**Software Development II**

**Course**: CIS 200 Fall 2012, 3 Credit Hours

Section 75: Mo We 7:00 - 8:15 PM, BS 003/BS 054

**Instructor**: Andrew L. Wright, Ph.D.

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**Office Hours**:

|  |  |
| --- | --- |
| Mo | 2:30 PM - 5:30 PM |
| Tu |  |
| We | 2:30 PM - 5:30 PM |
| Th |  |
| Fr |  |

and by appointment

**Text**:

*Visual C# 2010: How to Program*, 4th Edition, by Paul Deitel & Harvey Deitel, Prentice Hall, 2011 (ISBN-13: 9780132151429). E-Text is also available for 180 day rental from CourseSmart.

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| [ourseSmart](http://www.coursesmart.com/) | |
| [isual C#® 2010 How to Program, Fourth Edition](http://www.coursesmart.com/9780132151481?__professorview=false&__instructor=914033&__instructorinstitution=University+of+Louisville&__instructorcourse=CIS+200&__instructorterm=Fall+2012) | |  | | --- | | [Visual C#® 2010 How to Program, Fourth Edition](http://www.coursesmart.com/9780132151481?__professorview=false&__instructor=914033&__instructorinstitution=University+of+Louisville&__instructorcourse=CIS+200&__instructorterm=Fall+2012" \t "_blank) | | by P. J. Deitel; H. M. Deitel | | **Price to Student $55.99** | |

**Laboratory Materials**:

Students are required to bring a USB flash/jump drive to every class.

**Prerequisite**: CIS 199

**Course Description**:

This course emphasizes object-oriented software development. Students study the object model and apply it to systems development problems. Topics include polymorphism, inheritance, and object interaction. Event-driven programming of graphical user interfaces is introduced. Application areas may include data structures, searching, sorting, and databases. Extensive programming assignments are required.

**Course Objectives**:

* Introduce Object-Oriented Programming concepts encapsulation, inheritance, and polymorphism
* Explore Graphical User Interface (GUI) programming in C#, including the event model
* Introduce exception handling in C#
* Explore basic file processing techniques in C#
* Introduce simple data structures and collections, including stacks, queues, linked lists, and trees
* Explore recursion
* Explore algorithm efficiency
* Study sorting algorithms including selection sort, insertion sort, and merge sort
* Introduce ASP .NET and Web Forms

**Student Learning Outcomes**:

Upon completion of CIS 200, students will be able to:

* explain the fundamental object-oriented (OO) principles of encapsulation, inheritance, and polymorphism
* write C# programs that demonstrate proper OO design using encapsulation, inheritance, and polymorphism
* contrast the use of interfaces with abstract classes
* write simple LINQ statements in C# to query program objects
* contrast declarative programming (such as used in LINQ) with imperative programming
* explain how exception handling works in C#
* use exception handling in C# programs to build robust, fault-tolerant applications
* explain the C# GUI event model and contrast it with prior models used
* build GUI-driven C# Windows Forms applications that demonstrate proper GUI design using components including labels, textboxes, buttons, menus, dialog boxes, and combo boxes
* classify the levels in the hierarchy of data
* contrast the use of text files with the use of object serialization
* build C# applications that read and write data using simple text files
* build C# applications that read and write data using object serialization
* classify algorithms based on their algorithmic efficiency (Big O)
* contrast the linear search algorithm with the binary search algorithm
* contrast the use of selection, insertion, merge, and quick sort algorithms
* choose an appropriate sorting algorithm to use for specified conditions
* contrast static data structures with dynamic data structures
* explain the operation of self-referential structures, including linked lists
* contrast the stack and queue data structures
* explain the operation of binary tree data structures, including the binary search tree
* write C# applications that extend the functionality of the fundamental data structures
* explain the operation of the built-in collections available in C#, including the hash table
* explain the advantages of writing generic methods and classes
* write simple generic methods and classes in C# including constraints
* explain the operation of recursive algorithms
* analyze the algorithmic efficiency of simple recursive methods (primarily using tail recursion)
* contrast the use of recursive methods and non-recursive methods for solving the same problem
* write simple methods in C# that use recursion properly
* explain the basic operation of web-based applications including client/server request-responses
* explain the various tiers used in 3-tier web applications
* build a simple web-based application using ASP .NET web forms and controls

**Course Grades**:

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| --- | --- |
| 2 Exams | 30 % |
| Programming Assignments & Homework | 35 % |
| Labs, Quizzes & Class Exercises | 15 % |
| Comprehensive Final Exam | 20 % |

In order to pass the class, students **must** score **at least** 60% in each category: Exams, Programming Assignments & Homework, Labs, Quizzes & Class Exercises, and Final Exam. For example, a student that earns 55% on exams but 100% on programs and quizzes will still earn an **F** for the class. Although extra credit may available on some assignments, at no time will it be allowed to elevate any category's contribution beyond the maximum percentages specified above.

97.0 - 100.0 : A+  
93.0 - 96.9  : A  
90.0 - 92.9  : A-  
87.0 - 89.9  : B+  
83.0 - 86.9  : B  
80.0 - 82.9  : B-  
77.0 - 79.9  : C+  
73.0 - 76.9  : C  
70.0 - 72.9  : C-  
67.0 - 69.9  : D+  
63.0 - 66.9  : D  
60.0 - 62.9  : D-  
00.0 - 59.9  : F

Curving may be employed but this minimum will be guaranteed. Note, assignment scores will be posted in Blackboard but Blackboard currently doesn't calculate final weighted scores correctly. Students must use the above category weights to accurately track their progress.

## Policies

* 1. **Format and grading for Programming Assignments**  
       
     **Number**: A maximum of 7 programming assignments will be given. Programs will be assigned and discussed during class, so **attendance is important**.  
       
     **Grading**: The score for each program will depend on  
     1. Correctness of program logic and output (~ 60%)  
     2. Program style - variable names, indenting, output formats, etc. (~ 20%)  
     3. Documentation - see below (~ 20%)  
       
     **Documentation**: **Each source file (edited by the student) should contain**  
     1. Your name, assignment due date, course number and section, and program number  
     2. A brief description of what the program does  
     3. A brief description and a *variable dictionary* for every **method** and **class** written, including preconditions and postconditions for methods, properties, and constructors  
     4. Comments which will identify and explain important sections in the code  
     5. Magic Numbers (decimal literals) are to be avoided. Use named constants instead.  
       
     *Any* missed documentation will result in a **1 point deduction per occurrence**. For example, if you forgot to describe 5 variables in your program, you would immediately lose 5 points regardless of whether your program works or not. Words to live by: "When in doubt, document it!!!"  
       
     **Submission**: Programs should be handed in at the time specified by the assignment and must contain  
     1. All source code files needed for compilation (named as specified) will be submitted using Blackboard's Assignment tool. Files may be e-mailed to your instructor *only* if problems prevent the use of Blackboard. **Be sure to keep a backup of all your files!!!**  
     2. Printouts of all source code created or modified for the assignment, if requested by the assignment. Electronic submission and grading will be used unless otherwise specified.  
       
     **Lateness**: No late programs will be accepted unless agreed upon **in advance** by the instructor.  
       
     **Interviews**: The instructor reserves the right to require an interview with the student before assigning a grade for a programming assignment. If the student is unable to adequately explain how the program works, the student will receive a **zero** for the assignment regardless of how well the program runs. Students may be selected at random or upon suspicion of cheating. Once notified, students have up to one week to schedule an interview.
  2. Quizzes and in-class exercises will not generally be announced in advance. Missed in-class work may not be made up without convincing reasons (such as a doctor's note) for the absence.
  3. Missed exams count as zero (0) points. A make-up test is allowed only if convincing reasons (such as a doctor's note) are given for the absence. If possible, arrange **in advance** of test.
  4. All exams may include an in-class portion and a take-home portion at the instructor's discretion.
  5. All quizzes are closed book and closed notes unless otherwise specified. However, students will be allowed to bring one 8.5" x 11" page (front only) "cheat sheet" to the exams. You may include anything you want (such as sample programs, worked homework problems, definitions, etc.) that will fit on the cheat sheet. Students may bring one 8.5" x 11" page, front and back, to the final exam.
  6. Test dates are given in the TENTATIVE Schedule. Any change will be announced as far in advance as possible (usually at least one week). Any such changes to the course schedule will be published to the *Syllabus* section of the course in Blackboard and explained in a Blackboard announcement.
  7. **Attendance**: Attendance of every class is encouraged. From time to time, missing a class is inevitable. If this happens, the student is responsible for what was covered in class and obtaining class handouts. Students are expected to arrive to class on time. The instructor will also strive to start class on time. If, however, the instructor is late by more than 15 minutes, the class will stand as cancelled.  
     In addition to direction instruction in the classroom and computer lab, students should expect to spend at least 7.5 hours per week outside of class working on course activities.
  8. **Cellular Phones and Pagers**: Please ensure that all cellular phones, pagers, and other electronic devices are turned off or placed in vibrate mode **before**entering class. Disruptions of class will be considered inappropriate conduct.
  9. Exceptions will not be granted nor grades of "Incomplete" given except in accordance with applicable University and College of Business policies.
  10. The last day to withdraw from this course without academic penalty is October 11, 2012.
  11. **Student Academic Rights and Responsibilities**: "Every student is expected to be thoroughly familiar with the University’s Code of Student Rights and Responsibilities and Student Conduct which can be found in the ‘General Information’ section of [the Undergraduate Catalog].  
        
      "Every student is responsible for reading the academic policies in the Undergraduate Catalog and official announcements of the College of Business and for abiding by such regulations. Specifically, every student is responsible for knowing the grade point averages and program requirements needed for graduation. Students are encouraged to see a COB academic advisor to clarify any questions or concerns.  
        
      "Along with preparing for and attending class, each student has the responsibility to promote high academic standards. Students are expected to cooperate in all classes with faculty members to achieve an optimal learning environment. Inappropriate classroom behavior may result in the student being withdrawn from the course, and potentially assigned academic penalties. Inappropriate classroom behavior will be dealt with in the same manner as academic dishonesty.  
        
      "The COB will not tolerate academic dishonesty. The COB has a strong policy of academic discipline for action against students who commit academic dishonesty or conduct themselves inappropriately in the classroom. A proven case of academic dishonesty will normally result in the student being denied admission to or dismissed from the COB.  
        
      "Academic dishonesty is defined by the Code of Student Conduct in the Undergraduate Catalog. Its definition pertains to but is not limited to cheating, fabrication, falsification, multiple submission, plagiarism, and complicity. It is the student’s responsibility to maintain high standards of ethical conduct, intellectual integrity and to be familiar with the definition of academic dishonestly.  
        
      "As evidence of the seriousness with which the COB regards these matters, academic dishonesty allegations are handled in accordance with COB Procedures for Dealing with Academic Dishonesty." -- From [Undergraduate Catalog](http://louisville.edu/undergraduatecatalog/2012-2013-files/catalog-full12_13.pdf" \t "_blank), Summer 2012 - Spring 2013, p. 199-200.

Programming intensive classes present unique problems. **Do your own work**. While some discussion of algorithms between students may be helpful and acceptable, **do not copy another person's program**. This is cheating and will be dealt with severely (see previous paragraph).

* 1. **Plagiarism Prevention**: "Instructors may use a range of strategies (including plagiarism-prevention software at the university) to compare student works with private and public information resources in order to identify possible plagiarism and academic dishonesty. Comparisons of student works may require submitting a copy of the original work to the plagiarism-prevention service. The service may retain that copy in some circumstances." -- From[Undergraduate Catalog](http://louisville.edu/undergraduatecatalog/2012-2013-files/catalog-full12_13.pdf" \t "_blank), Summer 2012 - Spring 2013, p. 46.
  2. **Lecture Capture**: Your instructor uses a combination of software, microphones and/or cameras to create a recording of most class sessions. These recordings are generally only made available to students enrolled in this class and authorized individuals, such as teaching assistants. In rare circumstances, such as when a recording cannot be created in one section, a recording may be made available to another section of the same course. Be aware that student voices may be captured as part of any recordings made in the classroom.
  3. **Policy on Work Restricted Holy Days**: "Federal law and University policy prohibit discrimination on the basis of religious belief. It is the policy of the University of Louisville to accommodate students, faculty, and staff who observe religious work-restricted holy days. Students who observe work-restricted religious holy days must be allowed to do so without jeopardizing their academic standing in any course. Faculty are obliged to accommodate students’ request(s) for adjustments in course work on the grounds of religious observance, provided that the student(s) make such request(s) in writing during the first two (2)weeks of term." -- From [Work Restricted Holy Days Policies & Calendar](http://louisville.edu/diversity/resources/work-restricted-holy-day-policies-calendar.html" \t "_new).
  4. **Americans with Disabilities Act**: "The University of Louisville is committed to providing equal opportunity for persons with disabilities. This commitment includes complying with the Americans with Disabilities Act of 1990 (ADA) and Sections 504 and 508 of the Rehabilitation Act of 1973. In addition, all of the University's websites and online courses will comply with the web page design standards established by the World Wide Web Consortium (W3C). The University of Louisville strives to maintain a barrier-free, welcoming environment for everybody.  
       
     "The ADA Coordinator, located in the Human Resources (502-852-6688), will monitor compliance and advise unit heads in meeting equal opportunity obligations. The [Disability Resource Center](http://louisville.edu/disability/" \t "_new) staff (502 852-6938) will assist the University community by serving as an information resource center and coordinating support services for students with disabilities. No otherwise qualified individual with a disability shall, solely by reason of such disability, be excluded from participation in, be denied benefits of, or be subjected to discrimination in University programs. The President, Board of Trustees, Student Government, Faculty and Staff Senates affirm the University's long standing and continuing commitment to Equal Opportunity for persons with disabilities." -- From [Undergraduate Catalog](http://louisville.edu/undergraduatecatalog/2012-2013-files/catalog-full12_13.pdf" \t "_blank), Summer 2012 - Spring 2013, p. 37.
  5. **Diversity**: The University of Louisville strives to foster and sustain an environment of inclusiveness that empowers us all to achieve our highest potential without fear of prejudice or bias. We commit ourselves to building an exemplary educational community that offers a nurturing and challenging intellectual climate, a respect for the spectrum of human diversity, and a genuine understanding of the many differences-including race, ethnicity, gender, gender identity/expression, sexual orientation, age, socioeconomic status, disability, religion, national origin or military status-that enrich a vibrant metropolitan research university. We expect every member of our academic family to embrace the underlying values of this vision and to demonstrate a strong commitment to attracting, retaining and supporting students, faculty and staff who reflect the diversity of our larger society. For more information, visit the [Office of Diversity](http://louisville.edu/diversity/" \t "_new).
  6. **Sexual Harassment**: The University of Louisville strives to maintain the campus free of all forms of illegal discrimination as a place of work and study for faculty, staff, and students. Sexual harassment is unacceptable and unlawful conduct and will not be tolerated in the workplace and the educational environment. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment, even when carried out through computers or other electronic communications systems. Students and Instructors are protected from Sexual Harassment according to the [Affirmative Action policy](http://louisville.edu/hr/affirmativeaction/sexualharassment/" \t "_blank), the [Student Code of Conduct](http://louisville.edu/dos/policies-and-procedures/code-of-student-conduct.html" \t "_blank), and the UofL [Computer Account Usage Agreement](http://louisville.edu/it/policies/computer-account-usage-agreement" \t "_blank). Anyone experiencing Sexual Harassment should refer to the links above and/or contact the [PEACC Program](https://louisville.edu/peacc/" \t "_new) at 852-2663 and an advocate will explain your choices. This is a free and confidential service.
  7. **Changes to Syllabus**: The schedule and procedures for grading in this course are subject to change in the event of extenuating circumstances, such as severe weather or pandemic illness. Any material changes to the course syllabus will be published to the *Syllabus* section of the course in Blackboard and explained in a Blackboard announcement.