Assignment 2

Collaborative assignment in groups of 2–3 people.
Due date: Sunday, 25 May 2025, 23:59 h AWST.

Write an abstract and science case for a proposal to a particular facility. You are free to pick any topic/facility you like, but it might be easiest to stick to your research field.

- The abstract needs to be fewer than 100 words.
- The whole document should be 2 pages at most, including references (with the main body text 11 pt or larger).

The science case needs to include:

- An introduction to the problem (this should be brief/to the point; there should be no more than 2–3 key science questions).
- How you will solve the problem. This should include a (brief) survey design for a telescope proposal/an outline of the simulations you would run for a supercomputing proposal. I encourage you to talk to supervisors/seek advice from experts on this.
- A description about what would be innovative about this survey/these simulations.
- A justification of resources (i.e. why is it essential you use this facility?) This should also include a statement on how you would (given the time) demonstrate the feasibility of your study.
- At least one figure/table (ideally 2). This can be hand-drawn.
- Good use of formatting.

You will have significant creative freedom in the selection of the project and demonstration of its technical feasibility. It is reflected in the marking rubric that the purpose of this assignment is more geared towards exercising persuasion skills than making a real science proposal. That said, the more realistic the science case, the easier it will be to make a persuasive case.

For example, you could write a proposal laying out a case for computing time to run a suite of 3D hydrodynamical simulations of stellar interiors -- focusing on convection and the CNO cycle for stars of various ages.

I don’t expect you to actually have a team capable of carrying this out. I also do not expect you to have conducted optimization experiments to show how computationally efficient such simulations will be. You can fabricate these elements. You can say that your team really is the perfect team to carry out the experiment. And you can say, for example: "Our optimization tests showed that one such simulation carried out at 1/64 of the desired resolution was completed in 28.5 hours wall-clock time using a total of 7300 core hours. Our average cpu and memory efficiencies were 97.9% and 1.3%, respectively, on Gadi SkyLake nodes equipped with two 16-core Intel processors." Then you can use these numbers to justify the requested time.

If you are writing a telescope proposal, I encourage the use of instrument-specific exposure time calculators.

Marking Rubric:

Total marks available: 100

Content marks (total marks available for content: 80)

Content	**Mark**
Clear, persuasive abstract/project summary. Less than 100 words.	20
Introduction to the problem (2–3 key science questions) and how you will solve it.	20
A description of what is innovative about the proposal.	10
A justification of the resources.	10
Inclusion of relevant figures.	10
Good use of persuasive language (targeted at audience, not too much jargon).	10

Formatting marks (total marks available for content: 20)

Formatting	**Mark**
Less than 2 pages	5
Clear figure	5
Use of headings/formatting to highlight key points.	10