Carleton University
Department of Systems and Computer Engineering
SYSC 2004 - Object-Oriented Software Development - Winter 2010
Course Outline

Instructor

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Office hours: posted on the course Web site.

Schedule

Lectures

- Section B: Wednesday and Friday, 13:05 - 14:25, ME 3380.
- Section C: Wednesday and Friday, 14:35 - 15:55, ME 3275.

Labs (AA 508)

- L1: Friday, 10:35 - 12:25.
- L2: Thursday, 14:35 - 16:25.
- L3: Thursday, 11:35 - 13:25.
- L4: Friday, 8:35 - 10:25.

Undergraduate Calendar Course Description

SYSC 2004 [0.5 credit]
OO Software Development
Principles and practice of three software development paradigms with an object-oriented programming language: developing classes from scratch, reuse of existing classes, incremental extension of frameworks. Development of expertise in designing, implementing, and testing industrial-quality, reusable code.
Precludes additional credit for SYSC 1101.
Prerequisite: SYSC 2002.
Lectures three hours a week, laboratory two hours a week.

Course Objectives

- To learn the fundamental concepts of object-oriented programming (classes, objects, inheritance, polymorphism).
- To gain experience applying these concepts by implementing small-scale programs as communities of interacting (collaborating) objects.
- To learn and apply some lightweight, modern techniques commonly used during object-oriented software development (responsibility-driven design; detection of olfactible source code defects; refactoring; iterative, incremental development; test-driven development).
- To develop the ability to build software experiments as an aid to learning.

Prerequisite

SYSC 2002 is the prerequisite for SYSC 2004. Prerequisite waivers will not normally be granted. Students who have not received credit for SYSC 2002 must withdraw from SYSC 2004 by the last date for registration in Winter term courses; otherwise, they will be deregistered before the end of term. Students who received DEF in the Fall 2009 offering of SYSC 2002 are eligible to register in SYSC 2004, provided that they write the deferred exam in February 2010. These students can remain in SYSC 2004 if the DEF is changed to a passing grade; otherwise, they must withdraw from SYSC 2004 by the last day for withdrawal from Winter term courses.

Textbook
Object-Oriented Programming in Python, Michael J. Goldwasser and David Letscher, Pearson Education Inc./ Prentice Hall, 2008, ISBN-13: 978-0-13-601383-9.

Printed copies of this book can be purchased from online retailers (e.g., chapters.indigo.ca, amazon.ca); however, an Online version of the eTextbook can be purchased from CourseSmart (www.coursesmart.com) for roughly 50% of the cost of a printed copy.

Another good textbook is:

Practical Programming: An Introduction to Computer Science Using Python, Jennifer Campbell, Paul Gries, Jason Montojo, Greg Wilson, Pragmatic Bookshelf, 2009, ISBN-13: 978-1-934356-27-2. An eBook (PDF, epub and mobi formats) or paperback copy of this book can be purchased from http://www.pragprog.com. If you only want a printed copy, it's probably less expensive to order it through the Web site of a large book retailer (e.g., chapters.indigo.ca, amazon.ca).

Java References
From Python to Java, Kenneth A. Lambert, http://home.wlu.edu/~lambertk/PythonToJava/index.htm

Objects First With Java: A Practical Introduction Using BlueJ, Fourth Edition, David J. Barnes and Michael Kolling, Pearson Education Limited/Prentice Hall, 2009, ISBN-13: 978-0-13-606086-4.

Web Site
The URL for the Web site is http://sites.google.com/site/baileysysccourses. Instructions describing how to join the site will be distributed in class.

Policy on Laptop Computers
During scheduled labs, students who prefer to use their own laptop computers instead of the lab computers are permitted to do so; however, all laptop computers must be turned off during lectures.

Attendance
Students are expected to attend all lectures and lab periods. The Faculty of Engineering and Design requires its students to have a conflict-free timetable, so requests to accommodate missed lab periods, tests, etc., because of conflicts with other courses, jobs or vacation plans will not be considered.

Evaluation and Grading Scheme
Students will be evaluated by means of laboratory work, assignments, two tests and a final exam.

To pass the course, students must pass the final examination (50% or better). For these students, the final grade will be calculated by weighting the course components as follows:

Lab work:	5%
Tests:	30% (15% each)
Final Exam:	65%

If you receive less than than 60% under this scheme, this value will be converted to your final letter grade, which will be between D+ and F. If you at least 60% under this scheme your grade will be recalculated using the following component weights. The higher of the two values will be converted to your final letter grade, which will be between A+ and C-.

Assignments:	5%
Lab work:	10%
Tests:	25% (12.5% each)
Final exam:	60%

In other words, your assignments count towards your final grade and the weight of your lab component is increased to 10% only if the 5%/30%/65% weighted sum of your lab work, test and final exam components is 60% or higher.

Lab Periods
Attendance at the scheduled laboratory periods is mandatory, and attendance will be taken. During the labs you will work on short programming exercises. Some exercises will be "stand-alone" and are intended to help you understand particular concepts that have been introduced in the lectures. Other exercises will be related to the current assignment. You will normally be required to demonstrate and/or submit your lab work by the end of the lab period, as indicated in that week's lab "handout".

Your work in each lab period will be graded *satisfactory* (1/1) or *unsatisfactory* (0/1). *Satisfactory* means that you were present at the lab and made reasonable progress towards completing the lab exercises. Note that you do not have to finish all the exercises to receive 1/1. *Unsatisfactory* means that you were absent from the lab period, or you attended but did not demonstrate or submit your work, or your solutions to the exercises were not sufficiently complete. Your lowest two lab marks will not be counted when calculating your final grade. This means you can have up to two unsatisfactory lab marks and still earn full marks (100%) for the lab component of the course.

If you are absent from a lab period for any reason, you will receive 0/1 for that lab. If you are unable to attend a lab because of illness, you are not required to provide a medical certificate to explain your absence. It is up to you to do the missed lab work on your own time; however, you cannot submit your completed lab work late to receive credit for the missed lab. You can miss up to two of the lab periods and still receive full credit for the labs, but it's up to you to use your "excused absences" wisely. Serious long-term illness will be dealt with on an individual basis; in these circumstances, please contact your instructor to discuss appropriate arrangements.

Students can use the Systems and Computer Engineering undergraduate computer labs whenever the Mackenzie Building and Minto CASE are open, except for those times when labs are reserved for specific courses.

Assignments
Programming assignments will be posted on the course Web site. Portions of the design and code from any assignment may be reused and refined in subsequent assignments, and doing the assignments is the best way to learn the course material and prepare for the exams, so students are encouraged not to "write off" any particular assignment just because of its relatively low weight in the overall grading scheme.

Your lowest assignment mark will not be counted when calculating your final grade. This means you can miss an assignment and still earn full marks (100%) for the assignment component of the course. Late assignments will not normally be accepted. Please do not ask for exemptions and/or extensions because of illness and so on - you have, in effect, one "sick day" to play with, and it is up to you to use it wisely. Serious long-term illness will be dealt with on an individual basis; in these circumstances, please contact your instructor to discuss appropriate arrangements.

Exams

There will be two closed-book tests. The first will be held approximately one-half of the way through the term. The second will be held approximately two-thirds of the way through the term. The dates of the tests will be announced in class and posted on the course Web site. Each test will cover all of the course material up to and including the previous week's lab and the most recent assignment.

Students who are unable to write a test because of illness or other circumstances beyond their control must provide in cases of illness a medical certificate dated no later than one working day after the test, or appropriate documents in other cases. Medical documents must specify the date of the onset of the illness, the (expected) date of recovery, and the extent to which the student was/is incapacitated during the time of the test. If this information is provided to the instructor no later than five working days after the test, the weight of the final exam will be increased to cover the missed test; otherwise, the mark for the missed test will be 0.

Requests for accommodation because of poor performance on a test will not be considered. We will not replace a poor test mark by increasing the weight of the final exam.

A closed-book final exam will be held during the University's April examination period. The *Academic Regulations of the University* permit instructors to specify requirements that must be satisfied for students to be eligible to write the final examination or, where circumstances warrant, the deferred final examination.

- All students are eligible to write the final examination, regardless of the marks they received during the term.
- Students who miss the final exam but earned at least 60% on the lab component, and wrote both term tests or wrote one term test and provided acceptable documentation to explain the absence from the other test, will receive the grade ABS. These students will be deemed to have performed satisfactorily during the term when their applications for a deferral of the final examination are considered. For more information, see the current Undergraduate Calendar, *Academic Regulations of the University*, Section 2.2, The Course Outline; Section 2.3, Standing in Courses/Grading System; and Section 2.5, Deferred Final Examinations.
- Students who miss the final exam but have not satisfied the conditions for receiving ABS, as listed above, will receive the grade FND. These students are ineligible to write the deferred final exam.

The final examination is for evaluation purposes only and will not be returned to students. You will be able to make arrangements with your instructor to see your marked final examination before June 30, 2010 (the last day for receipt of applications for review of final grades in Winter-term courses). Your exam will not be remarked during this meeting and solutions to the exam questions will not be provided.

Early Feedback
See Section 2.2.1 of the *Academic Regulations of the University*.

The weekly labs provide an opportunity to receive informal feedback and suggestions for improving your code. Outside of the scheduled labs, you can obtain feedback during office hours or by making an appointment to see your instructor.

If possible, at least one assignment will be evaluated prior to the 25'th teaching day of the term. The first test will be marked and returned prior to the 40'th teaching day of the term.

Academic Accommodations
If you need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations, requests for academic accommodation should be made to your Instructor during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more information. refer to the *Guide to Academic Accommodation for Students*, which can be found at: http://www2.carleton.ca/equity/accommodation/academic.

Students with Disabilities
Students with disabilities who require academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC every term to have a Letter of Accommodation sent to the Instructor by their Coordinator. In addition, students are expected to confirm their need for accommodation with the Instructor no later than two weeks before the first assignment is due or the first in-class test/midterm. If you require accommodations only for formally scheduled exam(s) in this course, you must request accommodations by the last official day to withdraw from classes in each term (March 12, 2010, for the Winter term).

List of Topics/Week-by-week Outline
A detailed, lecture-by-lecture list of topics, cross referenced to the course textbook, will be posted on the course Web site.