

# MTH314 Real Analysis II

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

## **Synopsis:**

MTH314 Real Analysis II will develop concepts of differential and integral calculus rigorously. Mathematical rigor will be emphasized for this course. Students will be exposed to and be expected to acquire the skills to read and write mathematical proofs. MTH314 will be paired with MTH312 so that students upon the completion of both courses will have a better understanding of the contents of Real Analysis.

## **Topics:**

- Derivative
- Mean Value Theorem
- L'Hospital rules
- Taylor's Theorem
- Differentiation of vector valued functions
- Partitions
- Riemann integral
- Riemann-Stieltjes integral
- Riemann integrable functions
- Fundamental Theorem of Calculus
- Change of variable
- Integration by parts

## **Textbooks:**

Robert G. Bartle, Donald R. Sherbert: Introduction to Real Analysis (e-text) 4th John Wiley & Sons  
ISBN-13: 9781119496786

**Learning Outcome:**

- Show the validity of given mathematical statements in real analysis.
- Give examples of mathematical statements in real analysis.
- Apply epsilon-delta arguments to prove mathematical statements in real analysis.
- Use Taylor expansion of a given function to estimate the value of the function at given points up to fixed degree of accuracy.
- Determine whether given function(s) are Riemann integrable and/or Riemann-Stieltjes integrable with respect to some monotonically increasing function.
- Compute limits of real-valued functions.

**Assessment Strategies - Regular Semester (Evening Class):**

<b>Components</b>	<b>Description</b>	<b>Weightage Allocation (%)</b>
Overall Continuous Assessment	COMPUTER MARKED ASSIGNMENT 1	10
	TUTOR-MARKED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>

\*The information listed is subject to review and change.