2017-2

Analysis(2) Syllabus

Course No. : 011472-02

Course	Analysis(2)	Credit	3	Hours	3	Instructor	-
Course description	Based on the knowledge of basic Calculus and mathematical analysis(1), the 2nd part of the mathematical analysis is introduced. After taking a brief look at the topological aspects of the real number system, we define Riemann integral and consider the sequences of functions.						
Course objectives	This course covers the following topics: - Riemann Integral - Sequences of functions and convergence - Fourier series						
Prerequisites	- Calculus, Analysis(1)						
Grading	- Quiz(10%), Midterm(40%) and final exam(40%) - Homework and Attendance(10%)						
Textbook	Introduction to real analysis (4th ed.) by Robert G. Bartle and Donald R. Sherbert, Wiley, 2011 (ISBN: 978-0471433316)						
Reference book	The elements of real analysis (2/ed), Robert G. Bartle, John Wiley & Sons, 1976 (ISBN: 978-0471054641)						

Assignment	**Remarks**
Homework	TBA

Weekly Schedule

Week	Date	Description	Assignment/ Reference
1	**8/29**	Course introduction	
	8/31	Open and closed sets	
2	**9/5**	Compactness	
	9/7	Heine-Borel Theorem	
3	**9/12**	Partition and Riemann sums	
	9/14	Riemann integral	
4	**9/19**	Integrable functions	
	9/21	The Fundamental Theorem of Calculus	
5	**9/26**	Pointwise convergence	
	9/28	Uniform convergence	
6	**10/3**	Criteria for uniform convergence	
	10/5	Interchange of limits	
7	**10/10**	Uniform continuity	
	10/12	Revisiting Taylor's Theorem	
8	**10/17**	Review and Catch-up	
	10/19	**Midterm**	**Homework (TBA)**
9	**10/24**	Introduction to infinite series	
	10/26	Tests for absolute convergence (1)	
10	**10/31**	Tests for absolute convergence (2)	
	11/2	Alternating series	
11	**11/7**	Abel's Lemma and Dirichlet's test	
	11/9	Series of functions	
12	**11/14**	Weierstrass M-test	
	11/16	Function spaces and projection	
13	**11/21**	Fourier series	
	11/23	Gauge and delta-fine partition	
14	**11/28**	Generalized Riemann integral	
	11/30	Improper integrals	
15	**12/5**	Improper integrals on infinite intervals	
	12/7	Lebesgue's Dominated Convergence Theorem	
16	**12/12**	Review and Catch-up	
	12/14	**Final Exam**	