From Andreas Pfenning:

I had originally received a similar [question] from computational biology faculty, which is why the course was raised to a 300 level. There are two primary aspects of the course that determine its difficulty.

The first is the computational section of the course - using command line tools and having a broad understanding of what the genomic tools are computing. I haven’t noticed a big difference in ability between mid-level undergraduates and first year graduate students in this regard. For both graduate students and undergraduates, that aspect of the material is likely to be completely new.

The second potentially difficult aspect of the course is to understand how genomics is related to the biology of gene regulation. The addition of genetics as an undergraduate requirement was meant to ensure that an undergraduate student in the course would have the depth of knowledge to understand the new concepts. In terms of the new biological concepts introduced, the course will be taught in such a way that anyone with a basic background in genetics should be able to understand the new material. By reading the CVs of biology graduate students as well as looking at the CMU course catalogue, I anticipate the material will be new to both groups.

In my experience, undergraduate and graduate students differ greatly in their ability to identify potentially new problems and solve them outside the confines of an assignment. The independent project provides a mechanism to give the graduate students experience working with more open-ended assignments. This will also substantially increase the difficulty level and justify the gap between 300 level and graduate.