Math 435 & 735  – Modern Algebra II  Fall 2010

Instructor: Joseph Gubeladze


Tests & Projects

Midterm: Monday November 1, 2010
Projects: will be posted by October 2010 (for Math 735 students)
Final: Monday December 20, 2010

Lectures
Lecture 1: §1.1: Groups: basic definitions, examples
Lecture 2: §1.2,1.3: Dihedral groups, Symmetry groups
Lecture 3: §1.4: Matrix groups
Lecture 4: §1.6: Homomorphisms, isomorphisms
Lecture 5: §2.1: Subgroups – definitions, examples
Lecture 6: §2.3 Cyclic groups
Lecture 7: §2.4: Subgroups generated by subsets of groups
Lecture 8: §3.1: Quotient groups, homomorphisms
Lecture 9: §3.3: Isomorphism theorems
Lecture 10: §7.1: Rings – introduction, examples
Lecture 11: §7.2: Examples of rings – polynomial rings, matrix rings
Lecture 12: §7.2 (continued) – Group rings
Lecture 13: §7.3: Ring homomorphisms and quotient rings
Lecture 14: §7.4: Properties of ideals
Lecture 15: §7.4 (continued)
Lecture 16: §7.5: Rings of fractions
Lecture 17: §7.6: Chinese reminder theorem
Lecture 18: §8.1: Euclidean domains
Lecture 19: §8.2: Principal ideal domains – PIDs
Lecture 20: §8.3: Unique factorization domains – UFDs
Lecture 21: §9.1: Polynomial rings – definitions, basic properties
Lecture 22: §9.2: Polynomial rings over a field
Lecture 23: §9.3: Polynomial rings are UFDs
Lecture 24: §11.1: Vector spaces – definition, basic properties
Lecture 25: §11.1 (continued)
Lecture 26: §11.2: The matrix of a linear transformation
Lecture 27: §11.3: Dual vector spaces
Lecture 28: §11.4: Determinants
Lecture 29: §13.1: Basic theory of field extensions
Lecture 30: §13.1 (continued)
Lecture 31: §13.2: Algebraic extensions
Lecture 32: §13.2 (continued)
Lecture 33: §13.4: Splitting field and algebraic closure
Lecture 34: §13.4 (continued)
Lecture 35: §13.5: Separable and inseparable extensions
Lecture 36: §13.5 (continued): Existence and uniqueness of finite fields
Lecture 37: §14.1: Galois theory – basic definitions
Lecture 38: §14.1 (continued)
Lecture 39: §14.2: Fundamental theorem of Galois theory
Lecture 40: §14.2 (continued)
Lecture 41: §14.4: Composite extensions and simple extensions