices is prohibited during class.
- Please, no eating during class.
- Please do not disrupt class by leaving/returning, unless there is a **real** emergency.
- Accommodations for disabilities:

Wheaton is committed to ensuring equitable access to programs and services and to prohibit discrimination in the recruitment, admission, and education of students with disabilities. Individuals with disabilities requiring accommodations or information on accessibility should contact Jeremiah Bergstrom, Director of Accessibility Services, at the Filene Center for Academic Advising and Career Services.

~ accessibility@wheatoncollege.edu or (508) 286-8215 ~

Detailed Course Schedule (Subject to change):

Wk #	Date	Topic(s)	Reading	Due
	Jan			
1	25	Introduction; what are we doing? C++ and OOP		
2	30 Feb 1	More OOP, résumé workshop Python GUIs	 Web links	Résumé, cover letter
3	6 8	Initial client meeting More Python GUIs; file formats	Open mind Web links	Sem 1
4	13 15	Software engineering I: Agile vs. vs. Waterfall; DFS Topographic processing	<i>Web Style Guide</i> , handouts Notes, online resources	
5	19 20 22	 More topographic processing Project discussion; GitHub	 Notes, online resources	Sem 2 Ideas, DFS v1.0
6	27 Mar 1	The power of PowerPoint? Tufté does rocket science Doumont rebuttal Client project proposal presentation	 <i>The Cognitive Style of PowerPoint Slides Are Not All Evil</i>	 Pitch & prototype, DFS v1.1
7	6 8 9	Project discussion TBD		DFS v1.2 DFS v2.0 Sem 3
8	13 15	<i>SPRING BREAK</i> <i>STILL SPRING BREAK</i>	Islands Guidebook	Corona bottle
9	20 22	How to read a research paper I How to conduct research	<i>CompSurf: An Environment for ...</i> , Online resources	
10	27 29	How to read a research paper II Lightning talks	<i>Visualization of DEM Error,</i> <i>Augmenting Grid-Based Contours...</i>	Lightning topic
	Apr			
11	3 5	Client project progress meeting Software engineering II		Running prototype Copy of article
12	10 12	Paper presentations More presentations	Your choice Your choice	Short presentation Short presentation
13	17 19	TBD Project progress meeting		Another sprint
14	24 26	Career preparation TBD		
	May			
15	1 3	Project finalization Final presentation for client		Sem 4