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Funding General Education Classes: Alternatives to Meet Current UMass Needs

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EXECUTIVE SUMMARY

The University of Massachusetts has identified general education requirements as being an important component of undergraduate student education. These requirements prepare them for their undergraduate education experience but perhaps more importantly for their lives beyond their university experience. UMass currently provides additional funding for teaching assistants for certain schools and colleges to aid in delivery of general education classes. Unfortunately, the funding model has not been reexamined in light of changes to general education requirements that were implemented starting with the incoming freshman class in the fall of 2010. An organizational problem exists because of the failure to examine the funding model to determine if changes are needed to support the new requirements structure.

This analysis will look at factors that should be used to determine an appropriate funding model that UMass can adopt. Data was gathered via a survey sent to ten peer institutions and examination of the institution websites to gather additional information on general education requirements. UMass data was obtained and analyzed to determine who is taking general classes and also who is offering said classes. Additional analysis was done on the use of teaching assistants and their roles as it pertains to general education classes.

An analysis of four possible alternatives is presented for consideration. In addition criteria are identified for analyzing the alternatives. The four criteria include meeting the needs of undergraduate students, ease of administration, meeting the needs of graduate students for both teaching experience and financial assistance and the ability to support special projects and initiatives.

- Alternative 1: status quo, central funding of a fixed number of teaching assistants in designated schools and colleges, is easily administered but does not offer any meaningful support for the identified objectives.
- Alternative 2: funding per student goes to the school or college that sponsors a student's major.
- Alternative 3: funding per seat provides that schools and colleges receive funding based on the number of students taught in classes offered through each academic organization.
- Alternative 4: distributed model where a percentage of funding, after certain administrative costs are covered, goes to schools and colleges based on the number of students in sponsored majors and the remaining funding goes to the academic organization offering classes.

After considering the alternatives in light of the four criteria, alternative four was chosen as most suitable to suit the evolving needs of UMass. This alternative provides funding to support the schools and colleges that sponsor majors as well as providing incentives to offer a sufficient quantity of classes to meet undergraduate student need for timely graduation. It is further expected that classes will meet student interests as departments will want to offer classes that attract students. The formulaic nature of the alternative, along with its ability to meet the unique needs of unaffiliated and honors students allows for ease of administration, reducing needed resources. While not guaranteed it is hoped that the funding for general education classes across all academic units will lead to increased opportunities for graduate students as well. Finally, by freeing up funding currently used for funding only select teaching assistant position, the central administration will have funds available for use in special projects and initiatives, specifically those being advocated by current best practices models.

THE PROBLEM AT THE UNIVERSITY OF MASSACHUSETTS AMHERST

The University of Massachusetts Amherst (UMass) incorporates general education requirements into the curriculum as an important part of undergraduate student education. General education requirements provide curriculum breadth that supplements the depth of study provided by classes that specifically support a student's declared major. The goal of the UMass general education program is stated in the purpose statement on the general education website.

> "The purpose of the General Education requirement is to stretch student minds, broaden their experiences, and prepare them for:
> - Their college experiences and subsequent professional training
> - Their careers and productive lives
> - Community engagement and informed citizenship
> - A diverse and rapidly changing world
> - A lifetime of learning"[1]

The current UMass general education funding model[2] did not change when a new curriculum was rolled out in the fall of 2010[3]. This failure to address possible funding changes based on the change of curriculum points to an organizational problem whereby one aspect of a complex system is changed without looking at the other areas that may need adjustments to meet changing needs. Any university is a complex organization with many constituencies including students, faculty, staff, administration, governing agencies, federal and state government. It is imperative that any all areas affected by a change be analyzed and necessary changes addressed to avoid possible conflicts and tensions.

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[1] (University of Massachusetts General Education Program 2009)

[2] The current will be discussed in further detail later in this analysis, specifically in the alternatives section.

[3] Starting with the Fall 2010 freshman class, a new set of general education requirements were implemented as part of an initiative to incorporate a new upper division three credit Integrative Experience into the curriculum. In order to add the new three credit class while still keeping the total general education requirement at 18 credits, changes were made in the Biological and Physical World (BPW) and the Social World (SW) categories. To meet the new requirements, many general education classes were changed from 3 to 4 credit hours per class. BPW requirements were changed from 3 courses worth 3 credits each to 2 courses worth 4 credits each. SW was changed from 6 courses totaling 18 credits to 4 courses totaling 16 credits. This new curriculum required that many classes be reformatted to raise the credit level from 3 to 4 credits by adding additional class requirements while not necessarily adding more meeting times to classes.

Funding and curriculum decisions are made using both a centralized and decentralized process. A centralized budget process determines the funding for the various academic and administrative units on campus but then each unit has a certain amount of discretion on allocating those funds. Schools and colleges within the university have a great deal of discretion on curriculum but still must address university requirements including the general education requirements for undergraduate students. There is a possible disconnect between expectations of the academic departments to deliver classes that adequately meet student requirements and the administrative areas responsible for determining funding for these departments.

UMass is separated into various schools and colleges in which programs fall. Each school and college offers classes that are specific their expertise (e.g. engineering classes are offered through the College of Engineering). Each school and college, however, is not charged with offering all the general education classes that their students would need to graduate. For example, the College of Engineering students need to be able to take some classes through the College of Humanities and Fine Arts. Thus, no school or college can successfully graduate students without the cooperation of other schools and colleges. Any funding model must ensure the continued cooperation between the academic units so that student needs are met in a timely manner.

This analysis will look at the background and issues involved in providing general education classes to students, propose alternative funding models and criteria to use to analyze the models and recommend a funding model to address the organizational failure.

BACKGROUND

The overarching question that should be examined before looking at data and making recommendations for a funding model for general education classes is that of "why are general

education classes included as part of the undergraduate curriculum and what makes them important?". This question is often posed by students (and others) when examining the graduation requirements for a specific major. Why do engineering students need to know about the arts and why do art majors need to know math? To help answer this question it is helpful to understand what is meant by a general education or breadth requirement and how it is determined. We will also look at recent history of education and how the curriculum has evolved to include these requirements.

While various arguments can be made as to why classes that expose students to a breadth of experiences can be made, one compelling reason is the idea of diversity and pluralism with the aim of developing an understanding of a pluralistic society as well as an awareness of one's actions.[4] Another is ensuring that students graduate with the skills and knowledge that they need to succeed in both their professional and personal life.

In examining general education requirements at an institution, there are two central questions that determine the institution specific requirements. These are what is to be taught and how is this decided? For each of these there are continuums along which decisions are made. For the "what" question, the continuum has at one end a full liberal arts education and at the other, a purely vocational education whereby a student only takes classes that give skills and knowledge in subjects directly related to the degree sought. An example of this would be a curriculum where engineering students only take classes in engineering, math and perhaps computer science or a business administration student only taking classes in management, marketing and accounting. The decision continuum has at one end schools and colleges determining all curriculum related matters for students under their purview with the other end of the spectrum being senior administration (i.e. Chancellor or Provost) making all curriculum decisions.

[4] (University of Massachusetts General Education Program 2009)

On these continuums, UMass Amherst falls somewhere in the middle. Degree requirements for students are based both on specific requirements for a particular major plus additional, university requirements, including a general education curriculum. The general education requirements includes both specific skills such as math and writing fluency as well as incorporating breadth requirements such as arts and humanities, history and diversity.

The general education requirements are determined by a council made of faculty and administration representatives and not specific to major, department, school or college. Each student receiving a Bachelors degree from UMass Amherst must fulfill these requirements. The universal nature of the requirements leads to tension because no student can meet all requirements solely within one school or college, necessitating cooperation among the academic units.

General Education History

Stevens traces back some of the origins to the 19th century when classical and religious curriculums first started to include electives instead of just a proscribed curriculum.[5] In the early 1900's we see a continued protest against the so-called Germanic curriculum model of higher education, calling for the addition of survey classes. These early protests set the stage for what many scholars feel are some of the defining moments in the modern general education requirements. The ability for student to choose electives and design their own curriculum was advocated by Charles William Eliot, president of Harvard from 1869-1909.[6] This was certainly revolutionary thinking for the time, interestingly mirroring the philosophy behind various modern non-traditional colleges such as Hampshire whereby students design their 'major' and programs such as the Bachelors Degree in Individual Concentration at UMass.

[5] (Stevens 2001)
[6] (Carnochan 1993)

Two universities led the movement in the early to mid 1900's, Chicago and Columbia. Hutchins, president and chancellor of the University of Chicago from 1929-1951, is responsible for instituting a general education curriculum in 1931 with four divisions: humanities, social sciences, biological sciences and physical sciences.[7] Columbia's Contemporary Civilizations course was also a significant influence on the general education evolution as well, often cited as one of the first to bring an international perspective to curriculum.[8]

The political climate in America and the world can be seen as driving some of the change as well[9]. World War I and World War II added to the urgency of understanding perspectives beyond the United State's borders. The GI Bill resulted in a large influx of veterans to campuses, bringing with them life experiences that were far beyond the traditional college aged student. The civil rights and women's movements added a diversity to campuses that was soon reflected in curriculum.

It is important to note that not everyone agreed with this curricular evolution. Cited above were examples of using a system of electives to bring breadth to learning. Another curriculum format is known as "Great Books".[10] This format involves a reading list designed to bring a broad perspective on learning. Others argue that a general education curriculum has negative aspects citing issues with students not having a cohesive education due to choices, issues of employability when comparing a more vocational type education versus liberal arts based curriculum and even arguing that the increased faculty needed to offer choice results in unnecessary overhead.[11]

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[7] (Stevens 2001)
[8] (Carnochan 1993, Nelson 2000, Stevens 2001)
[9] (Thelin 2004)
[10] (Carnochan 1993, Stevens 2001)
[11] (American Council of Trustees and Alumni 2010, Carnochan 1993, Nelson 2000, Suskie and Eckstein 1983)

General education curriculum continues to evolve even today. Over the last thirty years many studies have been published and there is even a journal devoted solely to general education topics, Journal of General Education. Still being discussed is not only curriculum content but also how it should be delivered and assessed. In 1989, Cheney and the National Endowment for the Arts released a report detailing a model curriculum.[12] The report spoke of the need for senior faculty to teach some of the classes in order to engage and excite students. Henscheid, et al speak of the importance of senior faculty teaching general education curriculum.[13] O'Hanlon and Warner both speak to the need of a clear understanding of the goals and objectives of a general education curriculum and how they relate to course content, and this understanding as being important when assessing the effectiveness of classes while Anderson et al spoke of either the inability or lack of interest by some faculty to understand the objectives.[14]

Several authors also spoke of some of the barriers with curriculum delivery including research demands at large institutions diminishing the role of teaching, students not having sufficient background for classes and even a lack of administrative support.[15] Tetrault and Rhodes speak of the continued pedagogical debate of imparting knowledge versus learning as well as the potential tension caused by a feeling of loss of control over curriculum by faculty.[16]

Several studies have looked at not only what makes up the general education curriculum at various institutions but also have put forth some potential suggestions and models. Warner and Koepel's study showed not only how general education varies at different schools but also broke it down based on tiers and type of institution (e.g. research/masters/liberal arts).[17] They

[12] (Cheney 1989)
[13] (Henscheid, O'Rourke and Williams 2009)
[14] (O'Hanlon 2007, Warner and Koeppel 2009, Anderson, et al. 2007)
[15] (Orillion 2009)
[16] (Tetreault and Rhodes 2004)
[17] (Warner and Koeppel 2009)

articulated a concern that having a large number of choices may not always meet the objectives of the curriculum as it allows students to stay only within certain topics, thereby mitigating the breadth objective. The 1998 Boyer Commission report advocated a full model of undergraduate education that covered the full spectrum of undergraduate education including general education requirements.[18] This report advocated for, among other things, the building of communication skills through course work as well as using technology and a capstone experience to enhance the learning environment. The report also proposed how to effectively educate graduate students to be effective classroom teachers as well as calling for rewarding faculty for effective teaching.

Although the above articles and reports only start to touch upon current trends and emerging practices, several commonalities emerge. These include: senior faculty teach classes, cross-disciplinary classes, capstone experiences, communication skills and the importance of tying the goals and objectives of a broad curriculum to actual course content. As UMass looks to define a funding model for its general education classes it is important that we also ensure that we are incorporating best practices and emerging trends.

METHODS & SAMPLE CHARACTERISTICS

To inform the creation of alternatives and a recommendation for future funding of UMass Amherst general education classes, data was gathered using three different methods. A survey was used to poll peer institutions about their general education practices along with opinions and reasons for both the institution's general education requirements and the funding model employed. The peer institution websites were used to gather more specifics on the general education requirements as well as information on the governance structure for changes. Five years of quantitative data was collected from the UMass student information system on students, instructors including teaching assistants and classes taught.

[18] (Boyer Commission of Educating Undergraduates in the Research University 1998)

Before creating the survey, a meeting was held with the client to identify the peer institutions to be surveyed as well as discussing the type of information to be gathered. Ten peer institutions were identified using information from UMass upper administration. The ten institutions (appendix A) are all large public research institutions, similar in scope and size to UMass Amherst. Next, contacts were identified using information gleaned from their websites. Care was taken to identify a contact that was responsible for undergraduate education.

A ten question questionnaire was created (appendix B) and sent to the contacts identified above via email. A short email identifying myself as a graduate student working on my capstone and a bit about the project introduced the questionnaire. Initially, responses were received from four of the institutions. A follow up was sent out two weeks later which resulted in one additional response.

Additionally, the institution websites were mined for information on general education requirements. Information was grouped into six categories: requirements, restrictions on using test or transfer credit to meet requirements, how requirements are the same or different across majors or programs, approval process, funding and when requirements were last changed. As several of the institutions had requirements that varied based on school/college and/or major, analysis was done based on commonalities where possible and using the information that seemed most appropriate (e.g. for Rutgers the newest curriculum information was in the College of Arts and Sciences).

Quantitative data was collected on UMass Amherst classes by writing queries to access PeopleSoft (SPIRE) information. Information was collected for five years of classes, from Fall 2007 through Spring 2012. Headcounts was taken from the Office of Institutional Research (OIR) website.

The first set of data involved students and the general education classes they took. One shortcoming of the data is that it is not possible to determine if a student is actually using a class as a general education requirement as opposed to either a required or elective class for their major. To try and account for this, the data was summarized by the school/college that owns the student within the school/college that owns the class. With this information it is still possible to analyze cross school/college offerings. Data was also collected on all undergraduate and 500 level class offerings to allow for analyzing general education classes as part of the whole.

The second type of quantitative data gathering was to look at the number of teaching assistants in general education classes over the same five year period. For this data, both graded and non-graded sections of classes were downloaded as often the TAs are the main instructors for non-graded sections such as discussions and labs.

All of the data needed recoding to account for the major campus reorganization that occurred over the summer of 2010. At that time, two existing colleges, Natural Sciences and Math (NSM) and Natural Resources & Environment (NRE), were combined into a new College of Natural Sciences (CNS). In addition, several departments were also relocated within the academic structure. Resource Economics was moved to the Isenberg School of Management (ISOM), Psychology was moved into the new CNS and Landscape Architecture & Regional Planning moved to the College of Social and Behavioral Sciences. Student and class information was changed to be consistent with the new structure.

Recoding was done on students in several majors that did not fall within any of the main schools and colleges, including the students with an individual concentration major, University Without Walls students and general studies majors. All were combined with the students who fall in the undeclared/pre-major category. This follows the norms set by OIR.

FINDINGS

The research findings fall into several key areas. The first area that will be discussed is how UMass and the peer institutions have structured their general education requirements and how they are delivered. The second area will be to look at UMass data to examine who delivers versus who consumes the general education classes. The third area will be to look at the utilization of teaching assistants for general education instruction at UMass.

General Education Requirements

When examining the general education requirements at the eleven universities studied, one large finding is the isomorphic nature of the requirements and governance structure across the institutions. With few exceptions, the requirements were rolled out across all majors, regardless of the school/college structure of the university. Even, when there was some variance either by major or school/college, the difference was small.

Most universities appear to have defined their general education requirements based on learning objectives and skill acquisitions. Using these as a framework, categories (i.e. humanities, writing) are defined that encompass one or more of the objectives. Once this is done, specific courses are designated within the categories, thus creating a general education requirement curriculum. The UMass learning objectives and curriculum are fairly typical within the studied group.

Terminology varies by institution with breadth requirements, content areas, skill attainment, learning outcomes, curriculum, distributive studies all being used to essentially convey the same idea. That being said, by looking closely at the requirements it is still possible to see similarities and differences. Commonalities include communication (written and oral), mathematics, analytical reasoning, diversity, pluralism, social sciences, history and the natural

and/or physical sciences. There are also small differences in curriculum delivery with some institution requirements offered as distinct requirements while another institution folds the requirement in as an objective[19]. Other main requirement differences were in the area of foreign languages[20] and fine arts[21].

Governance structure was also examined to aid in the understanding of how curriculum changes are made. The approval process varied but most had a process similar to UMass where there is some type of committee or subcommittee charged with general education designations as a first step and then going up through an approval process that includes faculty approval usually within a faculty senate format. Stony Brook University has a somewhat unique circumstance whereby general education classes must also be approved and added to the state university system curriculum[22]. How a course is added to requirements also varies depending on whether or not the institution has the same or different requirements for majors.

UMass General Education Data

To inform the general education funding model decisions at UMass Amherst it is important to look at who offers versus who consumes the current general education offerings. First we will look at general education offerings from the offerings side.

[19] Information and technology literacy are stated as bullets under UMass's Critical Thinking and Communication learning outcomes. Looking at the curriculum, though, these are not explicitly addressed as distinct areas but are instead expected to be folded into course offerings. University of Connecticut explicitly includes an information literacy component into its freshman writing component. Rutgers requires that students take at least three credits in information technology and research. Stony Brook and Indiana University are similar to UMass in that information management (computer) skills are required but are built into the courses themselves. Iowa State University offers a different type of information literacy in the form of a half-credit class in library instruction that has been incorporated into the requirements of many of their programs.

[20] California, Connecticut, Stony Brook

[21] Many schools such as UMass have an area covering arts and humanities but several including University of Delaware, Stony Brook University and University of California, Santa Barbara include specific requirements for the creative arts.

[22] (Stony Brook University 2012)

In determining what classes, how many classes and how large the classes must be, there are two main factors, the general education requirements themselves and the number of students who need to satisfy the requirements. As previously discussed, there has been a recent change in requirements starting with the Fall 2010 incoming freshman class. At the same time that these changes were implemented, the campus also started an initiative to increase undergraduate enrollment. Incoming freshman enrollment increased from 4248 in 2007 to 4579 in 2011, while overall student counts increased from 19,120 to 20,562[23].

Class offerings can be looked at using two different types of units. The first is to count each class as one unit; the second is to look at the number of credits that a class represents. Tables 1 and 2 illustrate the difference between the percentages of credit hours offered by each academic group versus the number of classes offered[24]. These tables only show one term, Spring 2012 but are illustrative of the findings from the full studied five year time frame. Over the time frame, the percentages of both classes and credit hours remained fairly stable. Looking at credit hours over the five years, CNS delivers 42 to 45% of the credit hours each term, HFA 25-30% and SBS 16-19%. The percentage of classes shows a similar pattern. More interesting is the difference in percentages when looking at credit hours versus number of classes. Using Spring 2012 as an example, CNS delivered 44% of the credit hours but only 26% of the classes while HFA delivered only 26% of the credits hours but this equated to 49% of the classes. Several factors explain this including the number of students taught per class and the number of credit hours per class.

[23] (University of Massachusetts Office of Institutional Research 2012)

[24] Academic group is the school or college offering the class for most classes. See Appendix C for abbreviations and their meanings. Commonwealth Honors College classes are broken out. There are also other classes that are not offered via any of those academic groups (e.g. military science). These are categorized together into 'Other'.

In looking at possible funding models for general education classes it is important to understand who is taking the classes. Table 3 shows for each academic group, the number of credits delivered for each term in the studied period. The category of 'Other' classes shows the classes that do not fall under one of the schools, colleges or Commonwealth Honors College (CHC). This table shows that three colleges, Natural Sciences (CNS), Humanities and Fine Arts (HFA), and Social and Behavioral Sciences (SBS), offer the largest number of general education credit hours, Nursing and Engineering offer very few and the other areas, including CHC, are offering a small number as well.

Tables 4-5 show the general educations credits supplied by the three colleges that offer the largest number of general education credit hours: CNS, HFA and SBS, broken down by the academic organization of the student taking the class for fall 2011. Only one term is shown as an illustration as the percentages have remained fairly stable over the studied period. Fall is chosen rather than spring as there are generally a higher number of general education classes offered in the fall terms. The other category of students in these tables includes undeclared, Bachelor of Individual Concentration, University Without Walls and Bachelor of General Studies students. One shortcoming of the data available is in determining when a general education class is being taken for general education credit versus as a major requirement or elective for a student. For purposes of this study it is enough to know that each of the colleges is offering many general education classes to students outside of their majors without having to know precisely how many are for general education requirements.

Utilization of Teaching Assistants

Currently, UMass provides some additional funding for general education classes in the form of Teaching Assistant compensation. To understand how teaching assistants are used in the

classrooms it is important to have some understanding of the various instruction roles assigned within classes. The main categories are primary instructor (PI), secondary instructor (SI), section assistant (SA), teaching assistant (TA) and SPARK/Moodle[25] assistant (LMS).[26] Table 7 show the gross number of teaching assistants and the breakdown by instructor role over the study period for general education classes. What is quickly apparent is the increasing number of teaching assistants employed and the increase in use of teaching assistants as primary instructors. The use of TA's as primary instructors has increased by 1000% while the overall employment has increased by more than 3 times. So, not only is there greater number of teaching assistants employed, but they are taking on roles with greater responsibilities.

TA's traditionally have been employed as the instructor of discussion and lab sections of classes that are associated with lecture sections. Often the lecture sections have many students and the discussion and lab sections are broken into multiple sections with fewer students per section. CNS, HFA and SBS general education classes for the current academic year are broken down by role and component in tables 8 and 9. Looking at these two terms, teaching assistants are clearly seen taking on responsibility for teaching lecture sections of classes, especially in the College of Humanities and Fine Arts.

SUMMARY OF CRITERIA

There are four essential criteria that will be considered in evaluating each of the alternatives presented below: 1) undergraduate students needs; 2) ease of administration; 3) graduate student teaching experience and funding and 4) the degree to which the model allows for flexible central funding for special projects and initiatives. These are discussed in a ranked order of importance.

[25] Two of the learning management systems currently used at UMass Amherst. SPARK is the UMass name for the Blackboard/WebCT LMS used.
[26] Note that the SI role is no longer a sanctioned role. A discussion about each role can be found at http://www.umass.edu/oapa/ias/ias_guide_instruct_role.pdf.

The first criterion is meeting undergraduate student needs for meeting general education requirements. To meet student general education requirements it is imperative that a sufficient number of classes with a sufficient number of seats be available to meet undergraduate needs. These needs can be defined in two ways. As discussed previously, UMass Amherst currently offers students a wide range of classes to meet general education requirements as opposed to a more proscribed general education curriculum. This decision to offer a choice type curriculum coupled with multiple requirement areas requires that a large number of general education classes be offered each term in order to meet the second part of student need, that of timely degree attainment.

The second criterion is ease of administration. Complicated budgetary models entail a lot of time and effort on an on-going basis and can represent a planning problem. The more complex a model is, the more time and human resources are needed during each budget cycle. An easily administered funding model will have a formulaic component for determining the main part of the funding. This type of model will lessen the amount of resources, both human and time, needed to create a budget during each budget cycle. In addition, the unpredictability of funding from year to year at UMass, leads to the needs for a model that can still be easily administered in both high funding and lower funding years. Another aspect of this criterion is how well an alternative can be used to deal with the students who are not affiliated with a school or college (e.g. undeclared majors and BDIC majors) but are instead serviced by the Undergraduate Advising& Learning Communities (UAALC) as well as provide funding for Commonwealth Honors College (CHC).

The third criterion is that of meeting the needs of graduate students for teaching experience and adequate teaching stipends. As was shown in the findings, UMass employs a

large number of graduate students as teaching assistants. This has a dual benefit in not only aiding UMass's ability to deliver curriculum to students but also is important for the graduate students as it provides teaching experience as well as financial assistance in the form of waivers, benefits and wages. As some graduate students have career aspirations of themselves becoming professors, it is important that opportunities exist for them to be able to teach while pursuing their education as teaching experience will be an important part of obtaining positions in education settings. Offering higher teaching stipends for graduate students has been identified as one part of the strategic plan to increase the number of graduate students at UMass.[27]

The final criterion is the ability to have central funding available for special projects and initiatives. Even if a funding model gives decentralized budget authority and autonomy to academic units, there will still be additional funding needs that are outside of the standard budgetary items. Discretionary funding for special projects and initiatives has become increasingly important to the ability of UMass to be able to compete not only in a regional and national market but increasingly in the international arena for both students and faculty. It is important to be able to incorporate best and emerging practices as well as new technology into the curriculum as well as research opportunities. Examples of these include cross disciplinary offerings, lower division classes taught by senior level faculty and funding to explore new pedagogies such as the "flipped" classroom and use of the new team based learning classrooms.

POLICY ALTERNATIVES

Four funding model alternatives are discussed below. The first is the status quo. It is acknowledged that the other three are not highly distinct. The models proposed all support the current UMass model whereby students are able to take general education classes to meet their requirements across schools and departments coupled with a centralized budget model.

[27] (University of Massachusetts Amherst 2010)

Alternative 1: Status Quo – centralized funding of a fixed number of teaching assistants in certain school/colleges only

Currently, there is no separate funding structure for general education classes at UMass other than a fixed number of TA positions funded through the Provost office[28]. The funding is limited to certain school/colleges. The funding model has not significantly changed since its initial implementation other than adjusting for changes in the TA stipends. It is important to note that this is the only proposed alternative that deals only with general education classes.

Alternative 2: Tuition and fees allocated by student

In this alternative the tuition and fees collected from students is transferred to the school or college that sponsors the student's major. In the case of students with multiple majors and algorithm will be developed to determine an appropriate percentage for each school or college if the majors cross boundaries. This alternative goes beyond the funding of just general education classes and looks to one aspect of overall funding for schools and colleges. It is also important to note that tuition and fees are not the only source of revenue for the university. Other revenue could also be allocated via this model, if desired.

Alternative 3: Tuition and fees are allocated per seats taught

This alternative allocates funding based on the number of students taught in classes[29]. The funding goes to the school or college that offers the class. Once again this model is not looking solely at general education classes but at classes as a whole although it could be used just for general education funding. This model is based on tuition and fees but is scalable to other sources of revenue, subject to the caveats mentioned in alternative 2.

Alternative 4: Distributed funding model

[28] Rutgers reported a similar model for adjuncts and TAs for their writing program and math.
[29] This model is currently being used by Indiana University, Bloomington.

The alternative is a hybrid of alternatives two and three. In this model, schools, colleges and other units will receive funding through a mixed distribution process. Some funding will be given to central administrative units to meet financial aid and other administrative needs. Then funding will be distributed based on both seats taught and students sponsored. Each school, college or other unit that "owns" students will receive a percentage of the revenue generated by that student. Then remaining revenue will be distributed based on seats taught within units. There are several well-know examples of this kind of funding. The first is at Iowa State University, one of the identified peer institutions. Their Resource Distribution model outlines a plan for distributing a percentage of tuition revenue based on program enrollment and a separate percentage based on credit hour enrollment with the revenue being first discounted by a percentage given to the financial aid office for central distribution.[30] A second model is employed by Kent State University (KCU). KCU uses a Responsibility Center Management (RCM) model.[31] This model details revenue types and how the revenue will be generated. For our purposes, what they classify as instructional fee revenues mostly closely match UMass's tuition and fee revenue. At KCU, 20% of this revenue goes to the academic unit of the student's major and 80% is distributed based on class enrollments. The proposal for alternative four would be a similar model to those employed by Iowa and KCU, tailored to fit the needs of UMASS.

ANALYSIS OF POLICY ALTERNATIVES

The next step in arriving at a recommendation of one of the alternatives is to analyze each alternative to see how well each meets the criteria defined above. See Appendix D for a summarization of each alternative/criteria combination. A more in depth look at each alternative/criteria is done below.

[30] (Iowa State University Budget and Planning 2011)
[31] (Kent State University 2009)

Alternative 1: Status Quo – centralized funding of a fixed number of teaching assistants in certain school/colleges only

In looking at this alternative based on criteria, this alternative ranges from poor to good. Starting with the first criterion, undergraduate student needs, this alternative only rates a fair. The current funding for teaching assistants only goes to certain schools and colleges so only they have any incentive to offer general education classes for undergraduate students. Additionally, the funding is not tied to any particular number of class offerings or seats nor tied necessarily based on offerings to students outside of the school or college's students.

Where this alternative does better is in ease of administration. As it is a simple formula based on a specific quantity the only yearly adjustments are in determining the amount per TA that is funded. What is not clear is what criteria are used for determining what units receive funding and for how many teaching assistants. It also lacks easy adjustability for budgetary changes. This alternative also offers no provisions for UA&LC or CHC.

This alternative receives a fair rating for meeting graduate student needs. While it does provide both teaching opportunities and stipends, it is limited to only certain schools and colleges. There are also no provisions to tie it to certain types of classes and teaching experiences.

The final criterion is the provision for flexible funding for special projects and initiatives. This alternative received a fair rating for this criterion. This alternative used the available central funding for only one initiative, funding general education class teaching assistants, so has no flexibility built into it for other projects. Funding that could be used for innovative programs that align with best practices and emerging trends in the general education arena is not available using this model.

Alternative 2: Tuition and fees per student

Alternative 2 receives a poor rating for meeting undergraduate needs. Schools and colleges will receive funding tied solely to the number of students in their major. There is no incentive to offer any classes to students outside of their major, including general education classes. While this is a highly unlikely scenario because, at this time, no school or college offers all classes that a student would need to graduate because of general education requirements, there is still no incentive to offer large number of classes and/or seats for other students.

This model rates fair in ease of administration. For the students who are affiliated with only one major, determining how to distribute the revenue can be done using a simple formula for affiliated students, including an allocation for CHC affiliated students. There are several major complications with determining distribution. If all funding for students follow their major, UA&LC would receive sizable funding but as the area offers few classes it is unclear how open schools and colleges will be to letting these students into classes in their departments. Either a separate funding structure would need to be determined for this group of students or a wholesale change in the philosophy for allowing undeclared students to not be affiliated with a school or college will need to be adopted. The second complication is that many students are pursuing double majors, dual degrees, minors and certificates that are outside of their primary major school or college. Students also change majors often and at no set time during each term. Determining how to deal with these issues in a consistent, equitable manner will involve a large amount of both time and human resources.

This alternative only receives a poor rating for meeting graduate student needs. As there is no clear incentive to offer any quantity of general education classes, there is no clear demand for use of teaching assistants. Departments could still decide to employ graduate students for

teaching classes but with less incentive to offer classes there will be less need for instructors of any kind.

This model receives a fair rating for the flexible funding criterion. As there is not central funding available with this model, the funding of special projects and initiatives will be depending on the priorities and needs of each school and college. This may lessen the incentive to do cross discipline projects. Another danger is that for the smaller schools and colleges there may not be enough funding to allow for special projects as all funding could be absorbed into the normal operating budget. The plus side of this model is that it would still allow the schools and colleges to see outside funding resources to be used at will, only constrained by requirements placed by the funder and regulatory restrictions.

Alternative 3: Tuition and fees are allocated based on seats taught

This alternative rates an excellent in meeting undergraduate student needs. Departments will have incentive to offer a quantity of classes which will help students be able to get the general education classes they need for timely degree completion. While there is no sure way of ensuring quality of any particular offering via this method, the concept of students voting with their feet comes into play. Students will gravitate to classes that get positive reviews, are offered at attractive time and/or are of interest to a student based on their academic pursuit. Current oversight of classes by academic and administrative areas should also help low quality classes from being offered as well.

This alternative receives a rating of fair for ease of administration. Determining compensation by seats taught is noncomplex once an amount is determined. Complexity arises when determining how to fund areas such as UA&LC and CHC that have administrative and academic responsibility for students but do not offer many classes. This alternative is less

complex to administer than alternative two, thus giving it a higher rating. Data capture can be tied to the current census date used in other processes, generally the Office of Institutional Research census date which is several days after the add/drop registration period ends. It also avoids the complexity of dual majors, dual degrees and minors as student affiliation is not part of the model.

This model receives a fair rating for meeting graduate student needs. While there are incentives to offer classes in this model which may lead to more teaching assistant opportunities, there is no tie to how much instruction will be offered by teaching assistants. Expanded class offering could instead be taught by tenure track faculty, instructors or adjuncts. There is also no provision for the type of teaching experience. TAs could be utilized only for lower division classes, large lecture type classes or any other configuration which may not fit within a student's career aspirations.

This model also receives the same fair rating for the flexible funding criterion as alternative three. As there is not central funding available with this model, the funding of special projects and initiatives will be depending on the priorities and needs of each school and college. This may lessen the incentive to do cross discipline projects. Another danger is that for the smaller schools and colleges there may not be enough funding to allow for special projects as all funding could be absorbed into the normal operating budget. The plus side of this model is that it would still allow the schools and colleges to see outside funding resources to be used at will, only constrained by requirements placed by the funder and regulatory restrictions.

Alternative 4: Distributed funding model

This alternative also receives an excellent rating for meeting undergraduate student needs for the same reasons discussed in alternative 3. While the funding per seat will be less because

some funding is diverted to the sponsoring school/college, it is expected that this offset will not have a major impact on offering as the per student funding will be able to be used for offering subjects specific to majors in the school/college.

For ease of administration, this alternative also received an excellent. After the initial large effort to come up with a plan that will work well for UMass, a plan that is formulaic and objective will be created. This will allow for smaller amount of time and human resources to be used during each budget cycle. The added benefit is that the budget plan adjusts itself according to revenue and enrollment fluctuations. This alternative will sufficiently deal with both UA&LC and CHC as they will also receive funding for the students they administer as well as for any classes offered. This alternative also only receives a fair for meeting graduate student needs for the same reasons that are articulated in alternative three.

In looking at the fourth criteria, this alternative rates a good. The main issue will be the amount of funding that can be made available to support central funding of special projects and initiatives. Schools and colleges will still be able to use outside funding resources for their own special projects but this alternative will allow for central funding of cross discipline and other special projects.

PROJECTED TRADE-OFFS AMONG THE PROPOSED ALTERNATIVES

The evaluation of alternative (Appendix D) shows clearly that alternative four has the highest rating when looking at the identified criteria. Based on the evaluation, none of the proposed alternatives can be outright dismissed as none had an overall poor rating.

Two of the alternatives, funding by seat and distributed funding, received an excellent rating. In both cases it is expected that a sufficient quantity of classes will be offered with these models to ensure that students have enough classes to allow for timely degree completion.

Neither have a built-in guarantee of variety or high quality but the ability of students to choose from a wide variety of classes, coupled with academic and administrative oversight, help to alleviate this concern.

The second ranked criterion, ease of administration, was ranked high for both alternative one and alternative four. Alternative four received a higher ranking due to its ability to deal with the special populations discussed above. For meeting graduate student needs, none of the alternatives fared well. While funding by seat and the distributed model are projected to provide a quantity of classes, neither model ties any of the offerings back to employment of graduate students as teaching assistants. Additionally, neither have provisions for what type of instruction teaching assistants will provide.

Only alternative four is seen as being able to provide funding for special projects and initiatives but even so only received a good rating as funding will be tied to availability of funding, currently a scarce resource. Alternatives two and three will have flexibility to allow the funding of projects but as funding will not be teased out for specific purposes, there is no guarantee.

POLICY RECOMMENDATION

My recommendation is that UMass look to adopting a revenue distribution model that is based on splitting revenue based on both program and class enrollments. This type of model will address many needs of the university. It will supply programs with operating capital based on number of students while also recognizing that some academic units are teaching many students outside of their domain by providing funding for class offerings.

It is acknowledged that embarking on a large funding change will meet resistance on many fronts. The amount of work that will be needed to arrive at a solution that is perceived as

fair and equitable, transparent, sufficient and sustainable will entail a collaborative, good-faith effort from administration, faculty and academic leadership. A distributed model, though large in resources during implementation, should evolve to an easily managed system that will be sustained through budgetary and enrollment fluctuations without major reworking and extensive negotiations.

It is also recommended that as part of rolling out a new funding model, attention is paid to the needs of graduate students, specifically in terms of their role as teaching assistants. To attract high-caliber graduate students we must be able to offer attractive opportunities. As was seen in the data analysis, TAs play a significant role in the delivery of classes at UMass. Additionally, many of these teaching assistants represent the faculty of the future. With this in mind it is important that any funding model ensure that teaching assistants are employed to not only meet the UMass teaching needs but also that the teaching done matches the educational needs of the graduate students.

The final part of the recommendation is that sufficient funding be set aside to allow for the funding of special projects and initiatives including cross-disciplinary classes, incentives for senior faculty to offer lower division classes and to provide training and support for integration of new technologies and pedagogy in classes. It is easy during times of limited resources to only look to meet the current, urgent needs but we must be willing to invest in the future is we are to move UMass toward its goal of continued and growing excellence in all areas.

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Appendix A

Peer Institutions

Indiana University
Iowa State University
Rutgers Stony Brook University
Stony Brook University
University of California, Santa Barbara
University of Colorado, Boulder
University of Connecticut
University of Delaware
University of Maryland
University of Nebraska, Lincoln Park

Appendix B

General Education Capstone Questionnaire

Thank you for taking the time to help with my capstone research. In the questions below I use the term 'general education' to refer to those undergraduate requirements that are outside of specific requirements for a major, intended to add breadth to student education. Please feel free to use terminology specific to your institution.

Institution:

Your name and title:

1. Do all undergraduate students at your institution have to fulfill the same general education requirements? If not, how does it vary (e.g. campus, college, school or major level)?

2. What terminology is used at your institution to denote these requirements?

3. When was the last time any changes were made in general education requirements at your institution? Please describe.

4. What was the primary reason or reasons changes were made?

5. Are there are any changes either currently being implemented or proposed? Please describe?

6. Does your institution have a requirement that all areas must offer classes that meet general education requirements? If so, is it at the campus, college/school, department or other level? Are these classes open to students in other units?

7. Please describe the funding model employed for general education requirements. (E.g. central office funds teaching assistants, reimbursement based on offered seats, reimbursement offered based on actual numbers.) If the model is centralized, at what level (system, campus, college)?

8. When was the last time the funding model changed? What was the impetus for the change (e.g. new general education requirements, increased cost of offering)?

9. Do you anticipate changing your funding model in the near future? If so, what is the impetus for change?

10. Please add any additional information or comments here.

Appendix C

Abbreviations

CNS – College of Natural Sciences
COMWL – Commonwealth Honors College
EDUC – School of Education
ENGIN – College of Engineering
HFA – College of Humanities and Fine Arts
ISOM – Isenberg School of Management
NURSG – School of Nursing
PH&HS – School of Public Health and Health Sciences
PUBHL – School of Public Health and Health Sciences
SBS – College of Social and Behavioral Sciences

APPENDIX D – SUMMARY OF OUTCOMES FOR PROPOSED ALTERNATIVES				
ALTERNATIVES →	Additional funding for teaching assistants (Status quo)	Funding by student	Funding by seat	Distributed funding
CRITERIA ↓				
Undergraduate student needs	Fair • Only recipients have incentives to offer classes	Poor • No incentive to offer general education classes	Excellent • Incentive to offer quantity of classes • Incentive to offer classes attractive to students	Excellent • Incentive to offer quantity of classes • Incentive to offer classes attractive to students
Ease of administration	Good • Formulaic • Low overhead • No provision for UA&LC and CHC	Fair • Partially formulaic • Separate budgeting for UA&LC and CHC	Fair • Partially formulaic • Separate budgeting for UA&LC and CHC	Excellent • Formulaic • UA&LC and CHC provision • Sustainable through budgetary changes
Graduate student needs	Good • Provides TA stipends • Not all schools/colleges included	Poor • No incentive to hire graduate students as TAs	Fair • More classes may lead to more TAs • Teaching experience may be mixed	Fair • More classes may lead to more TAs • Teaching experience may be mixed
Flexible funding for special projects and initiatives	Poor • Funding available only for one use	Fair • School/College dependent • Schools/Colleges free to use outside resources	Fair • School/College dependent • Schools/Colleges free to use outside resources	Good • Will depend on amount of funding available • Funding not specific for one use • Schools/Colleges free to use outside resources

Tables

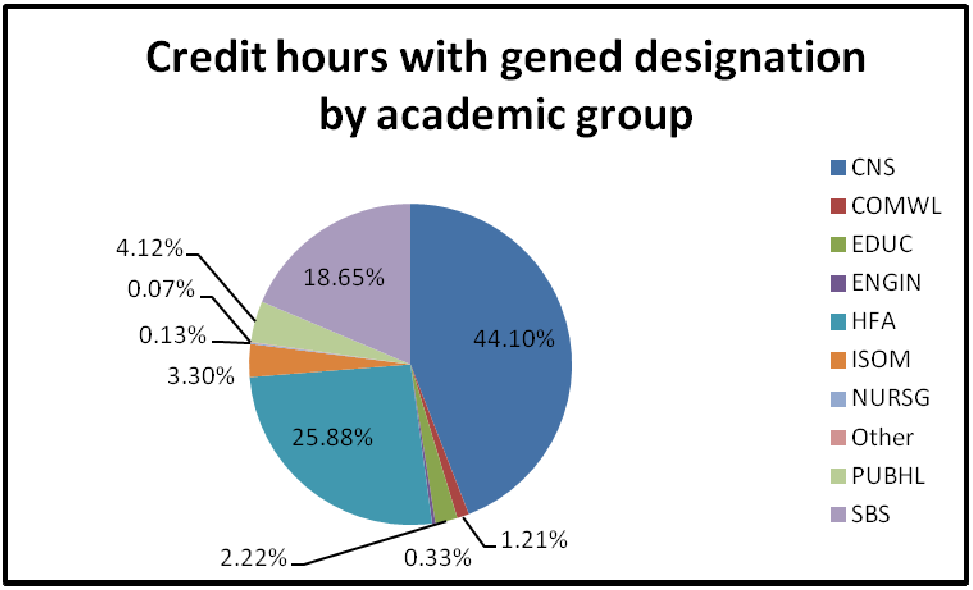

Table 1 – this table illustrates, for the spring 2012 term, the percentage of general education credit hours provided by academic group. The total number of credit hours is 147,088.

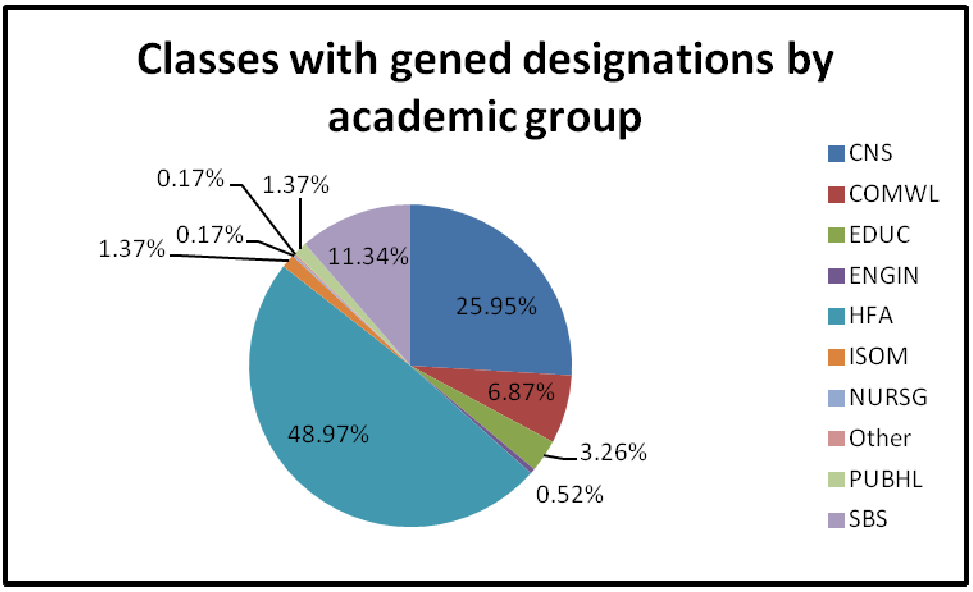

Table 2 – this table illustrates, for the spring 2012 term, the percentage of general education classes provided by academic group. The total number of classes is 582.

Table 3-6 – Breakdown of general education credits taken within each academic group (users) by academic group (providers). Other classes include any classes offered outside of either a school/college or Commonwealth Honors College. The other student category includes undeclared, BDIC, UWW and BGS students.

Academic Group	F2007	S2008	F2008	S2009	F2009	S2010	F2010	S2011	F2011	S2012
CNS	59903	53739	61191	55187	62900	55834	67934	63632	72491	64863
COMWL	1514	1588	2093	1516	1477	1105	2099	1367	2877	1773
EDUC	2073	1995	1986	2409	1950	2424	2770	3221	2775	3261
ENGIN	0	198	0	444	0	435	0	279	0	490
HFA	36980	36124	38245	35102	39513	35508	43725	40231	43450	38069
ISOM	3957	3552	3849	3615	4374	3666	4547	4761	4742	4848
NURSNG	192	168	105	261	0	174	0	183	0	198
Other	213	312	168	261	322	84	185	93	222	105
PHHS	4842	4833	4761	4662	4710	4764	7927	6140	6688	6056
SBS	26078	20066	24468	22511	24785	20980	30568	25422	31223	27425

Table 3 - total number of general education credits provided by each academic organization. Details on three highlighted colleges are shown in tables 4-6.

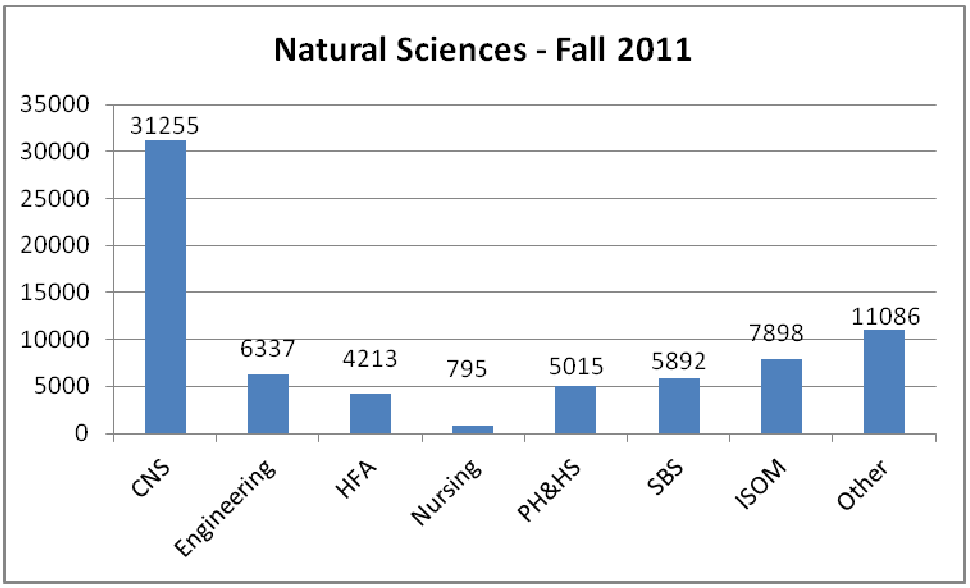

Table 4 – this table shows the breakdown by school/college of the students taking the 72,491 general education credit hours provided by the College of Natural Sciences in fall 2011.

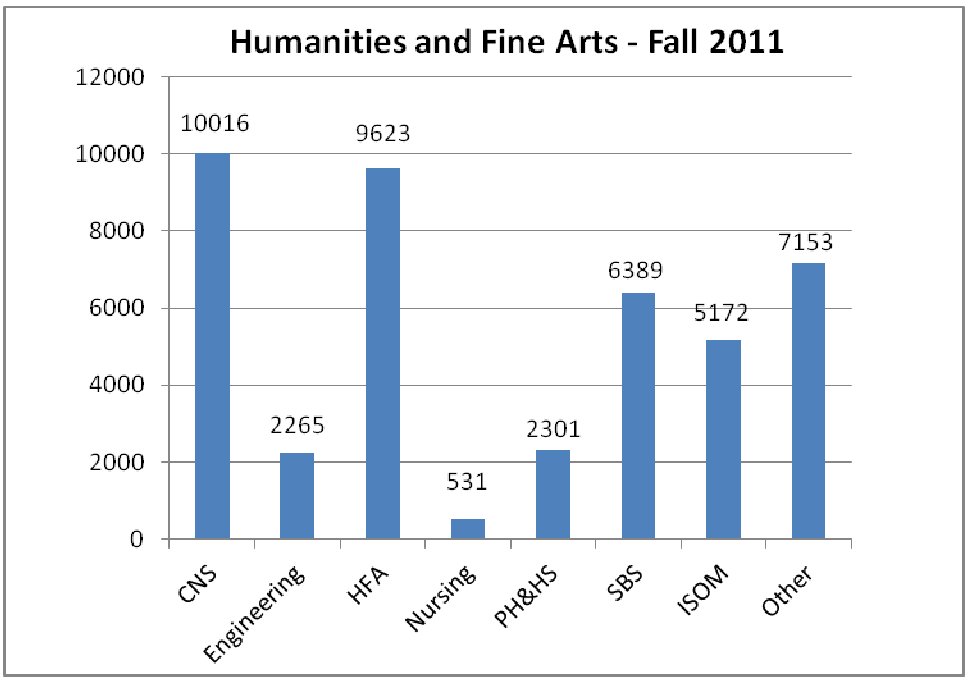

Table 5 – this table shows the breakdown by school/college of the students taking the 43,450 general education credit hours provided by the College of Humanities and Fine Arts in fall 2011.

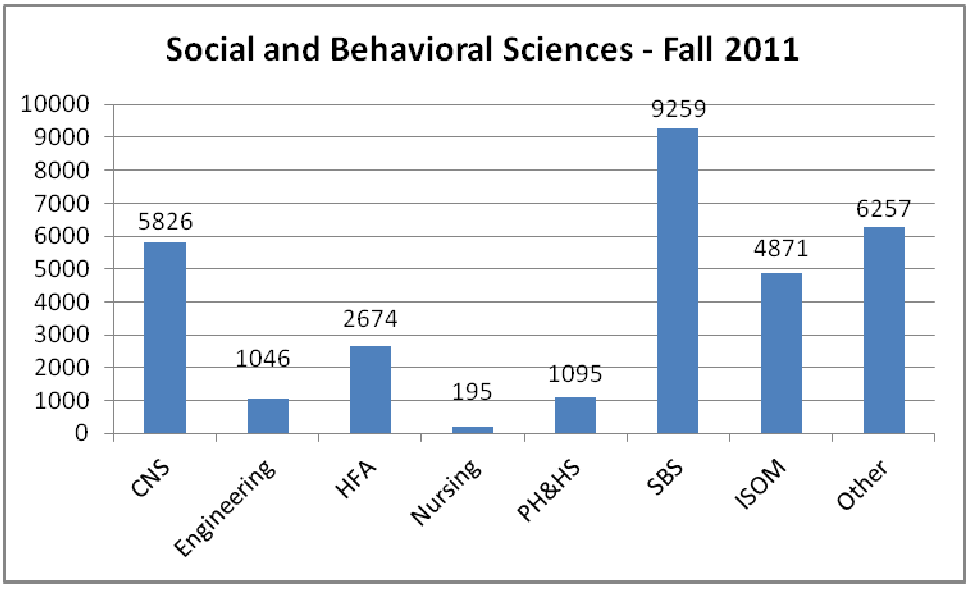

Table 6 – this table shows the breakdown by school/college of the students taking the 31,223 general education credit hours provided by the College of Social and Behavioral Sciences in fall 2011.

	F2007	S2008	F2008	S2009	F2009	S2010	F2010	S2011	F2011	S2012
Primary Instr (PI)	40	53	108	120	219	191	312	267	395	386
Secondary Instr (SI)	15	8	8	14	20	26	23	18	29	32
Section Asst (SA)	121	68	64	46	56	52	46	38	50	89
Teaching Asst (TA)	38	123	258	193	227	134	421	321	388	278
LMS asst (LMS)	25	19	7	18	4	2	62	15	26	0
Total	239	271	445	391	526	405	864	659	888	785

Table 7 – this table shows the number of teaching assistants and the associated role for general education classes over the five year reporting period by term.

Fall 2011	Teaching Assistant Usage					
Academic Group	Role	Component				
		Lecture	Discussion	Seminar	Lab	STS
CNS	PI	18	34	0	4	0
	SA	12	0	0	7	0
	SI	1	0	0	1	0
	TA	126	0	0	119	0
	LMS	0	0	0	10	0
HFA	PI	124	47	1	0	9
	SA	21	0	0	0	0
	SI	21	3	0	0	0
	TA	43	45	0	0	0
	LMS	16		0	0	0
SBS	PI	13	126	0	0	0
	SA	1	0	0	0	0
	SI	0	0	0	0	0
	TA	26	0	0	0	0

Table 8 – this table shows the type of class and role for teaching assistants for fall 2011 general education classes

Spring 2012	Teaching Assistant Usage					
Academic Group	Role	Component				
		Lecture	Discussion	Seminar	Lab	STS
CNS	PI	15	44	0	0	0
	SA	17	1	0	0	0
	SI	1	0	0	0	0
	TA	75	7	0	47	0
	LMS	0	0	0	0	0
HFA	PI	132	47	0	0	6
	SA	23	0	0	1	0
	SI	10	0	0	0	0
	TA	39	38	0	0	0
	LMS	0		0	0	0
SBS	PI	10	118	0	0	0
	SA	9	0	0	0	0
	SI	0	6	0	0	0
	TA	18	5	0	0	0
	LMS	0	0	0	0	0

Table 9 – this table shows the type of class and role for teaching assistants for spring 2012 general education classes