Title of Study: Undergraduate Legal System Courses and Where They Fit in the Curriculum for Best Learning Outcomes

Executive Summary:
Our findings show that student standing with respect to course level has a significant effect on grades for the “test” course. We hypothesized, therefore, that first year students who take a high-level law class (i.e., upper level) would not tend to obtain a high grade. This is because first year students may not have the right preparation to perform at the required level. We also hypothesized that senior students who take a low-level law class (i.e., first year) would not tend to get a good grade in the class. This is either because senior students who take first-year level courses are struggling academically, or simply because they lack the motivation to do well in classes that are below their standing level. Our results do not support the first hypothesis—as first year students can do well in high-level law courses—but provide support for the second hypothesis—senior students who take low-level law courses do not do as well as expected of them.

Initial Findings

Courses about legal systems can be found across the university curriculum, from the business school, to the school of public and environment affairs, to several units in the arts and sciences college. While these courses are taught independently across these many units, the success of the students may well be predictable, based on the timing of inclusion of these courses in the students’ academic career. This study models undergraduate program course sequencing across disciplines for greater student success in the accomplishment of legal system education. Since many of these students also go on to graduate degrees relevant to legal system training, our students would be better prepared for success in those programs too.

The data we analyze include only general course statistics and student demographics along with course placement in student academic careers. Our analysis compares the success within undergraduate law courses offered across campus units to the timing of those offerings within a student’s program of study. The results are useful to any of the units included in the data set who, like the Media School, are considering curriculum adjustments or re-invention.

In order to explore the relationship between placement and grades, a Hierarchical Linear Model (HLM) was conducted. At level one, two variables were of interest: student academic standing (STANDING) and his/her number of prior law courses (NPLC). At level two, the variable of interest was placement in the curriculum (CLASS.LEVEL). As of student
demographics, five covariates were included in the model in order to control for extraneous variability in student grades: cumulative GPA (GPA), school (SCHOOL), academic load (LOAD), ethnicity (ETHNICITY), and gender (GENDER). In order to assess the predictive power of the HLM, the model was fit on a subset of the data (75%) and a series of fit indices—i.e., mean absolute error (MAE) and Pearson correlation (CORR)—were obtained by predicting on the test data (the remaining 25%) the dependent variable (i.e., student final course grade).

Our findings show that the HLM explains 69.83% of the variability in student grades, which implies that our model is fairly robust. We found that a relatively low proportion of students (16.12%) who take a law course end up taking at least one more law course. However, we found that, controlling for student demographic characteristics, having experience with a previous law course does not significantly affect student grade.

In addition, our findings show that students’ standing with respect to the course level has a significant effect on grades. Descriptive statistics show (see Figure 1) that there is a clear pattern in the relationship between student standing and class level. First year students take mostly first year and sophomore-level law classes; sophomore and junior students take mostly sophomore and junior-level law classes; and, senior students take sophomore, junior, or senior-level law classes.

We hypothesized that first year students who take a high-level law class (i.e., upper level) would not tend to obtain a high grade. This is because first year students may not have the right preparation to perform at the required level. We also hypothesized that senior students who take a low-level law class (i.e., first year) would not tend to get a good grade in the class. This is either because senior students who take first year-level courses are struggling academically, or simply because they lack the motivation to do well in classes that are below their standing level.
Our findings show (see Figure 2) that first year students perform statistically significantly worse than senior students only in first year-level courses. The few first year students who decide to take higher-level courses are probably getting a lower grade compared to other students, but this difference is not statistically significant. We speculate that these few first-year students are overachievers and can do as well as seniors regardless of the course placement. On the other hand, contrary to our hypothesis, senior students tend to get significantly better grades than other students only in first year level courses. However, in sophomore-level courses that difference (between senior students and other) is no longer significant and, in fact, it reverses in junior and senior-level courses. Indeed, junior students tend to do significantly better than seniors in junior-level classes. That is, in average and controlling for demographic variables, senior students do not do as well as other standing students in junior or senior level courses as we could have expected. Bear in mind, however, that most of the students take their law courses in their intended level. In addition, it is worth noticing that students labeled as “non-degree” tend to do poorly in first year level courses, but their performance is statistically and significantly better than
any other student level in sophomore and senior-level courses. Further research is needed to determine the reasons for these differences.

Figure 2. Line Plot. Average Grade by Student Placement and Course Level

As of the demographic variables, our findings show that the effect of student’s cumulative GPA is statistically significant. Holding everything constant, a unit increase in cumulative GPA increases the predicted final course grade by 1.03 points. Student gender has a small but significant effect. It seems that even though in average female students have higher grades than males (see Figure 3), after controlling for the effect of other variables such as cumulative GPA, standing, ethnicity, etc., the student gender affects her final grade in that females tend to receive 0.08 points less than males. On the other hand, academic load, as defined by the number of credits taken in a semester, has a non-significant but positive effect (in the sense that academic loads other than full-load tend to get better final course grades, but this increase is non-significant). Finally, student ethnicity has an effect on final grades (see Figure 4). African American students and other ethnicities such as American Indian, Native Hawaiian, and Alaska Native, tend to have significantly lower final course grades compared to White students. This difference, although negative, is non-significant for Asian or Hispanic/Latino students.
In assessing the predictive power of our model, we calculated the Pearson correlation and the Mean Absolute Error (MAE) between the obtained and predicted student final course grade for the test data (a 25% of the total data). The obtained correlation, $r = .662$, is moderately high, meaning that our HLM model is relatively good at predicting student’s final grades. The MAE is 0.446, which means that, in average, our predictions are off by a little less than half a point. This error means that if, for instance, we predict that a student would get a final grade of 3.0 in a particular law course (corresponding to a B course grade), we are confident that his/her final grade would be at most 3.446 (around a B+) and at least 2.554 (around a B-). Finally, other model-check statistics, such as the number of outliers (272 cases beyond 2 standard deviations, 6.2% in total, for a 95% Confidence Interval) and the distribution of residuals, do not raise a red flag.
In future studies we would like to examine how a particular course sequence throughout the courses offered by a program affect students’ final grades in that program. Specifically, we are interested in how different course-trajectory sequences in the now-Media School tend to affect the final grade students obtain in J-300. The data from this study will be provided to the Media School curriculum committee with the suggestion that analysis of other courses for specific restrictions on class standing matriculation be more carefully considered. The data from this study suggest there is a correlation that does not reflect well on the student who tarries or lags behind on required courses, nor the student who tries to jump ahead too quickly on those courses that are deemed senior or capstone courses.

Working with large datasets always creates a set of challenges. Correctly describing and cleaning the data took much longer than we had anticipated, but I was supremely lucky in finding a graduate student both well-equipped and savvy enough to handle the work. I could not have come anywhere near accomplishment without his talents and his patience. That said, the learning analytics data was the perfect source for finding the answer to my question. I would most certainly, and without hesitation, point others to the same source for similar questions.