

Module code

SPM-2301

Type of module

Undergraduate: Mathematical Sciences – Major Option

Complex Analysis



Modular credits

4

Total student
engagement

56 hours

Prerequisite

SPM-2201 Advanced
Mathematical Methods
for the Sciences

Anti-requisite

None

Aims

To develop students' ability to analyse and apply the principles of complex analysis to solve mathematical problems involving analytic functions, contour integration, and residue theory.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse and apply operations on complex numbers and elementary complex functions to solve problems in the complex plane.

MLO 2

Determine if a complex function is analytic and apply the specific properties of analytic functions.

MLO 3

Apply differentiation and contour integration techniques to analyse complex-valued functions.

MLO 4

Evaluate residues of analytic functions and apply residue theory to evaluate real and complex integrals.

Module contents

Algebra of complex numbers

Topology of the complex plane

Complex functions

Differentiability of complex
functions

Line and contour integrals

Singular points and Laurent
series

Calculus of residues

Assessment

60% **40%**

Examination

Coursework

Examination
60%

Class tests
40%

■ Examination — 60%

■ Class tests — 40%

Formative assessment

Weekly tutorial
sessions, discussion
and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	40%
Class tests	40%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1

PLO 1 (Core Mathematical Knowledge)

2

PLO 2 (Analytical Problem-Solving)

4

PLO 4 (Mathematical Communication)

Sustainability concept addressed

4

SDG 4 Quality Education

Digital skills/software used (not limited to)

- Word processing software (e.g. Microsoft Word)
- Learning management and collaboration platforms (e.g. Canvas, MS Teams)
- Mathematical productivity software (e.g. Microsoft Excel, Scientific Word)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree
Programme or other relevant Lifelong Learning
Programmes

No

Document details

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