

FEEG6002 Numerical Methods: Introduction

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1 Learning Outcomes

After studying the Numerical Methods part of this module you should be able to:

- Solve simple linear equations numerically using an iterative method.
- Solve simple ODEs numerically using a Runge-Kutta method.
- Solve simple PDEs, such as the Laplace equation or the Heat equation in 1D or 2D, using the finite difference method.
- Solve simple eigenvalue problems numerically.
- Recognise the numerical methods that are suitable for solving a given engineering problem.

2 Assessment

- Coursework due on Wednesday 6 January 2016
- Counts for 100% of the mark for this part of the module, and 50% of the total module mark.

3 Course notes and delivery

- PDF of lecture notes <http://www.southampton.ac.uk/~feeg6002/lecturenotes.html>
- Jupyter / IPython notebooks <https://jupyter.org/>:
 - Useful for executing code live
 - Keeps both theory, implementation, results and analysis in a single place
 - You can easily modify and re-run
 - Can be exported to HTML or PDF
- Snippets: http://www.southampton.ac.uk/~feeg6002/snippets/numerical_methods

4 Python / Matlab help

- See Appendix of lecture notes
- For Python:
 - [FEEG1001 notes](#)
 - [Installation with Anaconda](#)
 - [Support material](#)

5 References

See section 9 of notes.