Proposed Qualifying Exam Syllabus for John Goodrick
Logic and Methodology of Science, Special Option Exam
Proposed Date: Tuesday, July 15, 2003

I. Classical Model Theory

Compactness Theorem, theorems of Löwenheim–Skolem and Ryll–Nardziewski, Omitting Types, Robinson Joint Consistency. Elimination of quantifiers and model completeness. Constructing models: ultraproducts, unions of chains, Ehrenfreucht–Mostowski models and indiscernible sequences. Prime, atomic, saturated, and homogeneous models: existence and construction.

II. Basic Stability Theory

Morley's Theorem: Morley rank, Morley sequences, existence of prime models in uncountably categorical theories. Stability: equivalent definitions, stability spectrum, definability of types, Poizat's fundamental order, forking and its basic properties, the Finite Equivalence Relation Theorem. Superstability. T^{eq}, canonical bases.

Covered in Buechler's *Essential Stability Theory*, ch. 3.1–3.3 & 5.1–5.2, and Pillay's *Introduction to Stability Theory*, ch. 1–6.

III. Geometric Stability Theory

The pregeometry of strongly minimal sets. Baldwin–Lachlan Theorem and dimension in a strongly minimal set. Modular and locally modular geometries, plane curves.

Covered in Buechler, ch. 3.4 & 4.1–4.2.