Using an inductive content analysis to determine the most commonly required courses in U.S. geology programs

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**Introduction**

- Initial qualifying criteria states that the university was in the United States, offered at least a bachelor's degree and contained one or more of the following terms in department name: "Earth", "Geology", "Geological" or "Geosciences" (1998).

- Offers a Bachelor of Science specifically in geology, required courses were available online (1996).

- Convened three expert panels to develop course categories and a code book, then to test the reliability of those categories.

- Through discussion overall agreement reached 0.98, where agreement among individual categories ranged from 0.68 to 1, leading to revisions their final categories.

- Final categories were used to group courses from 217 qualifying universities.

**Methods (above and left):** Iterative process to create and apply a manual system to required courses at a total of 317 universities. Above is simplified, left is detailed.

**Categorizing system (below):** System created by expert panels to group then tally required courses. Super-categories in blue, sub-categories in white.

**Total number of times a class is required in a given category per university (n=217)**

The super-categories are listed across the top, with each column representing a sub-category. Highlighted in red are natural breaks found in the data at 90%, 70%, 30% and 15%.

Understanding what we expect from our majors is the first step toward preparing them for future learning (e.g., field camp), the workforce and/or graduate school. In terms of the classes that are required of geology majors, there is no prescribed uniformity throughout programs across the country but there is a discernible pattern. Trends indicate an emphasis (>70%) on field experiences, structural geology, petrology, sedimentary and introductory geology courses, and little emphasis (<15%) on geochemistry, geophysics, hydrology and data analysis courses. Courses often deemed as the most employable are required the least often.

Future work will characterize the courses deemed “electives” (i.e., the university instructed students to take an additional four geology courses from a list of 20) to determine any trends.