

**Department of Mathematics**

**Faculty of Science**

**MATH 435 (206435) REAL ANALYSIS**

**3(3/3-0/0)**

**Prerequisite** MATH 313 (206313) or MATH 336 (206336)

**Course Description**

The Riemann - Stieltjes integral. Sequences and series of functions. The Lebesgue theory.

**Course Contents**

**No. of Lecture Hours**

1. The Riemann-Stieltjes integral	8
- Riemann and Riemann-Stieltjes integral for bounded functions	
- Fundamental theorem of integral calculus	
- The indefinite integral	
- Bounded variation	
- Integration by parts	
- Mean valued theorem	
- Change of variables	
2. Sequence and series of functions	15
- Discussion on main problems	
- Uniform convergence	
- Uniform convergence and integration	
- Absolute convergence	
- Conditional convergence	
- Difference tests of convergence	
- Cauchy product	
- Power series	
3. The Lebesgue theory	15
- Set functions	
- Construction of the Lebesgue measure	
- Measure space	
- Measurable functions	

<b>Course Contents</b>	<b>No. of Lecture Hours</b>
4. Simple function	7
- Comparison with the Riemann integral	
- Integration of complex function	
- Function of class $L^2$	
<b>Total</b>	<b><u>45</u></b>