THE UNIVERSITY of ADELAIDE COLLEGE

Foundation Studies Program

Specialist Mathematics

Aims

The aim of the Specialist Mathematics subject is to prepare students for higher university mathematics, such as that required in engineering degrees. It could also be advantageous for students entering degree programs with an emphasis on mathematical skills such as Mathematics, Computer Science, Finance, Design Studies and some Science courses, such as Chemistry and Physics that have a substantial mathematical content. This subject satisfies the mathematics pre-requisite requirements of the University of Adelaide Bachelor of Engineering degree programs.

Learning outcomes

After successfully completing this subject students should be able to:

- Understand mathematical concepts and relationships
- Use mathematical algorithms and techniques (implemented electronically where appropriate) to find solutions to routine and complex questions
- Apply knowledge and skills to answer questions in applied and theoretical contexts, including some attempts at proof
- Apply mathematical models to data in order to make predictions
- Develop solutions to mathematical problems set in applied and theoretical contexts
- Interpret mathematical results in the context of the problem
- Understand the reasonableness and possible limitations of the interpreted results, and recognise any assumptions made
- Develop and test conjectures, with some attempt at proof
- Communicate mathematical ideas and reasoning to develop logical arguments, including some attempt at proof in applied and/or theoretical contexts
- Use appropriate mathematical notation, representations, and terminology.

Prerequisites and assumed knowledge

Mathematics to an Australian Year 11 standard.
Co-requisite: Mathematical Studies..

Subject content

Week	Topic and assessment schedule
1	Orientation week
2 – 4	Introductory Complex Numbers
5 – 8	Polynomials
9 –10	Complex numbers
Break	
11 – 12	Complex numbers
13 – 17	Vectors
18	Exam revision
19	Exam Week
20	Mathematical Induction
Break	
21 – 25	Applications of Vectors to Geometry, Kinematics and Vector Proof
26	Linear Algebra - Row Operations
27 – 30	Integration
Break	
31 – 34	Rates of change and differential equations
35 – 36	Revision. SWOTVAC
37 – 38	Exams
39	Graduation and transcript collection
40	End of course

Assessment

General weightings for each assessment item are outlined below

Assessment item	Weighting	Due dates
Tests	40%	As per assessment schedule
Assignments (8)	7%	As per assessment schedule
Projects (2)	8%	As per assessment schedule
Midyear examination	15%	As per College examination timetable
Final examination	30%	As per College examination timetable

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