**Abstract**

General Education (GE) curricula specify requirements, most often fulfilled through coursework, that undergraduate students need to satisfy in addition to and often preceding a specialized major or program. Due to the decentralized nature of the American higher education system and lack of national requirements or guidelines, however, GE requirements vary from one institution to another. This exploratory study investigates patterns of GE requirements among a selection of 154 institutions and determines whether and how institutions could be grouped or classified by their GE requirements. Our five-dimension typology is parsimonious and meaningfully distinguishes between GE patterns giving us insightful information about the values and goals of institutions that are not communicated through our traditional categorizations.

## Classifying Higher Education Institutions by their General Education Requirements

### 1. Objectives or purposes

General Education (GE) curricula specify requirements, most often fulfilled through coursework, that undergraduate students need to satisfy in addition to and often preceding a specialized major or program (Warner & Koeppel, 2009). GE is often designed to expose students to a breadth of different disciplines and subject areas and can comprise a significant proportion of the undergraduate curriculum overall. Due to the decentralized nature of the American higher education system and lack of national requirements or guidelines, however, GE requirements vary from one institution to another.

What we know about differences in GE curricula comes largely from anecdote and relatively small-scale studies. Comprehensive knowledge about the composition of GE programs and their variability across institutional and state lines is difficult to find. The American College Catalog Study (Brint, 2013) is perhaps the most comprehensive effort to date to inventory GE requirements and compare them across institutions. However, this study only examined four-year institutions, oversampled the most selective colleges and universities, and ended in 2011. In that time, and indeed over the course of the 2000s, many institutions have reformed their GE curricula, and calls for more thoughtful approaches to GE remain (Hart Research Associates, 2016; Gaston, 2015; Mrig, 2013). A more current and inclusive inventory of GE programs is necessary to better understand the composition of GE programs and uncover trends or patterns in GE. This exploratory study uses cluster analysis to investigate patterns of GE requirements among institutions and determine whether and how institutions could be grouped or classified by their GE requirements.

## 2. Perspective(s) or theoretical framework

Grouping or classifying institutions based on their curricular requirements represents a novel way of conceptualizing types of higher education institutions. Institutions of higher education are regularly grouped by mission, selectivity, control, size, location, and other characteristics. The Carnegie Classification of Institutions of Higher Education, perhaps the best-known way of classifying institutions of higher education in the United States, actually contains several different classifications or typologies (Atlbach, 2015; McCormick & Zhao, 2005; see also http://carnegieclassifications.iu.edu). The Basic Classification combines a number of different factors (e.g., size and types of degrees offered) to create well known groups like “R1: Doctoral Universities – Highest research activity” and “M1: Master's Colleges and Universities – Larger programs.” It is only in the two types of “Baccalaureate Colleges” where there is any connection to the curriculum, with a distinction between institutions with an “Arts & Sciences Focus” and those with “Diverse Fields.” A lesser known classification by Carnegie, the Undergraduate Instructional Program Classification, deals a bit more directly with institutional curricula, but it focuses on the mix of the arts and sciences and the professions through degree production as well as the coexistence of graduate programs (The Carnegie Classification of Institutions of Higher Education, n.d.)

What is lacking from the few existing curricular classifications like these Carnegie classifications is any connection to the common intellectual experiences required of nearly all undergraduate students on a campus—namely the GE curriculum. One reason that these connections may be missing is the lack of a centralized data source about GE curricula or curricular requirements more generally, as noted above.

### 3. Data sources, evidence, objects, or materials

With an aim to remedy this problem and explore current GE requirements, we collected and created a GE dataset during the 2017-2018 academic year. Using a stratified random sample of National Survey of Student Engagement (NSSE)-participating institutions, we selected a total of 154 institutions. Three institutions were randomly selected from each state and Washington, DC, except Wyoming which only had one NSSE participating institution. These institutions included only four-year schools and all Carnegie classifications applicable to those institutions. NSSE institutions were selected so that we can connect GE patterns and classifications to measures of student engagement and experience in future analyses. Data collection will, depending on funding, expand to all two- and four-year institutions in the near future.

The data for this study were collected from institutions' course catalogs and/or their GE

comprises the largest cluster. Cluster 2 is called Core Fields plus Global Study/Diversity, and is composed of 40 institutions. Cluster 3 is called Core Fields Plus Art, Religion/Philosophy/Ethics, and History, and contains 43 institutions. Cluster 4 differs from the other 3 clusters in that no categories were required by any meaningful proportion of institutions. This cluster, with 19 institutions, seems to be characterized by its lack of common requirements, rather than by shared

those requiring History, Art, and Religion/Philosophy/Ethics remains. Lost in this model is a cluster reflecting institutions that require Global Study/Diversity.

We decided to test one additional set of parameters, manually forcing the creation of 5 clusters for our Model 3. The average silhouette value for Model 3 was .23, similar to our other models and still acceptable. Clusters 1, 3, and 4 look similar to the clusters from both other models—a "Core Fields Plus Humanities" cluster, a "Core Fields Plus Art, History, Religion/Philosophy/Ethics" cluster, and a "Few Common Requirements" cluster. Cluster 5, with 23 institutions, brings back the Global Study/Diversity requirement but also has Art as a requirement. Cluster 2 represents a new grouping, with its member institutions requiring the four core fields of Communications, Quantitative Reasoning, Social Science, and Science, as well as First Year Seminar.

Given the similar fit indices of each model, any of our three models could be a good fit for our data, statistically speaking. Thus, it makes more sense to select a model based on interpretability and usability of the groupings. In particular, the Core Fields + First-Year Seminar type found in the five-cluster solution seems meaningfully different than other groups as at most 38% of institutions in the other groups had first-year seminar requirements versus 100% in the Core Fields + First-Year Seminar group. As a result, we currently favor the five-cluster solution.

**6. Scientific or scholarly significance of the study or work**

The current study is important because it offers one of the first ways to group and compare institutions by the structure of their GE curricula. Our preferred five-dimension solution is parsimonious and meaningfully distinguishes between GE patterns. The groupings allow for practitioners to identify institutions similar to their own based on curriculum instead or as well as by other categorizations. For researchers, the groupings offer avenues for future research

including comparing student experiences and outcomes by curricular groupings as well as exploring institutional differences. In our full paper we will begin such work by also examining common institutional characteristics by cluster to determine whether institutions that have a particular set of GE requirements are similar in other ways, such as their Carnegie classification, size, control, location, or selectivity. As seen in Table 4, the five clusters give us an additional way to talk about institutional differences. It is interesting to note that the clusters in this study do not clearly align with other popular methods of categorizing institutions: Basic Carnegie Classification, public versus private control, and Barron's selectivity. Although there are notable markers of alignment, such as large proportions of private institutions in clusters 2 and 4 and an equally large proportion of public institutions in cluster 5, there are private and public institutions categorized into each of the clusters. This typology of institutional GE requirements could give us insightful information about the values and goals of institutions that are not communicated through our traditional categorizations.

## References

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Table 2. Model 2: TwoStep Cluster Analysis with 3 Clusters

| | Cluster 1: Core fields (n=86) | Cluster 2: Core fields + Art, History, Religion/ Philosophy/ Ethics (n=48) | Cluster 3: Few Common Requirements (n=20) |
|---|---|---|---|
| Critical Thinking | 14% | 19% | 15% |
| Communications | **97%** | **94%** | 65% |
| Quantitative Reasoning | **95%** | **94%** | 50% |
| Social Science | **97%** | **92%** | 5% |
| Science | **98%** | **100%** | 10% |
| First Year Seminar | 21% | 46% | 20% |
| Foreign Language | 22% | 33% | 0% |
| Art | 70% | **90%** | 5% |
| Global Study/Diversity | 47% | 46% | 25% |
| History | 21% | **94%** | 15% |
| Capstone | 12% | 13% | 30% |
| Religion/ Philosophy/Ethics | 17% | **81%** | 30% |
| Physical Health | 22% | 31% | 5% |
| Humanities | 77% | 10% | 10% |
| Literature | 13% | 59% | 10% |

Table 3. Model 3: TwoStep Cluster Analysis with 5 Clusters

| Cluster 1:<br>Core fields<br>+<br>Humanities |
| --- |

Table 4. Institutional Characteristics by Cluster (Column %)

| | Cluster 1: Core fields + Humanities (n=52) | Cluster 2: Core fields + First Year Seminar (n=20) | Cluster 3: Core fields + Art, History, Religion/ Philosophy/ Ethics (n=40) | Cluster 4: Few Common Requirements (n=19) | Cluster 5: Core fields + Art, Global Study/ Diversity (n=23) |
|---|---|---|---|---|---|
| Doctoral-granting/Very high research | 12.8 | 6.7 | 5.1 | | |

(n=23)