WELCOME TO

COMPSCI 101

Principles of Programming

Lecture 1 - Introduction
Learning outcomes

- At the end of this lecture, students should be able to understand:
  - where to obtain information about COMPSCI 101
  - which parts of the COMPSCI 101 assessment contribute to the practical mark
  - which parts of the COMPSCI 101 assessment contribute to the theory mark
  - that to pass COMPSCI 101, both the practical part of the course and the theory part of the course need to be passed
  - an algorithm
We are using Canvas

- We will be using the Canvas learning management system this semester.

[https://canvas.auckland.ac.nz](https://canvas.auckland.ac.nz)

COMPSCI 101: Principles of Programming

Principles of Programming: COMPSCI 101 Semester 1 2017

- [Course Information](#)
- [Lecture times and locations](#)
- [People](#)

This course is an introduction to programming computers. It is the main introductory course in the Computer Science department and is taken by students from a variety of disciplines wishing to have an understanding of computer programming as well as students wanting to continue on to further studies in Computer Science.

We teach programming using the cross-platform language Python. The main focus is on learning to understand the detailed requirements of a programming task, and writing programs that are well structured, correct, easy to read, and to maintain. In order to do this students need to develop an understanding of how to represent information both as data and algorithms. Students also need to develop the skills of incrementally developing and testing programs.
On Canvas you will find:

- your marks
- class announcements
- lecture recordings
- link to the COMPSCI 101 website
The COMPSCI 101 website

- The COMPSCI 101 website can be reached by logging onto the Canvas website:  https://canvas.auckland.ac.nz
- or by going directly to the COMPSCI 101 website:  https://www.cs.auckland.ac.nz/courses/compsci101s1c/

- Here you will find all the information about our course set up.
- Get used to looking at this website for information about lecture slides, lab documents, assignment resources, assessment, people involved in the course and lots more.
People in this course

Ann Cameron (Lab Supervisor)

Email: ann@cs.auckland.ac.nz
Room: 303.413
People in this course

Damir Azhar (Coordinator)

Email: damir.azhar@auckland.ac.nz
Room: 303.411
People in this course

Adriana Ferraro

Email: adriana@cs.auckland.ac.nz
Room: 303.415
People in this course

Angela Chang

Email: angela@cs.auckland.ac.nz
Room: 303.414
People in this course

Jing Sun
Email: j.sun@cs.auckland.ac.nz
Room: 303.522
Office Hours

- Open door policy – Visit any time
On the course information sheet there is a schedule of the lectures for COMPSCI 101.
Lecture slides will be available on the web before each lecture.

https://www.cs.auckland.ac.nz/courses/compsci101s1c/lectures
There is no textbook for CompSci 101

- There is **no textbook** but we do have an online reference book, *Think Python – How to think like a computer scientist*.

- Please be aware that we are teaching the COMPSCI 101 material in a different order to the ordering in this book. This book is a reference book, not a textbook for this course.

https://www.cs.auckland.ac.nz/courses/compsci101s1c/resources/
Labs

Labs start on the second week: March 13th – March 17th

- You must attend **one** 2 hour tutorial lab session each week.
- You will have enrolled in your lab time through Student Services Online. You should attend the same lab times each week.
- Labs are held in room 279 (Building 303S) which is on the second floor of the Computer Science building.

https://www.cs.auckland.ac.nz/courses/compsci101s1c/labs/
More about labs

- **Labs start on the second week:** March 13th – March 17th
- There are 9 labs and each lab is worth 1% of your final mark.
  - At your lab time you will be given programming problems to solve within the 2 hours for your lab.

https://www.cs.auckland.ac.nz/courses/compsci101s1c/labs/
Before the first lab

- Visit the lab **this week**.
  - Before the first lab you need to complete the lab preparation sheet (I will hand this out today).
  - In order to fill the sheet you need to visit the COMPSCI 101 lab sometime this week.
Assignments

- The assignments are worth 11% of your final mark.
- Assignments give you the experience of solving problems on your own. Never share your code.

Solve the problem on your own – discuss the assignment with others but never share code.

https://www.cs.auckland.ac.nz/courses/compsci101s1c/assignments/
Assignments

- There are 5 assignments in total worth 11% of your final mark. For three of these five assignments (7% of your final mark), you are required to write and submit one or more programs.

- All assignments are due at 4:30pm on the due date.
- Three of the five assignments are handed in using the Assignment Drop Box:

  Assignment Drop Box:

  [https://adb.auckland.ac.nz/Home/](https://adb.auckland.ac.nz/Home/)
Assignments - CodeRunner

- There are 5 assignments in total worth 11% of your final mark. For two of these five assignments (a total of 4%), you are required to use CodeRunner.

- The CodeRunner tool is designed to help you practise by presenting you with a set of coding and other exercises. Students can work with on-line exercises using the Moodle learning system. 
  
  https://www.coderunner.auckland.ac.nz/moodle/

- All assignments are due at 4:30pm on the due date.
- Information about using CodeRunner is available on COMPSCI 101 assignments web page:
  
  https://www.cs.auckland.ac.nz/courses/compsci101s1c/assignments/
Plagiarism: Any work that you take credit for, but which is done by someone else. This is treated very seriously in an academic environment.

**Policy**
- All assignments will be checked for copying
- *Everyone* involved is penalised
- Disciplinary action will be taken in all cases of plagiarism

**Advice**
- Don’t ever copy an assignment (or part of an assignment) from anyone
- Don’t ever allow anyone to copy your assignment

[https://www.academicintegrity.auckland.ac.nz](https://www.academicintegrity.auckland.ac.nz)
https://www.academicintegrity.auckland.ac.nz
The test is worth 15% of your final mark

The test date and time is:

Wednesday 12th April 6:30pm - 7:45pm

Email Damir Azhar (damir.azhar@auckland.ac.nz) the COMPSCI 101 course coordinator, if you are unable to attend the test

The test is 75 minutes long plus 5 minutes of reading time. Arrive at 6:15:

- You will need some time to settle down and fill in your personal information on the front page of the test
- You will have 5 minutes reading time starting at 6:25

More about this closer to the time.
The exam is worth 65% of your final mark.

Assessment

**PRACTICAL**
- Labs: 9%
- Assignments: 11%

**THEORY**
- Test: 15%
- Exam: 65%

To pass the course
you MUST pass the PRACTICAL (i.e. get 10 / 20 or more)
you MUST pass the THEORY (i.e. get 40 / 80 or more)
Computing resources

Undergraduate Labs:
There are demonstrators in these labs to help you

**GCL** (room 091) – Ground Floor Computer Lab
This is a *quiet* lab
Learning outcomes for COMPSCI 101

- determine the state of the program both during and after execution, given a code listing that may include functions and parameters, loops, conditionals and sequences,
- implement a given algorithm using Python,
- show that a program meets given specifications by writing appropriate tests,
- provide a useful level of documentation, in the form of program comments, for all programs developed,
- decompose a simple problem into several smaller tasks,
- given a brief textual description of the problem,
- compose functions that perform a specified task into a program that solves a given problem,
- describe program design and syntax using written language,
Algorithms

- A finite set of steps that specify a sequence of operations to be carried out in order to solve a specific problem.

- A better definition:

  An algorithm is a well-defined, unambiguous sequence of steps

http://www.webopedia.com/TERM/A/algorithm.html
Algorithms – what kind of steps?

An algorithm is a well-defined, **unambiguous** sequence of steps.

- Walk to the bus stop at the shops up the road
- Get on bus number "101"
- Pay the bus driver $4.50
- Get off at the Symonds St bus stop
- Walk 200m to the Computer Science building
Algorithms – what kind of steps?

An algorithm is a well-defined, unambiguous sequence of steps

- Open the front door
- IF it is raining THEN take an umbrella
- Walk down the driveway and turn left
- Walk 50m down the street
Algorithms – what kind of steps?

An algorithm is a well-defined, **unambiguous** sequence of steps.

**Open wallet**

**WHILE** you still haven't paid enough

**Give the driver another coin**

**Take a seat**
Basic programming steps

1 design
2 coding
3 testing
Programming - Step 2 - write the code

- We will use the **Python programming language** to implement our algorithms
Hangman

Enter a letter: d

Word: l a _ _ b o n e s

Letters Missed: r m k c u d
Letters Guessed: a e s n o l b
Letters Available: f g h i j p q t v w x y z

Sorry, you have lost in the game of Hangman...
The word was lazybones

Enter a letter: a
**TicTacToe**

```
***************
 - - -
 - - -
 - - -
***************

X enter your move? (1-9): 5
***************
 - - -
 - X -
 - - -
***************

Computer move
***************
 - - O
 - X -
 - - -
***************

X enter your next move? (1-9): 1

The result is a draw.
```