

School of Computing, Clemson University
CpSc 8700 – Software Application Development
Syllabus, June 26, 2018
Brian Malloy, PhD

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1. Pre-req: (1) Fundamental knowledge of programming, (2) Ability to install Python & Tkinter. You do not need to know Python.
 - inheritance, **object**, overriding, no overloading
 - XML: SAX, DOM
2. **Software Engineering**
 - Requirements: scripting & story boards
 - Software Process: Development Models
 - XML: SAX & DOM
 - UML: Class diagrams, Sequence diagrams State diagrams
 - Design Patterns: Singleton, Composite, Visitor, MVC, Observer,
 - Testing: system; classes: **unittest**
 - Verification and Validation: Resolve
3. **Python Programming**
 - Interpreter: **dir**, **help**,
 - Basics: numbers, boolean, variables/identifiers, **global**, strings, negative indices, **if**, **while**, **range**, lists, **len**, list comprehension, shallow/deep copy, tuples, **for**, dictionaries, switch, **set**, file I/O, gzip, regular expressions
 - scripts: **os**, **sys**, **os.path**, **shutil**, try not to use **system**.
 - Program modules, module name, “`__main__`”, “`__init__.py`”
 - Functions: **lambda** functions, parameter transmission, args,
 - classes: constructors, public/private, overloaded operators, overloading print, class variables (static)
4. **GUI Programming: Tkinter**
 - Widgets: **Label**, **Button**, callbacks, widget resizing, binding events, multiple widgets, configuring widget appearance, standard dialogs, message and entry; **Checkbutton**, **Radiobutton**, and **Scale** (slider); Images.
 - Geometry layout: packer, packing order, side attachments, expand, fill, stretch, anchor, container classes; grid
 - **Tk** widgets, **Frames**, and **Toplevel**
5. **Programming Projects**
 - Write a script
 - Add a gui to script
 - Specs for your project
 - Development phases for project.
 - Deploy project
6. **Pygame Concepts (optional)**
 - Drawing a surface, blitting, colorkeys and transparency, text
 - Sprite animation
 - Collisions & explosions
 - Processing input: mouse, keyboard
 - Adding levels
 - Adding sound
 - Game time and timers