

Carleton University
Department of Systems and Computer Engineering
SYSC 1005 - Object-Oriented Software Development - Fall 2011
Preliminary Course Outline (Subject to Change)

Instructor

Don Bailey, Room 3042 MC, 520-2600 ext. 5748, bailey@sce.carleton.ca.
Office hours: posted on the course Web site.

Schedule

Lectures

- Section A: Tuesday, Thursday and Friday, 16:35 - 17:25, Location TBA

Labs (Location TBA)

- L1: Thursday, 8:35 - 11:25
- L2: Monday, 14:35 - 17:25

Undergraduate Calendar Course Description

SYSC 1005 [0.5 Credit]

Introduction to Software Development

A first course in software development as an engineering discipline, using a modern programming language, Language syntax. Algorithm design. Tracing and visualizing program execution. Testing and debugging. Program style, documentation, reliability. Lab projects are drawn from a variety of application domains, for example, digital image manipulation; computer games; and robotics.

Precludes additional credit for ECOR 1606 and SYSC 1101.

Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

Course Objectives

- To learn the fundamental concepts of procedural programming.
- To learn some lightweight, modern software engineering practices and use them to design and implement small-scale programs.
- To develop a "mental model" of computation; in other words, to learn how to reason about the execution of code by drawing diagrams that depict program state.
- To develop the ability to build software experiments as an aid to learning.

Prerequisite

None, but registration is normally restricted to students enrolled in the Software Engineering and Computer Systems Engineering programs.

Textbook

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).

Python References

Software Carpentry (<http://software-carpentry.org>)

Software Carpentry is an open source/open license project to develop materials to teach “scientists and engineers the concepts, skills, and tools they need to use and build software more productively.” The project lead is Greg Wilson, who is one of the authors of *Practical Programming*. The Software Carpentry Web site contains video lectures and lecture slides (PDF and PowerPoint files). Several of these lectures cover topics that will be taught in SYSC 1005.

Think Python: How to Think Like a Computer Scientist, Allen Downey, Green Tea Press, 2008.

According to the Green Tea Press Web site, this book "is the manuscript of *Python for Software Design*, published by Cambridge University Press. In support of Free Books, Cambridge has agreed to keep this manuscript available under the [GNU Free Documentation License](#). Readers are free to copy and distribute the text; they are also free to modify it, which allows them to adapt the book to different needs, and to help develop new material."

A PDF copy of the most recent version of this manuscript is posted on the course Web site.

Course Web Site

Carleton University is in the process of selecting a Learning Management System to replace WebCT. Based on the progress and outcome of this initiative, the Web site for SYSC 1005 will be selected prior of the start of the Fall term.

Policy on Laptop and Tablet 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 and tablet 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 students to have a conflict-free timetable, so requests to accommodate missed tests, lab periods, due dates, etc., because of conflicts with other courses, jobs or vacation plans will not be considered.

Health and Safety

Every student should have a copy of our Health and Safety Manual. A PDF copy of this manual is available online: <http://www.sce.carleton.ca/courses/health-and-safety.pdf>.

Evaluation and Grading Scheme (Preliminary - Subject to Change)

Students will be evaluated by means of laboratory work, a midterm test and a final exam.

To pass the course, students must pass the final examination (50% or better). For students who pass the final exam, final grades will be calculated using two schemes, which weight the course components as follows::

	Scheme 1	Scheme 2
Lab work	10%	20%
Midterm test	20%	20%
Final Exam	70%	60%

The higher of the two values will be converted to your final letter grade.

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 that are intended to help you understand particular concepts that have been introduced in the lectures. 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), *marginal* (0.5/1), 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.
- *Marginal* means that you made some progress towards completing the exercises, but your solutions were not sufficiently complete to warrant a *satisfactory* grade. This grade indicates that you may be falling behind, and should take steps to remedy this situation.
- *Unsatisfactory* means that you were absent from the lab period, or you attended but did not demonstrate or submit your work, or many of your solutions to the exercises had significant problems. This grade indicates that you are likely having difficulty with an important topic, and should seek help from your instructor as soon as possible.

Some labs will have prelab exercises that must be completed before the start of your lab period. You may be required to demonstrate or submit your solutions to the prelab exercises, and your prelab work will count towards your grade for that lab.

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. Please do not ask for exemptions and/or extensions because of illness and so on. You can miss up to two lab periods and still receive full credit for the lab component, 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.

Portions of the designs and code from any lab may be reused and refined in subsequent labs, and doing the labs is the best way to learn the course material and prepare for the exams, so students are encouraged not to "write off" any particular lab just because of its relatively low weight in the overall grading scheme.

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.

Exams

There will be one closed-book midterm test, which will be held approximately one-half of the way through the term. The date of the test will be announced in class and posted on the course Web site.

Students who are unable to write the 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 the midterm test will not be considered. We will not replace a poor test mark with a "make-up" test. So, if you are ill on the day of the midterm test, don't write the test and later claim that your performance was impaired because you were unwell. You are better off to miss the test and request that the weight of your final exam be increased, by following the procedure outlined earlier.

A closed-book final exam will be held during the University's December 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 the midterm test (or provided acceptable documentation to explain their absence from the 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 January 31, 2011 (the last day for receipt of applications for review of final grades in Fall-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 lab exercises will normally be graded during the lab period. Outside of the scheduled labs, you can obtain feedback during office hours or by making an appointment to see your instructor.

The midterm test will be marked and returned prior to the 40th teaching day of the term.

Academic Accommodations

You may need special arrangements to meet your academic obligations during the term. To request academic accommodation, the processes are as follows:

Religious Obligations

Email me with any requests for academic accommodation 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>

Pregnancy

Email me with any requests for academic accommodation 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, 613-520-6608, every term to ensure that I am sent a copy of your Letter of Accommodation no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you require accommodations only for the formally scheduled final exam, you must submit your request for accommodations to the PMC by November 11, 2011.

For more information, refer to the *Students* section of the Paul Menton Centre Web site::

<http://www1.carleton.ca/pmc/students>

List of Topics/Week-by-week Outline

To be provided.