

The University of Western Australia
School of Mathematics and Statistics
MATH1025/MATH2030

Unit Coordinator/Lecturer

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Unit Objectives

- Employ mathematical methods based on calculus and/or matrix theory to analyse mathematical models of real-world problems.
- Understand and appreciate the power mathematics has in helping to find solutions of practical problems.
- Communicate effectively with others.
- Present results in a logical and coherent fashion.
- Undertake continuous learning, aware that an understanding of fundamentals is necessary for effective application.

Unit Content

This unit has five broad sections:

- Matrices (including eigenvalues, eigenvectors and matrix applications)
- Differential Calculus
- Integral Calculus (including integration by parts and improper integrals)
- Differential Equations (including systems of differential equations)
- Multivariate Calculus (including partial derivatives and double integrals)

Prerequisites

- MATH1030 Calculus A or MATH1040 Calculus B
- Both TEE Calculus and TEE Applicable Mathematics

Incompatibility

- MATH1010 Calculus and Linear Algebra
- MATH1020 Calculus, Statistics and Probability
- MATH1025/MATH2030 Calculus and Matrix Methods

Learning Activities

- 4 Lectures per week (Monday, Tuesday, Thursday and Friday 8am in the Fox Lecture Hall). Lectures will be used to formally present the unit material.
- 1 Workshop per week (Wednesday 8am in the Fox Lecture Hall). Workshops will be less formal, with content depending largely on student demand. As a default I will prepare practice problems for students to work on during the workshop session, however this may be replaced with a discussion of assignment questions and clarification of lecture material as required.

Assessment

- (a) End of Semester Examination worth 60%.
- (b) One mid-semester test worth 15% (April 8).
- (c) Three Assignments: totalling 15%.
- (d) 10 quizzes: totalling 10% (every Thursday except for three weeks).

Unit Materials

- Some handouts and lecture slides.
- Further Reading: The content of this unit can be found in any introductory texts on Calculus, Matrices and Differential Equations. Examples are the three texts which have been nominated as references for this unit:
 - (a) Greenwell, R. N., Ritchey, N.P. & Lial, M.L. (2003) *Calculus for the Life Sciences*. Addison Wesley, US.
 - (b) Goode, S.W. & Annin, S.A. (2007) *Differential Equations and Linear Algebra (3rd ed.)*. Pearson Prentice Hall, New Jersey, US.
 - (c) Williamson, R. E., & Trotter H. F. (2004) *Multivariable Mathematics (4th ed.)*. Pearson Prentice Hall, New Jersey, US.

What is required for success in this unit? You are responsible for your own learning experience: My job is merely to facilitate your learning of the unit material. It is up to you to do the learning.

I recommend that:

- You attend all lectures and workshops, or at least keep up to date with reading the lecture slides to ensure that you can identify any difficulties you may be having quickly.
- You ensure that you understand how to do the assignment questions.
- If you are having difficulty with the unit material, **Get help early**. This will also provide me with feedback on what concepts I may need to elaborate on further in lectures.