

Course Code	Course Title	C	H	I	E	T
17U4MMC6	Sequence and Series	2	2	25	75	100

Learning Objectives

- To impart the knowledge of sequences and summation of series.
- To have a good foundation in Sequences of Bounded, Monotonic, Cauchy etc., and Summation of infinite series of positive terms and arbitrary terms.
- To develop the skill of computation with real sequences and series.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Determine if an infinite sequence is bounded , monotonic or oscillating.
- Determine the sequence whether it is convergent or divergent by using the appropriate tests.
- Find the sequence of partial sum for an infinite series.
- Determine if an infinite series is convergent or divergent by selecting the appropriate tests such as D' Alemberts ratio test, Rabe's test, Bertrand test, Kummer's test, Gauss test, Cauchy condensation test, Cauchy nth root test, etc.

Unit I Sequences

Definition and examples of sequences – Bounded sequences – Monotonic sequences – Convergent sequences – Definition and examples of divergent and oscillating sequences – Problems.

Unit II Sequences (Continued)

Algebra of Limits – Properties – Problems.

Unit III Monotonic sequences

Behavior of monotonic sequences – Some theorems on Limits — Problems.

Unit IV Series of Positive terms

Infinite series - Problems – Comparison test (without proof) – Problems – Harmonic series.

Unit V Series of positive terms (Continued)

Kummer's test (without proof), Gauss's test (without proof) – Problems based on these tests -
Cauchy's nth root test (without proof) – Problems.

Text Book:

1. S. Arumugam and A. Thangapandi Issac, Sequences and Series, Edition 2012,
New Gamma Publishing House.

Chapters : 3 (3.1 – 3.8), 4 (4.1 – 4.4)

Reference Books:

1. K. Chandra Sekhara Rao and K. S. Narayanan, Real Analysis Volume – I, Edition 2008,
S. Viswanadhan Printers and Publishing Pvt. Ltd.
2. M. K. Venkatraman and Manorama Sridhar, Sequence and Series, Edition 2002,
The National Publishing Company.