Pure Mathematics 431   Algebra II

(see Course Descriptions under the year applicable: http://www.ucalgary.ca/pubs/calendar/)

Syllabus

Topics	Number of hours
Review of basic concepts of group theory; isomorphism theorems	3
Group actions; conjugacy and the class equation; semidirect products	3
The Sylow theorems; classifiication of groups of small order	3
Nilpotent and solvable groups; the Jordan-Holder theorem	3
Simplicity of alternating groups and of PSL(2,q) (time permitting)	
Review of polynomial rings over fields	3
Vector spaces over an arbitrary field; basis and dimension	3
Algebraic and transcendental field extensions; adjoining the root of a polynomial	3
Degrees of finite extensions; multiplicativity of the degree in towers	3
Existence and uniqueness of the splitting field of a polynomial; finite fields	3
Galois groups of polynomials; normal and separable extensions	3
The fundamental theorem of Galois theory	3
Solutions of equations by radicals; applications to geometric constructions (time permitting)	
TOTAL HOURS	**33**

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