CS4379B - Introduction to Graphical User Interface
CS5389 - Graphical User Interface
Summer 2020 - Syllabus

Instructor:

Dr. Dan E. Tamir:
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Lectures:

MTWR – 4:00 pm –6:05 pm; By Zoom (https://txstate.zoom.us/j/571131319)
MTW – are synchronous lecture days. R – is an asynchronous lecture day.

Office Hours:

By appointment; MWF - 11:00a – 1:00p by Zoom
By appointment; TR - 3:00p – 4:00p; by Zoom
Other times – by appointment (Zoom)

Course Catalog Description:

This course covers abstract and practical methods of using graphics to implement usable interactive computer/human interfaces. The course includes a survey of the major GUI standards and tools.

Prerequisite:

C or higher in CS 3358 - Data Structures and Algorithms

Course Outline:

This course covers the following topics (not necessarily in chronological order).

- Fundamental of user Interface
- Human factors
  - Human Centered Design
  - Interaction Styles
- **Usability**
- Interface Engineering
  - Principles and Guidelines
  - Standards
  - Tools
- Introduction to XR and Gaming
  - Computer Graphics - WebGL
- GUI programming in on-line computer applications
- QT Introduction
  - QT Mini projects
- GUI programming in web applications
- Java & JS / JQuery / PHP
- Special Topics
  - Visualization

Course Resources

The main channel of communication is Tracks

Components details:

Fundamental of user Interface

- I will assign reading assignments from various sources. You will have to write a narrative and / or an outline based on the assigned reading. This

assigned material will be covered in the examinations. You will be able to use your narratives / outlines in the exams.

GUI programming in computer applications

- There will be a brief introduction to QT; then, I expect you to learn QT on your own and practice it through mini-projects. The mini-projects would incrementally generate a rich user interface for a specific application
- Introduction to XR and Gaming
  - The Graphics Engine
  - The AI Engine
  - The Physics Engine
  - WebGL

GUI programming in web applications

- There will be a very brief introduction to Java/JS/PHP; then, I expect you to learn PHP and Java Script. A Web based application will be done using JS with Java, JQuery, and PHP Special Topics

Visualization (time permitting)

Required Work & Grading

- Active Attendance 10% (You have to be present with camera on)
- Participation +10% (Verbal, or written in Chat, in class send an email)
- HW assignments 25%
- Quizzes 15%
- Midterm 20%
- Final 30%

Points from unassigned homework will be distributed among other components according to their weight.

Required Textbook:

- C++ GUI Programming with Qt 4 1st ed. (in Soft form) Jasmin Blanchette and Mark Summerfield, Prentice Hall,
  Available for free download in:
  http://www.qtrac.eu/C++-GUI-Programming-with-Qt-4-1st-ed.zip
- **PHP 5 Power Programming,** Andi Gutmans, Stig Bakken and Derrick Rethans, Prentice Hall, 2004.
  Available for free under the open content license in:
  http://phptr.com/content/images/013147149X/downloads/013147149X_book.pdf

Recommended Textbooks:

- Designing the User Interface, *Ben Shneiderman* and *Catherine Plaisant*, Addison Wesley, 2010.
- Computer Graphics: Programming, Problem Solving, and Visual Communication, Steve Cunningham

GUI Software Used in the Course:

Qt
PHP/Java/JS/JQuery

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WWW GUI /Graphics Resources:

Official Qt web site
GUI Programming with Python and Qt - online book

OpenGL / Tutorials	**PhoneGap/ Cordova**
mesa	**Free version of a CG book**
WebGL	**Unity**
JQuery	**Unreal**

GUI Hardware Used in the Course:
I will distribute a Linux VM with QT OpenGl, Eclipse, and Android development tools;

Tests and Assignments
Assignments and tests are submitted on TRACS by the due date/time. Please do not submit your assignment via email they will be deleted. In extenuating cases, I will let you submit a late assignment to your TRACS drop box.

List of Topics

Date	Topic	Assignment
june 1	Introduction to GUI	
june 2	Introduction to QT;	
june 3	QT + OpengGL (CG Engine)	
june 4	Self-study Unity (U) or Unreal Engine (UE) (CG)	
june 8	QT + OpengGL (CG Engine)	
june 9	Usability Standards	I1 (due)
june 10	Effort Based Usability	
june 11	Self-study U/UE (CG)	
june 15	Usability requirements	
june 16	Usability requirements	I2 (due)
june 17	The AI Engine (Inference Search)	
june 18	Take Home Midterm; Self-study U/UE (AI)	
june 22	The AI Engine	
june 23	The Physics Engine	I3 & Mid (due)
june 24	Human Audio and Visual System (HVS);	
june 25	Self-study Unity U/UE (AI & Physics Engine)	
june 29	HVS	
june 30	Visualization; WebGl	I4 (due)
july 1	WebGl	
july 2	Take Home Final (optional class meeting)	Due july 3.

There will be no class meetings on June 4, June 11, June 18, June 25, and July 2 – this dates are marked for self-study. They are referred to as asynchronous meetings.

Stacked Course

This is a stacked course with undergraduate and graduate students. Graduate students will have additional assignments, a component of self-learning of relevant algorithms, and additional exam questions.

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Academic Honesty:

All work submitted for a grade is expected to be your own. As a guideline, you may talk together, but do not write together. Projects may be subject to review through TurnItIn. Students in this class are expected to adhere to the Texas State University Honor Code.

Attendance:

Regular and punctual attendance is required.

Academic Policies:

See Student Handbook and Registrar home page for more information about Texas State Academic Policies including probation, suspension, academic honesty, incompletes, drop, withdraw, and grade changes.

Special Needs:

Students with special needs as documented by the Office of Disability Services should identify themselves at the beginning of the semester.

Drop Policy:

See the information on http://www.registrar.txstate.edu/

Zoom Instructions and Etiquette

- The Zoom link for the class is: https://txstate.zoom.us/j/571131319
- It will be opened an hour before, and closed a few hours after, synchronous class meeting.
- To get the attendance credit you must attend the entire class, respond to prompts (IDK is an OK answer), and participate in pop quizzes.
- You must be present with video on. If you do not have a webcam, then use your smart phone as a second zoom instance with video on. Please consult with me if this is not applicable to you.
- You must wear proper attire (similar to what you wear at school) and participate from a proper location (e.g., from a computer desk).
- You must be muted at all times unless you have permission to participate.
- Note that sessions are recorded (and posted on TRACS). Hence, any disturbance on student side (e.g., listening to music while unmuted) will interfere with the session and might mean that I will not be able to post that meeting recording.
- During class students might be assigned to break-rooms.
- Office hours will be conducted via Zoom. You must coordinate with me prior to attending and you will receive a Zoom link.
- There will be no class meetings on June 4, June 11, June 18, June 25, and July 2 – this dates are marked for self-study. They are referred to as asynchronous meetings.
- Take home tests are open material and online resources. They will have two components; a written part and an oral part. In the oral part students might be asked to explain their solution to selected questions in the written part. Academic Honesty: Should be strictly adhered during take home tests.