Each MATH3078 student will be allocated a partial differential equation to research and to present a short talk of no more than 4 minutes in their tutorial in Week 8.

The purpose of the project is to extend your knowledge of the different PDEs that we do not study in detail in class, to deepen your knowledge of the applications of some of the PDEs that we are studying in class. A list of topics by student ID will be given as well as a list of tutorial times by name.

Content of the presentation. You should aim to address the following questions. Not all questions will be relevant to every equation and there may be other interesting points that you want to cover. A good presentation will synthesise the knowledge that you have found in your research about the equation(s) into a smooth, flowing narrative, rather than a question and answer format.

- What is the equation or system of equations? What do the variables represent? Is it linear or nonlinear? Homogeneous or inhomogeneous?
- What is the history of the equation(s)? Who first devised them and what application did they have in mind? How did the equation(s) contribute to solving this problem?
- What techniques are used to solve this equation? Are there analytic techniques available? What are they? Under what conditions do these techniques work? What approaches are used when there is no analytic technique available?
- How has our knowledge/understanding/use of the equation developed since it was first written down? How has the equation contributed to science, engineering, economics or other human endeavours? What are some recent interesting applications or results?

Format of presentation. You should prepare your presentation in Powerpoint or as a PDF file. These formats are supported by the university computers in tutorial rooms. You will not be able to use your own computer as time will be very tight on presentation day.

It is recommended that, if you can, you try your presentation slides on a computer in a tutorial room or lecture theatre if you can find an empty room. Please bring your presentation on a USB stick and load it up before the tutorial.

Hints on presentation. You should aim for a presentation that is 3 to 4 minutes long. After four minutes, you will be asked to resume your seat and stop talking, regardless of
whether you have finished your presentation or not, so it pays to have practiced your talk and to be well-organised in how you present your material. Because you only have a short time to speak, you are encouraged to think deeply about the material and information that you have found on your equation and to identify what are the most important points that you want to put across and how to convey these points accurately and succinctly.

It is usually harder to give a four minute talk than a ten minute talk!

Keep words on your slides to a minimum. Most of the words should come out of your mouth rather than be read off the screen. The purpose of the slides is to present visual information such as equations, graphs, simulations, diagrams, etc, with only a few carefully selected bits of text. Slide after slide full of dot points is not acceptable.

Assessment. Presentations will be assessed both by staff and by your peers. Everyone who is giving a presentation in a given tutorial is required to be there and to contribute to assessment. All other students who are enrolled in MATH3078 or MATH3978 are welcome to attend and participate in assessment.

Staff marks will comprise half the total mark and student marks the other half. Everyone is also required to grade their own presentation after they have given it to reflect on how they think it went. Students will be handed a mark sheet at the beginning of the presentation tutorials and asked to hand it up at the end.

All assessment will be done using the following grades:

1. **A+**: Outstanding. Engaging, informative and beautifully presented.

2. **A**: Excellent. One or two small faults but overall a very high standard of presentation with engaging and informative content.

3. **B**: Very good. Some aspects of the presentation may be a little rough around the edges, but overall it was well-organised and clear with interesting and intelligible content.

4. **C**: Good. A solid job. The presentation was able to be understood and the information was relevant to the topic and new material was presented that had not been presented in lectures.

5. **D**: Weak. There was evidence that some effort had been made with the presentation but it was not clear and/or slides were difficult to decipher. There was evidence that some effort had been made to find material relevant to the topic but there was little that was new.

6. **E**: Very weak. The presentation was clearly ill-prepared. Very little, if any, new material was presented.

These grades will be mapped to numerical marks and the student awarded an average mark as a mark out of 10.