MATH 2003 DIFFERENTIAL EQUATIONS

Credit Points 10

Legacy Code 200030

Coordinator Shatha Aziz (https://directory.westernsydney.edu.au/search/name/Shatha Aziz/)

Description Differential equations arise naturally both in abstract mathematics and in the study of many phenomena. This subject provides the theory of ordinary differential equations and an introduction to partial differential equations together with methods of solution. Examples are drawn from a wide range of biological, chemical, physical and economic applications.

School Computer, Data & Math Sciences

Discipline Mathematics

Student Contribution Band HECS Band 1 10cp

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

Level Undergraduate Level 2 subject

Pre-requisite(s) MATH1015 - Mathematics 1B

Incompatible Subjects MATH 1019 - Mathematics for Engineers 2

Restrictions

Students enrolled in Bachelor of Engineering, Bachelor of Engineering (Honours) or Bachelor of Engineering Science may not enrol in this subject.

Assumed Knowledge

None

Learning Outcomes

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

1. Classify and solve various types of first order ordinary differential equations
2. Classify and solve various types of second order ordinary differential equations
3. Apply Laplace transforms to solve problems including second order ordinary differential equations
4. Classify and solve various types of basic partial differential equations.

Subject Content

- Review of first order differential equations
- homogeneous linear second order equations
- reducible second order equations
- linear second order equations with constant coefficients
- differential operators
- method of undetermined coefficients
- variation of parameters
- equations with variable coefficients
- power series solutions
- Laplace transforms
- simple partial differential equations and separation of Variables, eg diffusion, wave and Laplace equations

- application of Fourier series to partial differential equations

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.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Intra-session Exam	45 minutes	10	N	Individual	Y
Intra-session Exam	45 minutes	10	N	Individual	Y
Intra-session Exam	45 minutes	15	N	Individual	Y
Intra-session Exam	45 minutes	15	N	Individual	Y
Final Exam	2 hours	50	Y	Individual	Y

Teaching Periods

Spring (2024)
Campbelltown
On-site
Subject Contact Shatha Aziz (https://directory.westernsydney.edu.au/search/name/Shatha Aziz/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH2003_24-SPR_CA_1#subjects)

Penrith (Kingswood)
On-site
Subject Contact Shatha Aziz (https://directory.westernsydney.edu.au/search/name/Shatha Aziz/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH2003_24-SPR_KW_1#subjects)

Parramatta - Victoria Rd
On-site
Subject Contact Shatha Aziz (https://directory.westernsydney.edu.au/search/name/Shatha Aziz/)

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Spring (2025)
Campbelltown
Hybrid
Subject Contact Shatha Aziz (https://directory.westernsydney.edu.au/search/name/Shatha Aziz/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MATH2003_25-SPR_CA_3#subjects)

Penrith (Kingswood)
Hybrid
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