Catalogue Description

An introduction to software design and development using an object oriented approach. Topics include design, specification, implementation and testing elementary classes; developing simple algorithms in an object oriented programming language; programming by contract; implementing fundamental structural relations between classes. Intended primarily for computer science majors, and for students in other departments where the major specifically requires this course.

Course web link:

www.cs.uno.edu/~jaime/Courses/1583/index.html

You can also visit the course page via the departments web page, and follow the “Class pages” link.

I will place homework, and reading announcements in the course web page. Read it daily as I may not make explicit announcements in class.

Prerequisites:

Mathematics 1125 with grade of “C” or better or consent of department. Concurrent registration in Computer Science 1581 is required. Eligibility for ENGL-1157.

Text:


There is also a set of lab notes under CSCI-1581, available in the bookstore.

You might want to get an introductory UNIX text for lab, such as *A Student’s Guide to UNIX*, by Harley Hahn (McGraw Hill, 1993), *UNIX for the Impatient (2nd ed.*)*, by Paul W. Abrahams and Bruce R. Larson (Addison -Wesley, 1995), or *A Practical Guide to the UNIX System (3rd ed.*)*, by M. Sobell (Benjamin/Cummings, 1994. Your lab instructor may have other suggestions.

Objectives

The objective of this course is to introduce you to the craft of programming. We will use the object oriented approach. Specific minimum set of goals expected at the end of this course include:

- Student is able to *specify*, *design*, *implement*, *test* and *document* classes modeling objects used in the solution to problems.
- Student is able to produce a complete set of classes used to solve problems of small complexity.
- Student is able to produce a complete OO system, including a text-based user interface for the solution of problems of small complexity.
- Student knows and understand the following concepts: object, algorithm, class, programming by contract, test suite, program control flow, relations (is-a, has-a), references, software quality and criteria.

Outcomes

After successfully attending this course you will be able to

- Specify, design, implement, test and document i.
- Solve problems of small complexity using an Object oriented approach.
- Produce the set of classes, and interface classes used in the solution to a problem of small complexity.
- Understand the concepts of object, algorithm, class, programming by contract, test suite, program control flow, relations (is-a, has-a), references, software quality and criteria.

Organization:

As indicated in the title, the goal of the course is to study the fundamentals of software design and develop-
ment. Emphasis will be on modular software design using an object-oriented approach. The programming language Java will be used in the course.

Please note: This is not a course in Java. This course is intended for Computer Science majors, and is the first of a three course sequence, continuing with CSCI 2120 and CSCI 2125. You should not be in this course if you do not intend to complete the sequence.

The laboratory, CSCI 1581, and lecture should be considered integral parts of a four credit hour course. They are organized as separate courses simply for your scheduling convenience. Thus you will receive a single common grade for both, the lecture course and the lab. In particular, it is not possible to pass one of the courses and fail the other; as is not possible to take one without taking the other.

Topics:

Topics and approximate order of presentation are as follows.

- Introduction to computer science and software systems. Abstraction and composition. Data, functionality, algorithms. Object oriented systems. An overview of computer systems. Software tools. Errors in the programming process.
- Syntactic structure of a system definition in Java. Java identifiers, literals, lexical structure.
- Programming by contract: preconditions and postconditions. Testing and test plans.
- Software testing. Unit testing.
- Building a text-based interface for a system. Use of object composition.
- Development of a complete system.
- Interfaces: modeling alternative clients and implementations.
- Inheritance and class extension.
- Modeling with abstraction.

Office Hours:

My office is MATH 331. I will generally be available 10:45-11:30 a.m. or 3:00-4:00 T, Th; make an appointment if you cannot come at that time. Phone: 280-7362, 280-6594. E-mail: jaime@cs.uno.edu.

From time to time I will communicate through email with you using your department email account; you are responsible to read your email in a timely manner. Also, if you send me email

1. best choice, do it using your department account.
2. write as subject: CSCI-1583 student.

Do not expect me to open nor to answer student email without the specified subject heading.

Exams:

The exam schedule is very tentative at the moment. We will probably have two in class tests plus the final. Tentative dates for the tests are Sept 29, and november 3. The final exam is scheduled for Monday dec 5, 8:00-10:00 pm. No makeup tests or exam will be given.

Homework:

I plan to assign a number of homeworks during the semester. These exercises will require use of the computing systems, and will be in addition to the work done in the laboratory. Assignments should be handed in to me at the beginning of class, or at your risk, left in my mailbox in MATH 311. Assignments are due in at class time on the due
date. There will be a late penalty of 5% per day or fraction of day for late work. Homework will be graded and returned on time only if submitted on the due date; any homework submitted late will be grade at my own convenience resulting on having your work returned by the end of the semester. **Homework will not be accepted if it is more than one week late. No late homework is accepted during the last week of classes.**

**Warning:** do not place any homework or material in the mailbox outside from my office.

*Homework assignments are individual projects.* Incorporation of ideas or material other than your own must be explicitly referenced.

Note: it’s better to turn in an assignment and get a poor grade than not to turn it in at all and get 0.

I will be also giving numerous pop quizzes at the beginning of lectures; if you are not present when a pop quiz is given you will receive a zero unless a medical excuse is presented.

**Attendance**

Attendance is mandatory. Failure to attend will affect your final grade, including failing the course. Every absence must be justified in writing. You will automatically fail the course if you accumulate more than 3 consecutive unjustified absences, or more than 6 absences (justified or unjustified) in total.

All absences must be justified in writing with appropriate documents (doctor’s office or otherwise.)

3 unjustified absences will cost 10% of grade.

6 unjustified absences will cost 25% of grade.

**Grading:**

Simply stated: **you must pass both courses CSCI-1583, and CSCI-1581 independently to be able to pass the course.** A common grade will be given for both courses based on separate grades given for each course.

a. Initially you will be given a preliminary final grade for 1581 and 1583 independently of each other.

b. The computation of the common grade for both courses will be carried out as follows:

1. If the preliminary numeric grades for each of the courses is 70 or more.

   *The final grade is computed as 80% of the course grade (1583) plus 20% of the lab grade.*

2. If the preliminary numeric grade in either 1581 or 1583 is below 70, your final grade for both courses is the lowest of the two preliminary numeric grades.

The preliminary numeric computation of your final grade for CSCI-1583 will use the following brake down:

a. *Homework/pop quizzes:* 40%.

b. *Tests:* 30%

c. *Final:* 30%

If one of your in-class test grades is less than your final exam grade, the final exam grade will replace the lowest test grade.

For the preliminary computation of your final grade for CSCI-1581 the following policy will be used:

*You will be graded for attendance during the whole lab period, as well as submission of lab work when requested. Each lab will carry the same weight. The lowest lab grade will be dropped in the computation.*

Final letter grades will be assigned as [90 – 100] = A, [80 – 90) = B, etc. No curve given.

Finally, I must call your attention to the University’s policies regarding academic dishonesty. (See pages 44-47 of the Student handbook.) Academic dishonesty includes cheating, plagiarism, and collusion. In particular, it includes “the unauthorized collaboration with another person in preparing an academic exercise” and “submitting as one’s own any academic exercise prepared totally or in part for/by another.” In the event of academic dishonesty, the student will be assigned a grade of 0 on the exam or exercise, the student will be informed in writing of the action taken, and a copy of this letter will be sent to the Assistant Dean for Special Student Services.

**Note that November 7th is the final day to drop classes**