UNSW Course Outline

ZPEM1302 Mathematics 1B - 2024

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General Course Information

Course Code : ZPEM1302
Year : 2024
Term : Semester 2
Teaching Period : Z2
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : UC Science
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course covers material from ordinary differential equations, statistics and multi-variable calculus. These are important tools when mathematics is applied to situations in science and engineering. Students will study first-order and second order ODEs analytically, graphically and numerically. Statistics concerns the use of data to obtain information about real-life situations

and problems. There are various statistical tools that help extract useful information from data. Topics covered are: measures of location, variability in data, histograms and distributions of discrete and continuous variables. The ideas and concepts of calculus of functions with a single variable are generalised to functions with two or more variables. Topics include: surfaces in three dimensions, partial derivatives, gradient vector, directional derivative and multi-variable optimisation.

Course Aims

The aim of this course is for students to have an understanding and appreciation of the art of mathematical thinking, rather than learning formulas and doing mechanical examples. We will approach problems graphically and numerically (where appropriate), as well as algebraically

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Describe functions of more than one variable, partial derivatives and the gradient vector
CLO2 : Evaluate derivatives and integrals of functions of more than one variable
CLO3 : Demonstrate the construction of differential equations and the interpretation of their solutions
CLO4 : Apply algebraic, graphical and numerical techniques to find solutions to ordinary differential equations
CLO5 : Describe statistical distributions and how they relate to real-life problems
CLO6 : Apply simple probability theory to appropriate problems

Course Learning Outcomes	Assessment Item
CLO1 : Describe functions of more than one variable, partial derivatives and the gradient vector	• Weekly quizzes • Class Tests • Final exam
CLO2 : Evaluate derivatives and integrals of functions of more than one variable	• Weekly quizzes • Class Tests • Final exam
CLO3 : Demonstrate the construction of differential equations and the interpretation of their solutions	• Weekly quizzes • Class Tests • Final exam
CLO4 : Apply algebraic, graphical and numerical techniques to find solutions to ordinary differential equations	• Weekly quizzes • Class Tests • Final exam
CLO5 : Describe statistical distributions and how they relate to real-life problems	• Weekly quizzes • Class Tests • Final exam
CLO6 : Apply simple probability theory to appropriate problems	• Weekly quizzes • Class Tests • Final exam

Learning and Teaching Technologies

Moodle - Learning Management System | Echo 360

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Weekly quizzes Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Not Applicable
Class Tests Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Not Applicable
Final exam Assessment Format: Individual	40%	Start Date: Not Applicable Due Date: Not Applicable

Assessment Details

Weekly quizzes

Assessment Overview

Weekly online quizzes. Multiple attempts allowed.

Course Learning Outcomes

- CLO1 : Describe functions of more than one variable, partial derivatives and the gradient vector
- CLO2 : Evaluate derivatives and integrals of functions of more than one variable
- CLO3 : Demonstrate the construction of differential equations and the interpretation of their solutions
- CLO4 : Apply algebraic, graphical and numerical techniques to find solutions to ordinary differential equations
- CLO5 : Describe statistical distributions and how they relate to real-life problems
- CLO6 : Apply simple probability theory to appropriate problems

Detailed Assessment Description

Formative and summative assessment. Pass level only.

Submission notes

Unlimited attempts allowed

Assignment submission Turnitin type

This is not a Turnitin assignment

Class Tests

Assessment Overview

Three short class tests to reinforce the results from the quizzes. Together these should allow

students meeting the CLOs to obtain a passing grade.

Course Learning Outcomes

- CLO1 : Describe functions of more than one variable, partial derivatives and the gradient vector
- CLO2 : Evaluate derivatives and integrals of functions of more than one variable
- CLO3 : Demonstrate the construction of differential equations and the interpretation of their solutions
- CLO4 : Apply algebraic, graphical and numerical techniques to find solutions to ordinary differential equations
- CLO5 : Describe statistical distributions and how they relate to real-life problems
- CLO6 : Apply simple probability theory to appropriate problems

Detailed Assessment Description

Three class tests scheduled during a lecture slot. 10% each, covering ODEs, MVC & statistics.

Pass level only.

Assignment submission Turnitin type

Not Applicable

Final exam

Assessment Overview

Exam

Course Learning Outcomes

- CLO1 : Describe functions of more than one variable, partial derivatives and the gradient vector
- CLO2 : Evaluate derivatives and integrals of functions of more than one variable
- CLO3 : Demonstrate the construction of differential equations and the interpretation of their solutions
- CLO4 : Apply algebraic, graphical and numerical techniques to find solutions to ordinary differential equations
- CLO5 : Describe statistical distributions and how they relate to real-life problems
- CLO6 : Apply simple probability theory to appropriate problems

Detailed Assessment Description

Exam covering advanced material spanning the entirety of the course.

Assessment Length

3 hours

Assignment submission Turnitin type

Not Applicable

General Assessment Information

The in-term assessment (quizzes and class tests) are designed so that students who are going to pass should have enough marks to pass from these alone (i.e. pass level students should be getting ~85% on this assessment). The exam is advanced questions only, designed to distinguish between grades beyond pass.

It is prohibited to use any software or service to search for or generate information or answers. If its use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Grading Basis

Standard

Requirements to pass course

50 marks ovrall out of a possible 100 required to pass the course.

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Students scheduled to attend four lectures and two tutorials per week.

Course Resources

Prescribed Resources

This course refers to open source textbooks. Links will be provided in the course moodle page.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Terry Frankcombe		B26 R135		By appointment, or drop in.	Yes	Yes