**PREDICTING FACULTY NEEDS USING SPREADSHEETS**

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ABSTRACT

A problem faced in higher education administration is determining the number of faculty members needed to deliver the curriculum. To analyze the problem, a spreadsheet model of course staffing was developed. Parameters such as class size, faculty teaching loads, and student enrollment can be varied using the “what-if” capability of spreadsheets. In our case, class size policies have the largest impact on staffing needs.

SUMMARY

A typical problem faced in higher education administration is determining the number and qualifications of faculty members needed to deliver the curriculum. This issue becomes more important as colleges seek and appropriate balance between full-time and part-time faculty. In particular, Menlo College needed a structured way to determine the aggregate size of its faculty as well as the number of faculty needed in specific disciplines. At the same time, the college was trying to determine the effects of possible policy changes including the teaching load of full-time faculty and class size decisions. As a small, private institution the college is proud of its small classes, but feared that overly low class limits would lead to excessive instructional costs.

To attempt to analyze the problem, the author developed a spreadsheet model of instruction. The model is driven by the total number and composition by major and year (freshman, sophomore, junior and senior) of the student body. Groups of students are followed through their entire curriculum, broken down into general education, core curriculum in their degree program, major or concentration and free electives to determine the number of sections of each required class, and each group of electives are needed to fulfill curricular demands. Classes are then grouped by discipline or type to determine the number of sections needed, and finally the number of faculty required to teach those sections. Rules were developed to handle situations where students are required to take some subset out of a set of possible requirements, and to handle transfer students who only take a portion of the curriculum.

Using the “what-if” capability of spreadsheets, parameters such as class size and faculty teaching load can be varied to see the impact of policy decisions on staffing needs. Perhaps not surprisingly, faculty needs are impacted more by modest changes class size policies than modest changes in teaching load policies, although these conclusions may vary depending on the nature of the college and its curriculum. The “what-if” capability also allows study of changing composition of the student body. For example, retention rate assumptions can be altered to see what impact they have on staffing needs.

While the spreadsheet model was built for a specific institution, the concept can be readily adapted to other universities, colleges, departments or programs.