Algebra

lectured by Prof. Dr. Frank Herrlich during fall 2014/2015 at the KIT

 $\textit{Written in} \quad \LaTeX \ \textit{by Arthur Martirosian, arthur.martirosian@student.kit.edu}$

Contents

Ι	Galois theory		
	§ 1	Algebraic field extensions	5
	§ 2	Simple field extensions	11
	§ 3	Galois extensions	19
	§ 4	Solvability of equations by radicals	24
	§ 5	Norm and trace	33
	§ 6	Normal series of groups	38
II Valuation theory		nation theory	43
	§ 7	Discrete valuations	43
	§ 8	The Gauss Lemma	47
	§ 9	Absolute values	51
	§ 10	Completions, p-adic numbers and Hensel's Lemma	57
III	Ring	gs and modules	65
	§ 11	Multilinear Algebra	65
	§ 12	Hilbert's basis theorem	77
	§ 13	Integral ring extensions	80
	8 1/1	Dedekind domains	86