MATH 1017 MATHEMATICS FOR ENGINEERS 1 (WSTC ASSOCD)

Credit Points 10

Legacy Code 700101

Coordinator Zdenka Misanovic (https://directory.westernsydney.edu.au/search/name/Zdenka Misanovic/)

Description The content of this unit covers a number of topics in mathematics essential to the study of engineering. The subject matter includes: matrix algebra, complex numbers, vectors, functions and inverse functions, differential and integral calculus of a single variable and some elementary statistics and probability theory.

School Eng, Design & Built Env

Discipline Mathematics

Student Contribution Band HECS Band 1 10cp

Check your HECS Band contribution amount via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 1 subject

Pre-requisite(s) MATH 1022

Equivalent Subjects MATH 1016 - Mathematics for Engineers 1 MATH 1018 - Mathematics for Engineers 1 (WSTC)

Incompatible Subjects MATH 1014 - Mathematics 1A MATH 1015 - Mathematics 1B MATH 1011 - Fundamentals of Mathematics MATH 1021 - Mathematics for Engineers Preliminary

Restrictions Students must be enrolled at Western Sydney University, The College in 7022 Associate Degree in Engineering

Assumed Knowledge

HSC Maths achieved at Band 5 or 6. This is the minimum requirement.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Solve problems involving matrices and determinants
2. Define j2 and operate with complex numbers
3. Perform operations on vectors, both in 2-D and 3-D
4. Find solutions to problems involving logarithmic, exponential, inverse trigonometric, hyperbolic and inverse hyperbolic functions
5. Apply correctly the techniques of both differential and integral calculus to solve problems that may involve transcendental functions
6. Define a random variable and find its probability distribution and calculate probabilities based on the Binomial distribution, the Poisson distribution and the Normal distribution
7. Appreciate the relevance of mathematics in an engineering context
8. Communicate mathematical ideas using common conventions

Subject Content

1. Matrix Algebra: Determinants; matrices; solution of simultaneous equations using matrices and determinants; Gaussian elimination; eigenvalues and eigenvectors.
2. Complex Numbers: Basic operations; polar coordinates; Euler?fs formula; powers and roots of complex numbers.
3. Vectors: definition; basic operations; dot product; cross product; angle between two vectors; equations of lines and planes.
4. Functions and Inverse Functions: Revision - inverse functions, logs, exponentials; trig and inverse trig functions; hyperbolic and inverse hyperbolic functions.
5. Differential Calculus: Revision- limits; continuity; definition of the first derivative, differentiation rules; implicit differentiation including inverse trig functions and inverse hyperbolic functions.
6. Applications of Differential Calculus: L?fHopital?fs Rule; properties of curves; differentials; related rates.
7. Integration: Indefinite/defin

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/ Group Task
Numerical Problem Solving		10	N	Individual
Numerical Problem Solving	90 minutes + 30 minutes for online submission	30	N	Individual
Applied Project		20	N	Individual
End-of-session Exam	2 hours plus 30 minutes for online submission	20	N	Individual
Viva Voce	20 minutes	20	N	Individual

Prescribed Texts

- Croft, A & Davison, R (2008) Mathematics for engineers: a modern interactive approach (3rd ed). Harlow: Pearson Prentice Hall, Harlow UK

Teaching Periods

Quarter 1

Nirimba Education Precinct

Composite

Subject Contact Zdenka Misanovic (https://directory.westernsydney.edu.au/search/name/Zdenka Misanovic/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH1017_22-Q1_BL_C#subjects)