

Syllabus of Mathematical Analysis I

Salahaddin University

Subject: Mathematical Analysis I

College of Education

Third class

Department of Mathematics

First semester

Weekly hours: (3Ttheoretical +2Eexample) classes

Week 1: Chapter One: The Real Numbers: Density of rational numbers, operations on rational and irrational numbers, density of irrational numbers.

Week 2: Chapter Two: Sequences of Real numbers: Convergent sequences, bounded and monotone sequences.

Week 3: Cauchy sequences and convergent sequences.

Week 4: Completeness, Nested intervals theorem.

Week 5: Chapter Three: Metric spaces: Open and closed sets, derived of a set, boundary of a set, discrete and perfect sets.

Week 6: Cauchy- Schwarz inequality, Minkowski inequality.

Week 7: Convergence in metric spaces, Cauchy sequences in metric spaces.

Week 8: Open covers of sets and compactness.

Week 9: Compact sets and closed and bounded sets, Heine- Borel theorem.

Week 10: Chapter Four: Continuity. Week 13: Some operations on continuous functions.

Week 11: Continuous functions on compact sets, uniform continuity.

Week 12: Chapter Five: Sequences of real valued functions, uniformly and pointwise convergence of functions.