# Welcome

## ENVX2001 Applied Statistical Methods

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The University of Sydney

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# Acknowledgement to Country

The University of Sydney is on Gadigal Country. We acknowledge their ongoing connection to and ownership of this land and pay our respects to past, present and emerging leaders.

# About

Staff | Structure | Attendance

# Staff



Aaron Greenville



Liana Pozza



Januar Harianto



Mathew Crowther

# Structure

## Lectures

**Tue 10 AM** – Chemistry Lecture Theatre 1

**Wed 11 AM** – Chemistry Lecture Theatre 3

## Tutorials

**Self-guided** sessions (1 hour), to be completed before the week's lab.

## Labs

All labs are held in the **South Eveleigh Precinct** (more on this later):

- Thursday 9 am – 12 pm
- Friday 10 am – 1 pm, 2 pm – 5 pm

# Attendance

- Mandatory for labs, **80%** minimum required.

- Lecture attendance is highly recommended, but not compulsory.

- Lecture recordings capture slides and audio *only*. You will miss out on important discussions and informal feedback.

# Assessments

▶ Code

| Assessment | Weight | Due | Description |
|---|---|---|---|
| Project 1 | 10 | Week 5 | Report -- Describing data |
| Project 2 | 20 | Week 10 | Report -- Analysing experimental data |
| Project 3 | 20 | Week 13 | Presentation -- Modeling multivariate data (Topics 7 to 12) |
| Canvas Quizzes | 5 | Weekly | Weekly quizzes |
| Final exam | 45 | TBA | 2 hours, Multiple Choice Questions + Short Answers |

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# South Eveleigh Precinct

Used to be known as the **Australian Techonlogy Park** (ATP). *Still is, but it used to, too.*

# Biomedical Building



Credit: Michael Wheatland

# Directions

## Buses

Courtesy buses are available:

- Best option is to take the bus from **Fisher Library** to **Redfern Station**, then walk to the precinct (through the new station platform as "local traffic").

- Alternatively, direct buses are available – but less frequent.

## Driving

Free parking is available around Henderson Road, but it is extremely crowded. We do *not* recommend driving to the precinct.

# Walking

# Why study statistics?
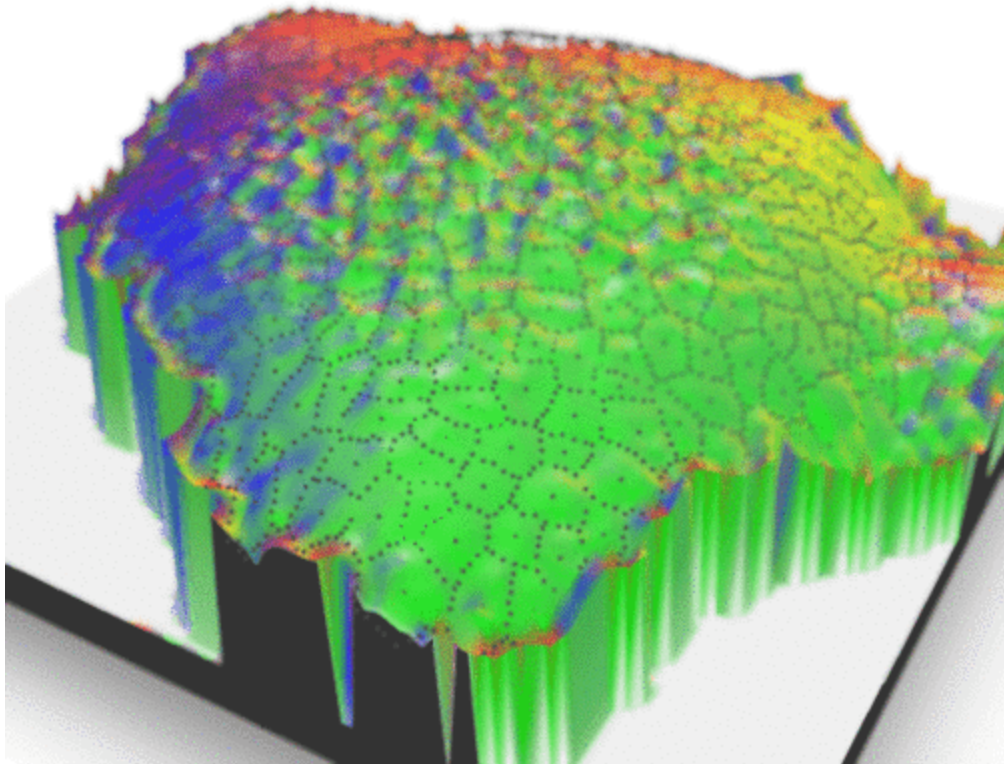
Doesn't seem relevant to my degree…

# Learn, so you can…

- Conduct effective **research**; *but if you are not a researcher*, you can still…

- Critically **evaluate** research findings; *but if you don't plan to read scientific literature*, you can still…

- Make informed **decisions** based on evidence and know the signs when someone is trying to mislead you.
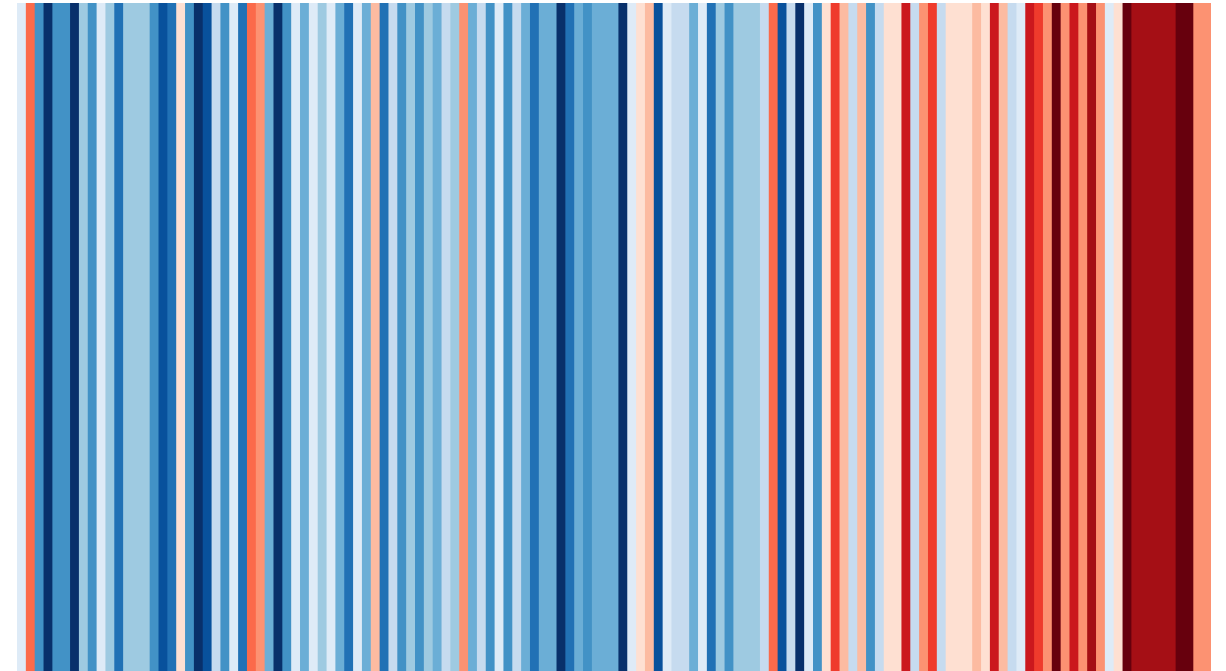


Source: *Anchorman* (2004)

# But, why R?

**Mechanical stress on plant tissue**

**Climate stripes**



Source



Source

# Doing well 🏆

Attend lectures | Put in the hours | Ask questions

# 🏆 Attend lectures

## Attending a lecture is *not* the same as watching a recording…

- You can **ask questions** and *interact* with your peers.

- Your **lecturer** actively adjusts the pace/conten based on your *informal* feedback (e.g. confused looks, Google polls).

- If you don't *understand* something, there is a *good* chance that you can address it *before* the next lecture or lab.

# 🏆 Put in the hours

- This is a **6 credit point** unit, which means that you are expected to spend **120 – 150 hours** in total, including exam prep time (~10 h per week)!

- **Practice makes perfect**. Tutorials and Labs help you apply the concepts you learn in lectures – complete all the exercises, and practice with the bonus questions provided.

# 👤❓ Ask questions

- **Ed** is the *best* place to ask questions. We are way more responsive on **Ed** than on email.

- We are *open* to the use of AI tools (including LLMs like ChatGPT) to help you answer questions about code… but don't use them to cheat *yourself* out of learning.

- We have **drop-in sessions**, where you can jump in and have a chat on Zoom. We will announce the schedule on **Ed**.

# Learning outcomes

# By the end of this course, we want you to be able to:

- **LO1** demonstrate proficiency in designing sample schemes and analysing data from them **using R**.

- **LO2** describe and identify the basic features of an **experimental design**: replicate, treatment structure and blocking structure.

- **LO3** demonstrate proficiency in the use or the statistical programming language **R** to apply an ANOVA and fit regression models to experimental data.

- **LO4** demonstrate proficiency in the use or the statistical programming language **R** to use multivariate methods to find patterns in data.

- **LO5** interpret the output and understand conceptually how its derived of a regression, ANOVA and multivariate analysis that have been calculated by R.

- **LO6** write statistical and modelling results as part of a scientific report.

- **LO7** appraise the validity of statistical analyses used publications.

# Let's get started!

## Questions?

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