



Australian  
National  
University

# COMP1730/COMP6730

## Programming for Scientists

Final exam revision

## From the very first lecture ...

- ★ As a scientist or engineer, you need to understand how software works, and (most probably) extend it with additional features:
  - to understand algorithms and their computer implementation
  - to interpret and explain the results produced by these
  - to debug programs (find and correct errors)
  - to modify existing programs to solve your (unique) problem
- ★ Main focus of the course has been on developing your **computational thinking** skills (we see this as teaching you “how to fish” instead of “providing you with the fish”)
- ★ From now on, we hope you will be able to approach computationally a novel problem by saying, “Hey, I can just write a program to solve that...”

## Course contents (recap)

### 1st half:

- \* Functional decomposition
- \* Types, expressions, statements
- \* Branching (`if`, `else`, etc.)
- \* Iteration (`while` & `for` loops)
- \* Sequences (`list`, `tuple`, `str`)
- \* Code quality
- \* Debugging & testing
- \* Files, Input/Output

### 2nd half:

- \* NumPy arrays
- \* Data analysis with DataFrame & visualisation
- \* Dictionaries and sets
- \* Time complexity, big-O notation
- \* Exception handling
- \* Dynamic programming
- \* Predictive models with scikit-learn, including using classes and inheritance to interface with the library (note: not examined for comp1730, possible short answer question only for comp6730)

## Announcements - In-lab project assessment

- \* In-lab project assessment (viva) **this week** (i.e., week 12)
- \* You will be interviewed by a tutor during the lab. Opportunity to:
  - Defend/show understanding of your work
  - Receive preliminary feedback on your work
- \* If absent without approval of the conveners, your mark for the project will be zero
- \* Lab 10, which runs during Weeks 11 and 12, will be on practicing final exam exercises and programming problems. You can ask tutors for help.



## Final exam date, time, location

- \* Date: Tuesday 4 June
- \* Time: 15 minutes reading time + 3 hours writing time
  - COMP6730: 9:00am - 12:15pm
  - COMP1730: 2:00pm - 5:15pm
- \* Location: CSIT and Hanna Neumann computer labs

## Final exam logistics

- \* You **MUST** show your **student ID card** (or any other ID card) at the beginning of the exam so that your identity can be validated
- \* Exam will be performed on the computer labs
- \* Check (e.g., *during week 12 lab*) that you are able to login into the lab computers with your ANU credentials!
- \* **We will NOT consider your inability to login into the lab computers as a reason to extend your exam beyond the established 3 hours**
- \* Exam files will be provided in subdirectory of lab computer-details next week.

## Final exam logistics (continued)

- \* Lab computers environment will include:
  - Spyder
  - PyCharm
  - VSCode + MS Python and Jupyter extensions (ONLY)
  - Anaconda (Python interpreter + vast array of python libraries)
- \* You **WILL NOT** be able to install your own VSCode extensions
- \* Students with special exam arrangements (e.g., in EAP) will have extended time and special conditions

# Announcements - Final exam format

## Final exam worth 50% of your final mark

Four exercises/short answer questions (**20%**).

Four programming problems (**30%**).

Questions answered on computer lab computers (not a written exam). See Lab 10 (weeks 11 and 12) for examples of practice exam exercises and programming problems



## Permitted materials

- \* Calculator (non-programmable)
- \* Course slides. For convenience, you might print them out if you like, but they CANNOT be annotated
- \* One A4 page with your own notes on both sides
- \* Foreign language dictionary
- \* Restricted Internet access. Web sites allowed:
  - `http://cs.anu.edu.au/courses/COMP1730/`
  - `https://www.pythontutor.com`
  - `https://docs.python.org`
  - `https://numpy.org`
  - `https://matplotlib.org`
  - `https://comp.anu.edu.au/`
  - `https://cs.anu.edu.au`
- \* All PDFs linked from the course website (e.g., Downey's and Sundnes's book) will also be available

## Support before and during exam

- \* **Before the exam:** drop-in labs
  - Thursday May 23 and May 30 1-2pm CSIT Building, Room N113
- \* **Before the exam:** conveners consulting hours (see course webpage, communication, for details)
- \* Although exam is centrally invigilated, teaching staff will be available **during the exam** to answer technical questions about the exam

# Cheating, plagiarism and misconduct

The exam is individual!

- ★ Any sign of collaborations or suspicious behaviour will be investigated
- ★ If you are found with academic misconduct, not only we apply mark penalty, but the record will also be retained at the University



**Questions?**

Questions?

# SELT survey is open



## Semester 1 SELT is live!

**20 May – Survey opens**  
Check your email or Wattle  
page for available surveys



**21 – 24 May**  
Food and prizes just for  
completing your SELT!



**Survey runs for 4 weeks**  
Please provide constructive and  
respectful feedback (**your teacher can't  
identify you**)

Join us for  
**free food and prizes**  
**21 – 24 May**  
**11.00am – 2.00pm**  
**CSIT Lab entrance or lawn**  
(weather dependent)



**8 July**  
SELT feedback is made available to  
teachers and course convenors to  
improve future course delivery



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