

# Lecture 01a – Welcome

## ENVX2001 Applied Statistical Methods

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# About

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## Staff



Figure 1: A. Prof Aaron  
Greenville Unit  
Coordinator, Weeks 4-6



Figure 2: Dr Liana Pozza  
Lecturer, Weeks 7-9



Figure 3: Dr Januar  
Harianto Lecturer, Weeks  
1-3



Figure 4: Prof Mathew  
Crowther Professor, Weeks  
9-11

## Structure

This unit includes lectures, self-guided tutorials, labs, discussions, and drop-in sessions.

- **Lectures:** Tuesdays 10 AM, Wednesdays 11 AM, **Chemistry Lecture Theatre 3**
- **Tutorials:** Self-guided (1 hour), complete before each week's lab.
- **Labs:** South Eveleigh Precinct, Thursday 9 am – 12 pm, Friday 10 am – 1 pm, 2 pm – 5 pm
- **Discussion:** Via Ed discussion, we usually respond the same day unless it is the weekend.
- **Drop-in sessions:** Scheduled as necessary (Zoom or in person). Email us to arrange a session.

## Attendance

1. **Lectures:** Highly recommended but not compulsory. Lectures are recorded, capturing slides and audio only, which may miss important discussions.
2. **Labs:** Mandatory, 80% minimum attendance required. Attendance will be taken by QR code. If you miss a lab, you may attend another session that week – send us an email!
3. **Tutorials:** Self-guided (1 hour), complete before each week's lab.

## Assessments

Check [Unit Outline](#)

Week	Assessment	Weight	Type
4	Early Feedback Task	1%	Individual
5	Project 1: Describing data	10%	Individual
10	Project 2: Analysing experimental data	20%	Individual
13	Project 3: Presentation (multivariate)	20%	Group
-	Quizzes (weekly, multiple due dates)	4%	Individual
-	Exam (2 hours, MCQs + Short Answers)	45%	Individual

# South Eveleigh Precinct

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

## Biomedical Building





Credit: Michael Wheatland

## Directions

### Buses

Courtesy buses are available:

- The 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

Walking to the South Eveleigh Precinct takes about 20 minutes. However, you can save approximately 5 minutes by using Redfern station's community access gates, where you don't need to use an Opal card to get through.

If the map does not load, [click here](#)

# **Your Statistical Journey**

## Statistics in Action

Modern science and decision-making are driven by data:

- **Research**: From lab experiments to field studies
- **Policy**: Environmental management decisions
- **Industry**: Business analytics and optimisation
- **Innovation**: AI and machine learning – foundations

## Why Statistics Matters?

Statistics empowers you to:

- Turn raw data into meaningful insights
- Make evidence-based decisions
- Communicate findings effectively
- Solve complex real-world problems



Figure 1: Statistics helps avoid misinterpreting data. Source: *Anchorman* (2004)



## Real-world Applications

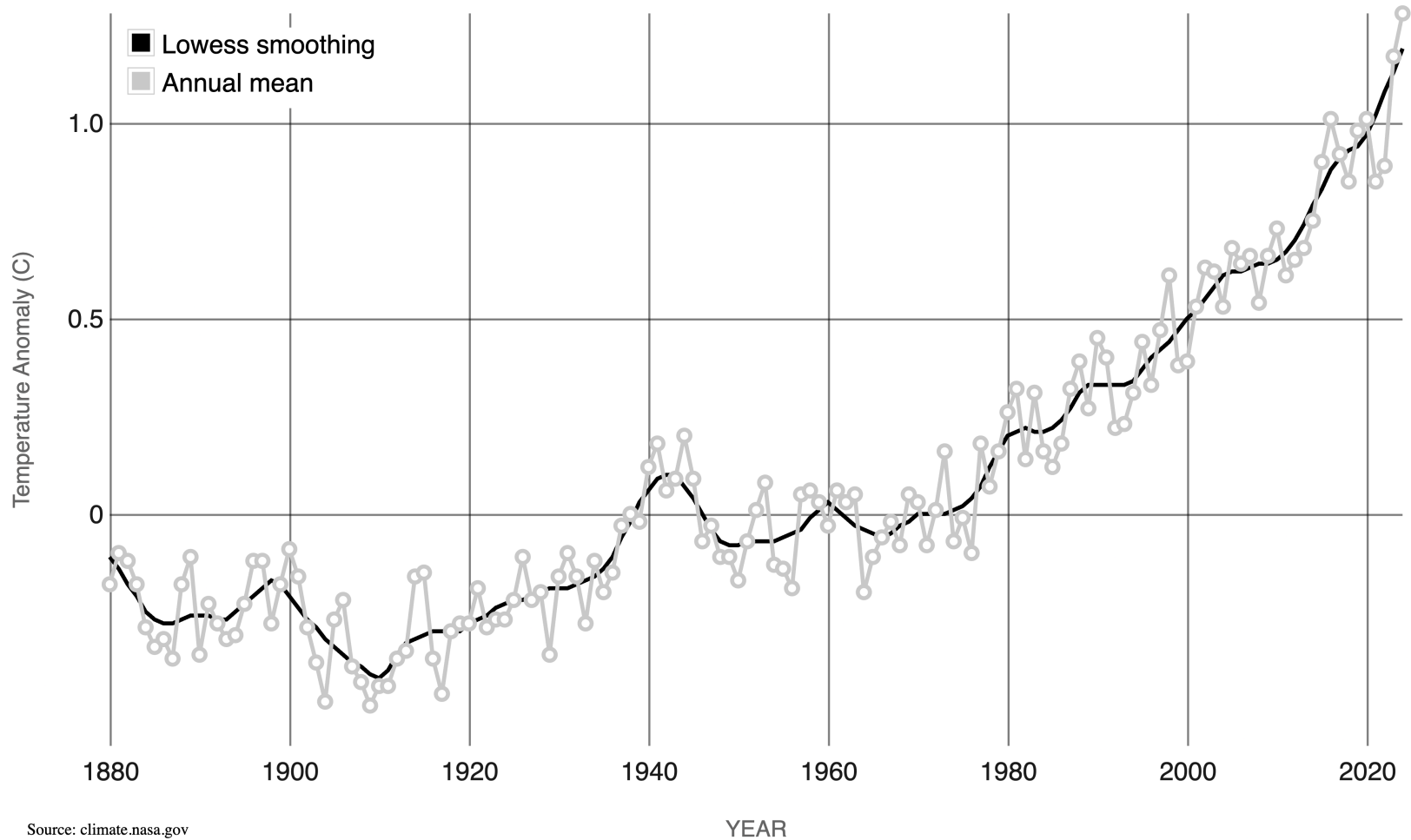
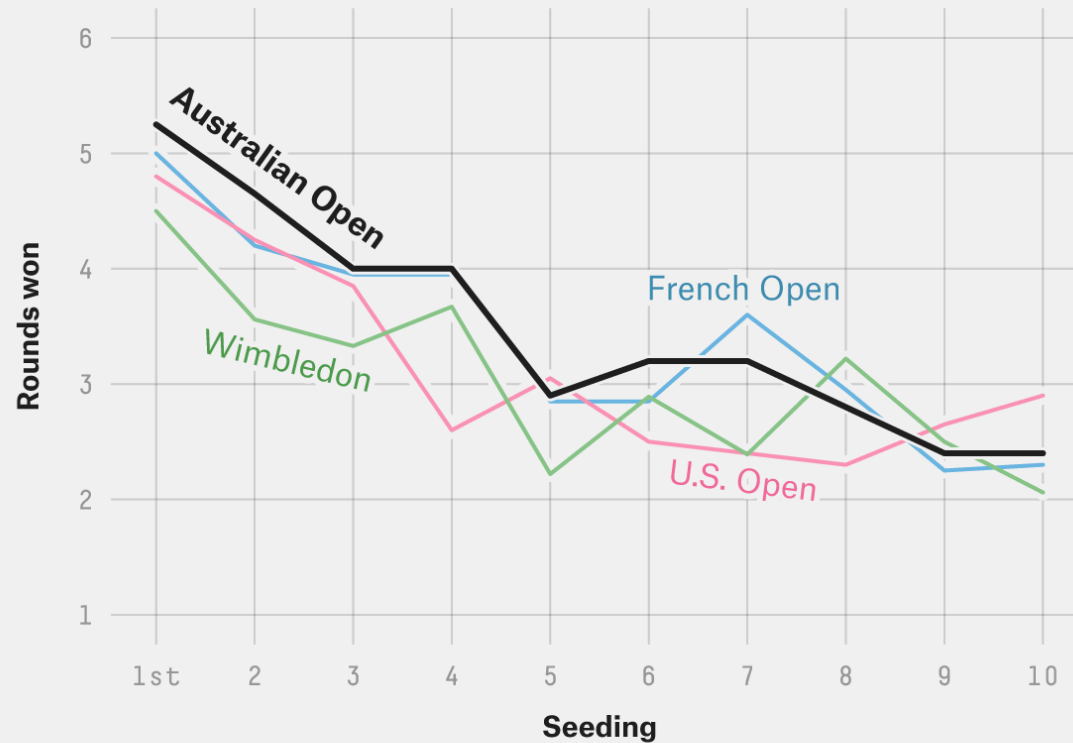


Figure 2: Source: NASA's Global Temperature Index

## Sports Analytics

## The favorites stick around longer at the Australian Open

Average number of rounds won for men's and women's players seeded in the top 10, by seeding at each of the four Grand Slams, 2011-20



FiveThirtyEight

SOURCE: TENNIS ABSTRACT

Figure 3: The 10 highest-seeded players averaged 3.48 rounds won in the Australian Open since 2011, compared to just 20 / 29

## **Your Path Ahead**

This course will develop your:

### **Technical Skills**

- R programming proficiency
- Data visualization expertise
- Statistical analysis methods

### **Professional Skills**

- Critical thinking
- Scientific communication
- Problem-solving abilities

**Doing well**

## Lecture attendance options

### In-person vs. online recordings

#### In-person benefits:

- Real-time interaction with peers and lecturers
- Immediate feedback and clarification of concepts
- Active participation in discussions and polls
- Building connections with classmates

#### Online recording benefits:

- Flexibility to manage other commitments
- Ability to pause and review complex concepts
- Learn at your own pace
- Convenient for those with long commutes

## On-campus or online?

Choose the option that best suits your learning style and circumstances. **If watching online, try to:**

- Stay up to date with recordings to avoid falling behind
- Use Ed discussion board actively for questions
- **Attend some lectures in person when possible for key topics**

There is a strong positive correlation between lecture attendance and final grades – but it's not the only factor. *It may just be the case that students who attend lectures are more likely to keep up with the course material.*



## 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 of the statistical programming language **R** to apply an ANOVA and fit regression models to experimental data.
- **LO4** demonstrate proficiency in the use of the statistical programming language **R** to use multivariate methods to find patterns in data.
- **LO5** interpret the output and understand conceptually how it's 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 in publications.

# Thanks for listening! Questions?

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