University of Moratuwa, Faculty of Engineering, Department of Mathematics- 27 January 2020
BSc Engineering Honors Degree
Batch 19-Semester 1(838)-27/01/2020:15/05/2020
Break-10/04/2019:20/04/2020
E4(80)+E5(80)+E6(80)+E11(47)-Tue-0815:0915-NA1(287)
E7(80)+E8(80)+E9(80)+E10(68)-Thu-1515:1615-NA2(308)
E1(81)+E2(81)+E3(81)-Fri-1015:1115-JG(243)

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Module Code	MA1013 Part B	Title	Mathematics Real Analysis			
Credits	01	Hours/ Week	Lectures	01	Prerequisites	None
			Lab/Tutorial	1/3		

Real Analysis

- Real number system, supremum and infimum, completeness axiom
- Basic functions: Polynomial, exponential, trigonometric, hyperbolic and their inverses.
- Limit of a function, continuity, differentiability, derivatives,
- Rolle's theorem, mean value theorem, L' Hospital's rule
- Sequences and series of real numbers.
- Tests for convergence of sequences and series.

Detailed Syllabus

1. Field Axioms
2. Order Axioms
3. Completeness Axiom
4. Functions and Inverse functions
5. Limits
6. Continuity, Differentiability
7. Intermediate Value Theorem
8. Rolle's Theorem, Mean Value Theorem
9. L' Hopital's Rule
10. Sequences, Series
11. Convergence Tests
12. Power Series, Radius of Convergence
13. Taylor Series
14. Extrema, Second Derivative Test

Method of Assessment (for the whole course MA1023)

- End of semester examination: 3 hour closed book paper: 80%
- Mid semester examination:1 hour open book paper: 14%(on 30/03/2020 from 6.30-7.30pm)
- Spot Tests in Tute classes: 6%

References

- *Calculus*-Volume1 and 2, Tom M. Apostol
- *Advanced Calculus,* David V. Widder
- *Real Analysis, U.A. Senevirathna*
- *Mathematical Analysis,* Tom M. Apostol