

Computer Science 1017F ~ 2015 ~ Notes to Students

Course Description

Computer Science 1017F offers an introduction to the development of algorithms and design of computer programs, along with other selected topics in computing. CSC1017F is offered in the first semester to Electrical Engineering students.

Prerequisites

Mathematics at NSC level 6 or better.

No prior knowledge of computer programming is necessary!

Staff

Course Convenor:	Dr. Maria Keet	mkeet@cs.uct.ac.za
Lecturers:	A/Prof. Sonia Berman Dr. Brian DeRenzi Ms. Sarah Brittan Mr. Lighton Phiri	sonia@cs.uct.ac.za bderenzi@cs.uct.ac.za sarahbrittan13@gmail.com lphiri@cs.uct.ac.za
Teaching Assistants (TAs):	Ms. Chao Mbogo	chao.mbogo@uct.ac.za
Tutors:	(will be announced on Vula)	

Textbook and Notes

There is *no prescribed textbook*. There is a departmental Python book that is structured roughly in order of the lectures' schedule of topics (see below), available from:

http://www.cs.uct.ac.za/mit_notes/Python/

If you like hard copy books, then the following one is highly recommended:

Python Programming: An Introduction to Computer Science (second edition) by *John Zelle*, Franklin, Beedle and Associates, Inc., ISBN: 9781590282410

Class notes (copies of slides) may be available for selected sections and announced by the relevant lecturer(s). Electronic copies of lecture slides will be made available on Vula.

Vula

Vula (<http://vula.uct.ac.za>) is the university-wide online learning management system that gives you access to resources to assist in the learning process. The class website for all courses will be located on the Vula system.

Lecturers, TAs and tutors may be consulted through Vula – this is preferable since any questions that are answered may benefit other students as well. Vula is used for the submission of ALL practical assignments and practical tests and for providing students with marks for assignments and tests, and feedback where appropriate. All students will be expected to consult the website on a daily (Monday-Friday) basis for updates on assignments, marks, hints, deadlines, etc.

Please refrain from posting anything of the following nature anywhere on the website, as it may violate the university's Appropriate Use of Computer Facilities policy (see ICTS website), necessitating disciplinary and/or legal proceedings: sexist, racist or otherwise discriminatory comments, flame wars, trolling; segments of program code (other than something provided by the instructor) ; solutions to graded work (or part thereof) before or after submission; or illegal material.

Lectures

Lectures are held in Computer Science CS2A in 4th period (11h00-11h45), on Monday, Tuesday and Thursday every week and on some Fridays.

Lab lectures are held in Scilab A/B/C in 4th period (11h00-11h45) on Wednesday every week.

Hotseat

The Computer Science HotSeat is run by senior tutors who can assist you to understand difficult concepts or work through problems you have encountered during lectures, assignments or tests. The HotSeat tutor is available on level 2A of the CS Building. A schedule of available times will be posted once finalised.

Tests

There will be 3 closed-book 40 minute theory tests. Venues and dates/times will be confirmed in class.

There will be 3 open-book 40 minute practical tests in Scilab A/B/C as part of the laboratory sessions. Each practical test will be offered 2 times – you may write one or both of them and the maximum mark obtained will be used for each test.

See the schedule for detailed test dates.

Tutorials / Practical Assignments

Tutorials are held in Scilab A/B/C on Wednesday afternoons every week. You may attend one 2-hour session each week, where you may work on the current practical assignment and discuss any general issues related to practical work with the tutors who are available. Attendance at these sessions is optional. However, in the first hour of each session, students will write a practical test (as described above) and these contribute to your final marks!

It is your responsibility to sign up for a laboratory session that fits in with your timetable. If you do not sign up for a session as soon as possible and find that all slots are filled, it is your responsibility to find a student with whom you can arrange a swop as soon as possible.

Questions and Submission

All questions for assignments, along with all related files, will be available on the class website on Vula. Practical assignments must be submitted electronically via Vula ONLY. The online submission system used to receive your assignments will provide the official timestamp used to determine whether a program is on time. Marks will be deducted automatically for automatically-marked assignments that are submitted late.

Marking

Most assignments will be marked automatically based on test cases and the marks will be uploaded to Vula. Tutors will mark randomly-chosen practical assignments during the semester.

Equipment and Programming Language

All programming will be done in Python v3 unless otherwise stated.

It is the responsibility of the student to submit a program that will successfully execute on the specified platform. Any student who works on their own equipment must ensure that all assignments will execute on the university equipment before submission – no discussion will be entered into after submission.

Computing facilities are available for use in the Scilabs that are located in the Computer Science building (Scilab A and B), RW James (Scilab C) and P D Hahn (Scilab D). Students also may use The Shuttleworth Lab, which is located in the Computer Science building and is open 24/7 (with student-card access).

It is ALWAYS the student's responsibility to ensure that adequate backup copies are made of all work in progress and all work already completed. Loss of data or programs is not an acceptable excuse for non-submission or late submission of assignments.

Plagiarism

Refer to attached document for the departmental plagiarism policy. This policy will be strictly enforced.

All assignments, tests and examinations are done individually – there is NO group work allowed in this course. It is acceptable to discuss the questions for assignments with peers but not the specific details of the solutions. When in doubt, speak to a tutor or TA.

Students are required to sign and submit a form (on the last page) verifying that they have read and understood the contents of this policy before commencing any form of assessed work.

DP Requirement

A student is granted DP status (and may write the exam) in CSC1017F if the following condition is met:

- $(3/5 * \text{Practicals average} + 2/5 * \text{Practical test average}) \geq 45\%$

Final Examination

The examination timetable will be published sufficiently in advance of the final examination on university notice boards. It is the student's responsibility to take note of the correct time and place for the examinations.

All examinations will be cumulative, closed-book and closed-notes (i.e., you may not bring your notes or textbooks into the examination room), and 2 hours in duration.

A final mark in CSC1017F will be calculated as follows:

$$\text{Final} = 0.15 * \text{Practical average} + 0.15 * \text{Test average} + 0.10 * \text{Practical test average} + 0.60 * \text{Exam}$$

In order to pass, ALL of the following requirements MUST be met:

- Final $\geq 50\%$
- $(3/5 * \text{Practical average} + 2/5 * \text{Practical test average}) \geq 45\%$
- $(1/5 * \text{Test average} + 4/5 * \text{Exam}) \geq 45\%$

Supplementary Examinations

Students who do not pass but obtain a mark of 45-49 may be awarded a supplementary examination. These are determined by the faculty in November and are written in January.

Grade Allocation

1 = 75-100; 2+ = 70-74; 2- = 60-69; 3 = 50-59; F = 0-49

Information Dissemination and Communication

Attendance and Absence

This is a lecture course. While attendance at lectures is not mandatory after the first day, all marked work (assignments, tests and exams) will be based on the lectures. Obviously, non-attendance at tests and exams will result in a mark of 0 (zero).

ALL students will be expected to complete ALL assigned work. If you miss ANY assigned work with a legitimate reason, send an email to the course convenor within a week or as soon as possible thereafter. Note that there are few legitimate reasons that will be accepted – these include hospitalization or illness – and a medical certificate from a qualified medical practitioner is typically required. Such medical certificates must be delivered to the departmental secretary.

Queries

Any queries about the content of the lectures MUST be directed to the lecturer teaching that section.

Any queries about marks or marking of practical assignments must be directed to your tutor or TA.

All marked work (whether in paper or electronic format) must be kept until the end of the semester. In general, queries about marks MUST be made within a week of marked work being returned. No queries about any marks will be entertained after the final examination.

Any queries about the administration of the course must be directed to the TA.

The course convenor must ONLY be contacted as a last resort unless otherwise indicated.

Disability

If any student needs special accommodation because of a disability, please contact the course convenor during the first week of classes.

Syllabus

Corresponding chapter numbers in the prescribed textbook are indicated in parentheses.

- Introduction to Computer Science (Ch. 1): What is Computer Science, Applications of Computing, History of Computing, Computer Hardware (Machine Architecture), Computer Software (System Software, Applications), Algorithms, Programming Languages
- Introduction to Python Syntax (Ch. 2.1-2.5; 3): Basic syntax, variables, operators, comments, expressions, output
- Strings and Input (Ch. 5)
- Conditionals (Ch. 7): Boolean expressions and logical conditions, If statements, nested ifs, if-else, if ladders,
- Loops (Ch. 8): for, while, nested loops
- Functions (Ch. 6): parameters, return values
- Testing: debugging, equivalence classes
- Arrays (Ch. 5; 11): lists, dictionaries, sets, multi-dimensional arrays
- Sorting and Searching (Ch. 13.1; 13.3)
- File I/O (Ch. 5.9): text files, exceptions
- Number Systems: Machine representations of data, Binary operations, Boolean algebra

Computer Science 1015F and 1017F

Students majoring in Electrical Engineering may take either CSC1015F or CSC1017F for equivalent credit. All other students must take CSC1015F.

Students may switch from one to the other after the first test, in consultation with the course convenor.

Students who score $\geq 70\%$ in CSC1017F are eligible to continue with CSC1016S. All students who pass CSC1015F are eligible to continue with CSC1016S.

Tentative Schedule of Lectures and Practical Work

The numbers indicate the corresponding chapter of the prescribed textbook.

	M	T	W	T	F	Lec	Prac	Test	Practical	Due Date
16-Feb	Intro	Intro	Orient	2		SBe			Orientation	20-Feb
23-Feb	2	3	lab lec	3					0 - Introduction	27-Feb
02-Mar	5	5	lab lec	5				PT 1	1 - Console IO	06-Mar
09-Mar	5	7	lab lec	7		SBr		PT 1	2 - Arithmetic and Strings	13-Mar
16-Mar	7	Test	lab lec	7, 8					3 - Control (if statement)	20-Mar
23-Mar	8	8	lab lec	8					4 - Consolidation	27-Mar
30-Mar	Vacation									
06-Apr		6	lab lec	6		LPh		PT 2	5 - Control (if, for)	10-Apr
13-Apr	6	Testing	lab lec	Testing				PT 2	6 - Control (if, for, while)	17-Apr
20-Apr	Test	11	lab lec	11					7 - Functions	24-Apr
27-Apr	Holiday	11	lab lec	5.9	Holiday	Bde			8 - Testing	30-Apr
04-May	5.9	5.9	lab lec	13.1				PT 3	9 - Arrays	08-May
11-May	Test	13.1	lab lec	13.3				PT 3	10 - Files	15-May
18-May	NS	NS	Consolidation							
25-May	Consolidation		Exams							
01-Jun										
08-Jun										
15-Jun	Vacation									



Department of Computer Science University of Cape Town



Policy on Copying and Plagiarism of Computer Program Submissions

Introduction

The University of Cape Town has well defined policies on the copying of academic submission and plagiarism, which are contained in the general Rules for Students and set out in full on the web at: www.uct.ac.za/uct/policies/plagiarism_students.pdf. The Department of Computer Science has set out the following guide and interpretation of these rules and policies as they apply to courses involving computer programming, and the use of the computer. The rules defined here are in line with the best procedures in other institutions and in particular are adapted from those on academic dishonesty at Oregon State University¹ and academic and cheating at San Francisco State University²

What is Copying and Plagiarism of Computer Program Submissions

Copying and plagiarism of computer program submissions

- is presenting, as your own work, material produced by or in collaboration with others, or
- permitting or assisting others to present your work as their own

without proper acknowledgment

The purpose of the tuition in the Computer Science Department is to enable you, the student, to understand the work that you have submitted. As Confucius once said "I hear – I forget, I see – I remember, I do - I understand". Thus you are required to do your own work for an assignment in order to ensure that you understand it.

Guidelines for Determining Copying or Plagiarism

The following guidelines are provided to help in determining if an incident of copying or plagiarism has occurred.

- The lecturer may suspect a student of program plagiarism if the student submits a program that is so similar to the program submitted by a present or past student, in whole or in part, in the course that the solutions may be converted to one another by a simple mechanical transformation.
- The lecturer may suspect a student of cheating, whether on a program or an examination, if the student cannot explain both the intricacies of his or her solution and the techniques and principles used to generate that solution.

¹ <http://cs.oregonstate.edu/acad/policies/dishonesty.htm>

² <http://cs.sfsu.edu/plagarism.html>

The following general policy on cooperation on practical assignments which will be adhered to is:

In all circumstances it is acceptable to discuss the meaning of assignments and general approaches and strategies for handling those assignments with other members of the Academic Community.

Any cooperation beyond that point, including shared pseudocode or flowcharts, shared code, or shared documentation, is only acceptable if specifically so permitted by the lecturer in written guidelines distributed to the entire class, either through printed handouts or on the course web notes or news group, or where the student submitting the assignment sets out in full what part(s) are the work of others.

Penalty for Academic Cheating or Plagiarism

In all cases where copying or plagiarism is suspected, is tested, and is deemed to have occurred, no credit will be given for the assignment in question and a record will be kept in the Computer Science Department office. A report will also be submitted to the Vice-Chancellor's office for possible disciplinary action through the University Disciplinary Tribunal, which may include expulsion, suspension, or probation; as well as lesser sanctions. In all cases the rule of law will apply and students will have the right to be heard by the lecturer, the course convener and the Head of Department before any action is finalized.

Identifying Copying and Plagiarism in Computer Program Submissions

As the Computer Science Department believes strongly that students should only get credit for their own work, it will take all necessary steps to identify any cases of copying and plagiarism of computer submissions. These could include

- Submitting program files to plagiarism detection sites, either locally or internationally
- Setting a test on the techniques used in a program
- Requesting students to explain sections of their code

If you have any doubt or if you have any questions, you should consult with your lecturer as to whether or not your work with other students and programs prepared for submission are appropriate.

Examples of Copying or Plagiarism

The following examples illustrate situations when Academic Cheating and/or Plagiarism has and has not occurred. Please note these lists are not comprehensive!

Copying and/or Plagiarism has occurred:

- When a student turns in the work of another student and represents it as his or her own work.
- When a student includes another person's work in their own submission without setting out in full what part(s) are the work of others.
- When a student knowingly permits another to turn in his work.
- When a student copies code from the work of another student.
- When a student deliberately transforms borrowed sections of code in order to disguise their origin.
- When several students collaborate on a project and fail to inform the lecturer of this.

- When a student steals, obtains solutions, or program samples from another student's output or computer directories.
- When a student is unable to explain the working of a piece of code.

Copying or Plagiarism has NOT occurred:

- When students have permission to collaborate on a project, and list all collaborators.
- When students receive advice from tutors, teaching assistants, or staff members involved in the course.
- When students share knowledge about syntax errors, coding tricks, or other language-specific information that makes programming easier, except where such techniques represent the core topics being tested in the assignment.
- When students engage in a general discussion of the nature of an assignment, the requirements for an assignment, or general implementation strategies.
- When students compare independent solutions to an assignment in order to better understand the nature of the assignment.
- When students engage in discussion of course concepts or programming strategies in preparation for an assignment or examination.
- When students copy code and cite its source on assignments for which the lecturer allows inclusion of code other than the student's own.

Conclusion

The Computer Science Department believes that by encouraging students to submit their own work and, where possible, removing instances of copying and plagiarism of computer program submissions from the courses we can better help weaker students to overcome their problems and guarantee that work actually done is correctly rewarded.

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Plagiarism Policy Acceptance

I, _____, Student number:
_____, hereby acknowledge that I have read and understood the plagiarism policy of the Department of Computer Science. I will adhere to this policy and the general policies of the university referred to therein.

Signature: _____

Date: _____