

# USC Viterbi

School of Engineering

**ITP-368 “Programming Graphical User Interfaces”**

**Units: 4**

**Fall 2022**

**Tue 6:00 PM-9:40 PM**

**Location:** GFS 101

**Instructor:** Allen Simon Almasi

**Office:** TBD

**Office Hours:** Tues 5:00 PM – 5:50 PM

**Contact Info:** [asalmasi@usc.edu](mailto:asalmasi@usc.edu), 818-689-0171

**IT Help:** Viterbi IT

**Hours of Service:**

Monday – Friday, 8:30 a.m. – 5:00 p.m.

**Contact Info:**

DRB 205

(213) 740-0517

[engrhelp@usc.edu](mailto:engrhelp@usc.edu)

## Course Description

With the rapid and continual evolution of computers from embedded systems into desktop, web, and mobile, programming graphical user interfaces (GUIs) has become an extremely challenging and expensive process. At the bare minimum, users expect GUIs to be always up-to-date, multi-platform, internationalized, support accessibility, technically perform well, and look visually appealing on every iteration of the software. Big tech companies such as Facebook, Microsoft, and Google build GUIs like this all the time, but how?

In this course, we will answer this question by building GUIs using the same techniques and concepts used by big tech companies to build world-class software. By mastering these techniques and concepts, they can be applied to any GUI framework outside this course and consequently accelerate professional development in real-world software engineering.

## Catalogue Description

Learn to program graphical user interfaces (GUIs) using the same techniques and concepts used by big tech companies to build world-class software.

## Learning Objectives

By the end of the course, students will:

- Learn how to program GUIs using industry standard frameworks.
- Learn techniques and understand concepts used by big tech companies to build world-class software.
- Prepared for real-world software engineering of GUIs.

**Prerequisite(s):** ITP-265 or CSCI-103L

## Course Notes

This class meets for three hours and forty minutes once a week. These sessions include lectures and hands-on learning labs. One exam is given during the semester and held during the class meetings. Assignments and a final project are completed outside of class time. For the final project for this class, you will design and create a GUI; the idea for this application will be one of your own. Your application will have to satisfy the requirements specified by the professor.

This course will make use of Blackboard (<http://blackboard.usc.edu>) for content and assignments. Lecture slides and any supplemental course content will be posted to Blackboard for use by all students. All announcements for the course will be posted to Blackboard. All assignments will be posted to Blackboard and will be submitted through Blackboard. **Please familiarize yourself with Blackboard before the course begins.**

## Technological Proficiency and Hardware/Software Required

Students will need a computer (laptop or desktop) and access to the internet. If you do not have access to a computer, please see below. All software needed for the course is available for free.

ITP has a limited number of laptops that are available to borrow for ITP classes. This semester, ITP is working with Viterbi IT (VIT) to facilitate the shipping and/or pick-up of loaner devices for ITP students.

Eligible students will be able to borrow a MacBook or Dell XPS for ITP coursework once their request is approved and their contract is signed via DocuSign. Though the initial loan period is 7 days, they will still be able to renew their device and extend the loan period as in previous semesters. They will need to pop into one of ITP's Zoom device check-in sessions before the end of each week. If all of them have been checked out, then the student will be placed on the waiting list. Information about the ITP Loaner Laptop Program and the request form can be found at <https://itp.usc.edu/current-students/itp-device-check-outs/>

You will not be able to save your work on the ITP lab computers and the ITP laptops. Once they are restarted, all work will be deleted. Use an external USB drive or a repository like GitHub or Dropbox to save your work. ITP is not responsible for any lost work.

### **Required Readings and Supplementary Materials**

Optional reading is **Flutter Apprentice** by Kevin D Moore, Michael Katz and Vincent Ngo.

### **Participation**

Participation is not part of the grading breakdown, although attending lectures will help you learn the material and succeed in this class. The instructor expects you to pay attention during lectures and be an active learner. Chatting while the instructor is talking, texting on your mobile device, and participating on social media sites during class is disrespectful to the instructor and your classmates. If you are not able to attend lectures, then you should watch the recorded lectures.

### **Assignments**

Programming assignments will be posted on Blackboard under the "Assignments" section and are due at 11:59 PM PT (Pacific Time). Each assignment will include instructions, a due date, and a link for electronic submission. Assignments must be submitted using this link. Each assignment must be completed individually. Do not collaborate with other students for these assignments. Application code should be submitted on Blackboard and must compile. If the application does not compile, you will automatically receive a zero until the issue is resolved.

### **Exams**

No make-up exams (except for documented medical or family emergencies) will be offered. If you will not be able to attend an exam due to an athletic game or other valid reason, then you must coordinate with the instructor before the exam is given. You may arrange to take the exam before you leave, with an approved university personnel during the time you are gone, or within the week the exam is given. If you do not take an exam, then you will receive a 0 for the exam.

If you need accommodations authorized by DSP (Disability Services and Programs), notify the instructor at least two weeks before the exam. This will allow time for arrangements to be made.

### **Final Project**

The final project replaces the final exam. This comprehensive assignment will be due during Finals Week and needs to be submitted by the due date. Late projects will not be accepted and will receive a 0.

### Grading Breakdown

The following scale is used to how items are weighed in the class:

Assignment	% of grade
Assignments (weighted proportionally)	50
Midterm Exam	25
Final Project Proposal	5
Final Project	20
<b>TOTAL</b>	100

The following scale is used to determine the letter grade:

Percentage	Letter Grade
93 and above	A
90 – 92	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
65 – 69	D
64 and below	F

If you are taking the class with a grade of P/NP, you must earn a grade of 70% or higher in order to receive a P. Final grade percentages are calculated to two decimal places and rounded to hundredths. For example, 89.99 is a B+ while 89.995 is rounded to 90 and thus an A-.

### Assignment Submission Policy

It is the student's responsibility to submit assignments on or before the due date. Assignments turned in one day (24 hours) late will have 10% of the total points deducted from the graded score. Assignments turned in over one day and up to three days (>24 hours and <= 72 hours) late will have 50% of the total points deducted from the graded score. After three days, submissions will not be accepted, and you will receive a 0. Each student will be allowed to submit ONE assignment with no late penalty, but this means you still must submit it within three days (72 hours) of the due date. You must indicate that you are using your free late submission in the comments when you submit the assignment, and this may not be used on the final project.

### **Course Material & Copyright Violation**

Do not reproduce, distribute, or post any lecture material, assignments, or exams publicly without the written consent of the instructor. Students may take notes and make copies of course materials for their own use. They may not post the course materials on sites such as CourseHero. Doing so is a copyright violation and an academic integrity violation that will be dealt with accordingly.

### Course Schedule: A Weekly Breakdown

<b>Week</b>	<b>Topics</b>	<b>Deliverable/Due Dates</b>
<b>1</b>	Intro and Setup	Slides
<b>2</b>	Language Tour (Dart)	Slides / Homework #1
<b>3</b>	GUI Framework Tour (Flutter)	Slides / Homework #2
<b>4</b>	Basic State Management, Layouts, Buttons	Slides / Homework #3
<b>5</b>	Alerts and Input	Slides / Homework #4
<b>6</b>	Theming, Scrolling, Animations	Slides / Homework #5
<b>7</b>	Basic Navigation, UI Testing	Slides / Homework #6
<b>8</b>	Advanced State Management	Slides / Homework #7
<b>9</b>	Dependency Injection, Unit Testing	Slides / Homework #8
<b>10</b>	Midterm Exam	App Proposal
<b>11</b>	Debugging, Internationalization	Slides / Homework #9
<b>12</b>	Networking, Asynchronous Operations	Slides / Homework #10
<b>13</b>	Advanced Navigation, Local Persistence	Slides / Homework #11
<b>14</b>	Supporting Multiple Platforms	Slides / Homework #12
<b>15</b>	The Tech Lead Path	Slides
<b>FINAL</b>	Final due before scheduled final session for class. Students required to do a 5 minute presentation about final project.	

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](https://policy.usc.edu/scientific-misconduct).

### Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call  
[studenthealth.usc.edu/counseling](https://studenthealth.usc.edu/counseling)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call  
[suicidepreventionlifeline.org](https://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call  
[studenthealth.usc.edu/sexual-assault](https://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298  
[equity.usc.edu](https://equity.usc.edu), [titleix.usc.edu](https://titleix.usc.edu)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298  
[usc-advocate.symplcity.com/care\\_report](https://usc-advocate.symplcity.com/care_report)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776  
[dsp.usc.edu](https://dsp.usc.edu)

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710

[campussupport.usc.edu](http://campussupport.usc.edu)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

[diversity.usc.edu](http://diversity.usc.edu)

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

[dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

[dps.usc.edu](http://dps.usc.edu)

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

[ombuds.usc.edu](http://ombuds.usc.edu)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.