

# Seminar in Cognitive Modelling

Lecture 1 - Welcome,  
Introduction, Preliminaries,



# Your course lecturers

- Neil
- Frank (Sem1)
- Mathilee (Sem2)
- Max
- Syd etc

# What is a seminar?

- a discussion

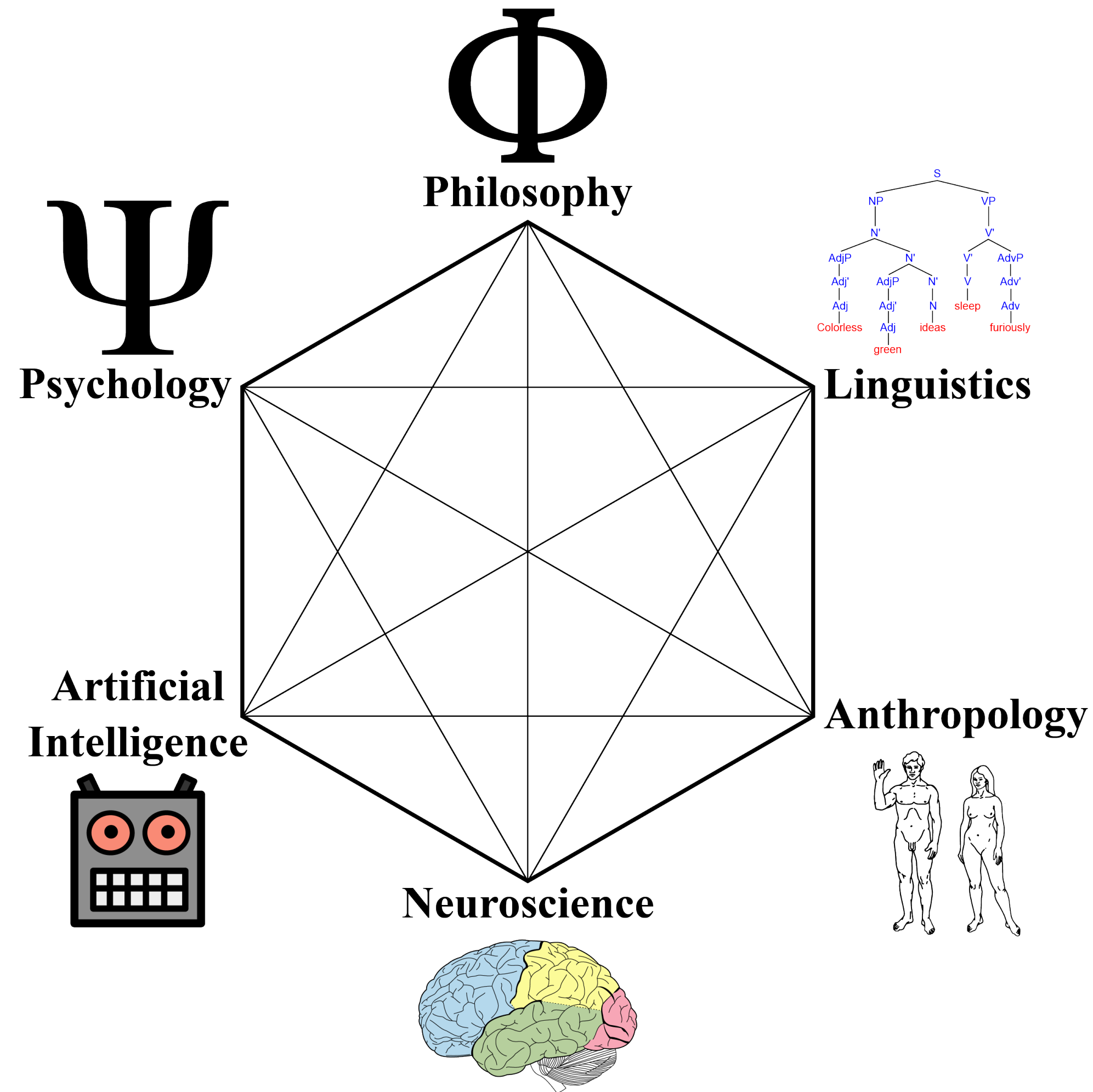
## **Relevant Learning Objectives**

Demonstrate understanding of a range of classic and current articles in cognitive science by summarizing and critiquing their central ideas and/or results.

Search the literature and synthesize information from several papers on the same topic and create a coherent presentation on that topic.

Communicate key findings in cognitive science to inter-disciplinary audiences.

# What is cognitive science?



# What is cognitive science?

- The study of **mental representations** and **processes**
  - A mental representation is a description of information in the mind
  - A mental process is a procedure for translating:
    - sensory information into representations
    - representations into other representations
    - representations into actions / behavior
- Loosely... **content** and **computation**

# Required background

- This course is suitable for outside students. But bear in mind:
- The course assumes knowledge of cognitive science
- By the second semester, knowledge of:
  - linear algebra (vectors / matrix multiplication, orthogonality, eigenvectors);
  - probability theory (discrete and continuous univariate random variables, expectations, Bayes rule);
  - statistics (linear / logistic regression); and model evaluation.
- Data visualization and programming experience will be useful
- but there is no required programming.

# Logistics

- In **Semester 1**, half of you will be assigned to 'earlies' (10-11), half on 'lates' (11-noon)
  - So you have two 1-hour sessions per week
  - You should always attend your assigned session but are also welcome to attend other session (space permitting\*)
  - No-one should have a clash for both earlies and lates, but some people will have a clash for TBD
- In **Semester 2**: Half will be assigned to Tuesdays and half to Thursdays
  - So you will attend one 2-hour session per week in Semester 2
  - You may also attend the other session if you like
- In both semesters you will be giving a presentation!
  - In semester 1, these will be on topics/readings assigned by us
  - In semester 2, these will be on a topic/readings chosen by you

# Course Roadmap

- Semester 1: Tour of cognitive modelling topics approaches themes and perspectives
  - Emphasis on ‘important’, ‘famous’, ‘classic’, ‘foundational’, ‘representative’ papers (but also recent high profile papers for contrast)
  - Each session 1-3\*\* presenters
- Semester 2: Your turn. Present on topic of your choice, describing modelling approach from 1-2 paper(s) of your choice



# Course roadmap: Semester 1

Week	Tuesday Topic	Date	Guide	Thursday Topic	Date	Guide
1	Intro to course	19/09/23		How to present	21/09/23	

# Course roadmap: Semester 1

Week	Tuesday Topic	Date	Guide	Thursday Topic	Date	Guide
1	Intro to course	19/09/23		How to present	21/09/23	
2	<i>Representation</i>	26/09/23	NB	<i>Process</i>	28/09/23	FM?
3	Concepts	3/10/23	Your names here		5/10/23	
4	Causality	10/10/23	We will assign everyone this Thursday		12/10/23	
5	Objects & Events	17/10/23		Inductive Reasoning	19/10/23	
6	Rationality	24/10/23		Learning & Development	26/10/23	
7	Time	31/10/23		Decision Making	2/11/23	
8	Number	7/11/23		Attention & control	9/11/23	
9	Space	14/11/23		Memory	16/11/23	
10	Theory of Mind	21/11/23		Analogical Reasoning	23/11/23	
11	Ecology	28/11/23		Expertise	30/11/23	

# Course roadmap: Semester 2

Week	Tuesday Topic	Date	Guide	Thursday Topic	Date	Guide
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

# Presentations

- Gantt chart and note that much more on that next time



# Reviewer roles

- copy over <https://colinraffel.com/blog/role-playing-seminar.html>

# Portfolios

- Over the course of each semester, you will build a portfolio of reflections on required papers. Each week, you need to submit one
- ( 200 word) entry. An entry should:
- pick a discussion role (can't use the same role consecutively);
- briefly summarise the main idea of the article (2-3 sentences);
- comment on whether or not you believe the conclusions (1-2
- sentences);
- justify your belief (2-5 sentences).
- The goal of the weekly entries are to ensure that you are prepared
- to participate in class discussions. In class, you will may also be
- asked to comment on the discussion and state if you revised your
- belief and why.
- Portfolios will be marked at the end of the semester. Two entries
- can be missing, no questions asked and no detriment to the marks.
- Otherwise, no extensions.

# How you will be marked

Extended Common Marking Scheme

Semester 1 Presentation

Formative but required

Semester 1 Portfolio

Marks: 15%; Weekly (Best 8/10)

Essay

Marks: 40%; Due 20 Jan 2023.

Semester 2 Presentation

Marks: 30%; Arranged.

Semester 2 Portfolio

Marks: 15%; Weekly (Best 8/10)

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# About the essay



# How we communicate

- When you sign up for the course, you will have access to:
- the Course Website: contains all course materials.
- the course mailing list: used for all essential communication;
- the Learn page of the course: contains links to copyrighted
- literature.
- We will use a Piazza forum for the course:
- you can use it to post questions about the course content;
- the main purpose is peer support: students discuss course
- material and help each other;
- lecturers lightly moderate the discussion and contribute;
- link is on Learn, all currently enrolled students should be
- signed up.
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# How to find the readings

- 
- No textbook 
- Readings are listed on the website.
- If the reading is behind a copyright wall, it's on Blackboard.
- Otherwise, you should be able to use university resources (e.g., the library) to find them.

# Literature review

- Forward

Do an example

# Literature review

- Backward



# How to begin

“It is a tremendous act of violence to begin anything. I am not able to begin. I simply skip what should be the beginning.”  
—Rainer Maria Rilke

 Live.

 Listen.

 Talk.

 Journals/conference proceedings