

Syllabus

GUI Programming - COMP 445
10:00 – 11:15 TR Science 200
Fall 2018

Instructor: Frank McCown
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Office Hours: Science 208: 2-3 pm WM, 2-5 TRF or by appointment

Course Description

This course prepares students to build applications with a graphical user interface (GUI) for the Microsoft Windows operating system. Topics include: event-driven programming, .NET Framework, C#, GUI widgets, MVC and MVVM, Windows Presentation Foundation, Universal Windows Platform, and Human Computer Interaction (HCI). Prerequisite: COMP 245 and 345.

Required text: *Designing with the Mind in Mind, 2nd Edition* by Jeff Johnson (2014). ISBN: 978-0-12-407914-4

Recommended: *C# 6 for Programmers, 6th Edition* by Deitel & Deitel (2016). ISBN: 978-0134596327

Recommended: *Developing Windows 10 Applications with C#* by Baidachnyi (2016). ISBN: 978-1522894919

Student Learning Outcomes

At the end of this course, the student will be able to...

1. Identify important events and individuals in the history of human-computer interfaces.
2. Design and develop Windows application using different Windows technologies that use a variety of GUI controls and classes to fulfill specific user requirements.
3. Explain how event driven applications use threading to perform time-consuming operations.
4. Demonstrate how to use specific features of the C# programming language to write object-oriented programs and handle run-time errors.
5. Explain in a public presentation how user interfaces should be designed to accommodate human physiology and limitations.

Exams

Two regular exams will be given in class as well as a final comprehensive exam covering the entire course and, in more detail, the information presented since the 2nd exam. If you are unable to take an exam as scheduled due to a serious illness or some other emergency, it is **your responsibility** to call me and leave a message *before* the exam or as soon as you are physically able. If an official school function takes you out of class on an exam date, it is your responsibility to make arrangements *one week prior* to the exam as to when you will take the exam. Usually it will be given early, not late. Makeup exams for excused absences will be given, but a penalty of up to 75% will apply for unexcused absences, at the teacher's discretion. **Phones must be turned off and put away.**

Programming Projects

Three major programming projects (written in C#) will be completed using Visual Studio. These projects will require you to integrate the information learned in class to produce non-trivial Windows applications. You should expect to spend a significant amount of time on each project.

The first two projects will be completed in teams of two or three that will be assigned by the instructor. The final project will be completed by teams of your own choosing. Pair programming may be used but is not required. Teams will use git for version control and will make their code available in private repositories on GitHub.com.

Quizzes and Homework

Quizzes over reading assignments will be worth 10 points each. All quizzes will be taken on Canvas *before* the class period on which the quiz is due. **No makeup quizzes will be given** unless extraordinary circumstances require it. Even if you are absent from class, excused or otherwise, you are still required to take the quiz while it is available.

Homework assignments will be assigned throughout the week that give the student opportunities to implement concepts presented in class. Homework assignments may be completed individually or in pairs using pair programming. If pair programming is used, only one person needs to submit the pair's solution to Easel, and both students' names must be documented in at the top of the primary window code. Example:

```
// Pair programmed by Becky Jones and Sammy White
```

Class Presentations

Teams of two will make 30 minute presentations to the class based on a chapter or two from the Johnson text. Presentations will be evaluated based on a number of criteria and will make up 10% of your grade. Details about the presentations will be posted on Easel.

Extra Credit

1. The McChallenge: **1%** will be added to your final grade for the completion of a program, which will be made available to you later in the semester. The program will be due the Friday before final exams. You can skip the program and still get the 1% added to your final grade if you beat me in a game of basketball, tennis, racquetball, Halo, chess, Trivia Pursuit, or any other sport/game that I know how to play. If you lose, you still may complete the program to get your 1%. Only one challenge per semester, and all challenges must be made *before* the final week of class. Come by my office to schedule a time to play.
2. Giving Blood: Donating at the Red Cross blood drives will earn you **0.2%** added to your final grade each time you donate. Donate as many times as you'd like, and give me a signed note confirming your donation each time you donate.

Grades

Final grades will be computed as follows:

Exams:	25%
Projects:	30%
Quizzes and Assignments:	15%
Presentations:	10%
Final Exam:	20%

Standard letter grades: A = 90-100%, B = 80-89% C = 70-79%, D = 60-69%, F = 0-59%

Late work: A maximum of 10% will be taken off *each day* (not each class period) a program or assignment is late, up to 50%. Every day is counted, including weekends. Nothing late more than 1 week will be accepted.

Final grades are not rounded unless the student has given significant effort which is evidenced by regular attendance, completion of nearly all homework assignments, significant effort on projects, etc.

Miscellaneous

1. Notes for each day will be made available to you on Easel. If you want to print them out, please do so *before* class so you don't disrupt others.
2. To be successful in this course, be prepared to spend at least **two hours outside of class** for every hour in class studying, reading, completing quizzes and homework, working on projects, and preparing for exams. This works out to about 9 hours a week. If you do not have this much time to dedicate to the course, you should take it some other semester when you can make that commitment.
3. You must check Canvas **regularly** for announcements and Easel for class assignments. Canvas is the place to ask questions outside of class and give help to others on homework and projects.
4. You are expected to hold to the **highest standard** of personal conduct and **integrity**. Cheating in all its forms is inconsistent with Christian faith and practice and will result in sanctions up to and including dismissal from the class with a failing grade. Homework and quizzes should be completed *individually* (not in teams or pairs), and it should be *your* work, not the work of someone else. One thing that you should *never do* is allow someone to see your source code as this often leads to cheating. Come by during office hours (or we'll arrange a time) for assistance on programs. Also see my [Plea for Integrity](#).
5. Please adhere to the **dress code** as spelled out in the Student Handbook, meaning shorts are not to be worn in class, and men should remove caps while in class. Please wear shoes to class (flip flops are OK).
6. Food and drinks are not permitted in the lab. However, I'll make an exception if you'll bring a drink that has a lid.
7. Lab computers may be used during class to **take notes and write programs**. They may not be used for non-class activities like Facebook, email, surfing the Web, games, etc. If you violate this rule, you will not be allowed to use the lab computers.
8. Silence your cell phones, and **put them away**. It is very distracting to me and those around you when you text in class.

GUI Programming may be one of the most practical courses for your career in software development. Whether programming a desktop app, a mobile app, or a web application, the concepts covered in this course will lead you to make better decisions when designing interfaces and help you produce much more usable software. You can apply these principles immediately in your senior capstone course.

If you ever need assistance in this class or anything else, please don't hesitate to come by my office or give me a call.

Assessment

Harding University, since its charter in 1924, has been strongly committed to providing the best resources and environment for the teaching-learning process. The board, administration, faculty, and staff are wholeheartedly committed to full compliance with all criteria of the Higher Learning Commission of the North Central Association of Colleges and Schools. The university values continuous, rigorous assessment at every level for its potential to improve student learning and achievement and for its centrality in fulfilling the stated mission of Harding. Thus, a comprehensive assessment program has been developed that includes both the Academic units and the Administrative and Educational Support (AES) units. Specifically, all academic units will be assessed in reference to the following Expanded Statement of Institutional Purpose: **The University provides programs that enable students to acquire essential knowledge, skills, and dispositions in their academic disciplines for successful careers, advanced studies, and servant leadership.**

Assessment of the knowledge, skills, and dispositions of each student for the purpose of assigning a letter grade at the completion of this course will be based on the projects, quizzes, homework assignments, presentations, and exams that were described previously in this syllabus.

Students with Disabilities

It is the policy for Harding University to accommodate students with disabilities, pursuant to federal and state law. Therefore, any student with a documented disability condition (e.g. physical, learning, and psychological) who needs a range of reasonable accommodations must contact the instructor and the Disabilities Office at the beginning of each semester. (If the diagnosis of the disability occurs during the academic year, the student must self-identify with the Disabilities Director as soon as possible in order to get academic accommodations in place for the remainder of the semester.) The Disabilities Office is located in Room 205 of the Student Center, telephone, (501) 279-4019.

Schedule

The following schedule is subject to change but gives you an idea of how the class will progress:

Week 1	Introduction History of comp interfaces Intro to .NET Framework	Week 6	WPF and XAML Laying out controls Event handling Chap 5 (Johnson)	Week 11	UWP app Layout, Navigation Chap 10 & 11 (Johnson)
Week 2	Intro to C# GUI dev in Visual Studio	Week 7	LINQ ADO.NET and DataGridView Testing GUI apps Chap 6 (Johnson)	Week 12	Saving state File I/O and file pickers Chap 12 (Johnson)
Week 3	C# details Dialog boxes Chap 1 (Johnson)	Week 8	Project 2: Music Player Context menus Drag-and-drop Chap 7 (Johnson)	Week 13	Project 3: UWP Data binding MVVM Chap 13 & 14 (Johnson)
Week 4	TreeView and ListView Threading and async Project 1: Photo Editor Chap 2 & 3 (Johnson)	Week 9	Misc GUI controls Chap 8 (Johnson)	<i>Thanksgiving Break</i>	
Week 5	Common dialog boxes Chap 4 (Johnson)	Week 10	Chap 9 (Johnson) Oct 22 Exam 2	Week 14	Usability testing Student presentations
Sep 17	Exam 1			Week 15	Student presentation Project presentations Review for Final Exam
				Week 16	Final Exam Dec 10



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