COURSE ANNOUNCEMENT

SPRING 2006

MAT 579

FUNCTIONAL ANALYSIS II

Instructor: John Quigg
Time: 9:15 – 10:30 Tuesdays & Thursdays
Location: PSA 307
Schedule Line #: 24634
Credit Hours: 3

Course Description: This is the second half of a two-semester sequence in functional analysis, which is the study of vector spaces equipped with a compatible topology, and continuous linear maps among them. In MAT 579 we will cover operator algebras and quantum physics, using the book “Mathematical Quantization” by Nik Weaver as our guide. We will start with the Spectral Theorem for bounded normal operators on Hilbert space. The emphasis will be the mathematics, although we will also try to understand the applications to physics, particularly what “quantization” means and what operators on Hilbert space have to do with it.

Prerequisites: The prerequisite listed in the course catalog is, unsurprisingly, “MAT 578 or instructor approval”. But actually it is enough to have a good course in real analysis (including integration in abstract measure spaces), some familiarity with functional analysis at the level of Banach spaces (including, e.g., the Hahn-Banach Theorem, the Open Mapping Theorem, and a good understanding of Hilbert spaces), and an acquaintance with basic topology (including, e.g., locally compact Hausdorff spaces and the Riesz Representation Theorem for bounded linear functionals on $C(X)$).

Textbook: “Mathematical Quantization” by Nik Weaver (Chapman & Hall/CRC, 2001). I will try to put this book on reserve in the library.