University of California, Berkeley

Temporary Academic Staff

Proof of Concept Project

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Preface

"One cannot think well, love well, sleep well, if one has not dined well."

~Virginia Woolf

Once upon a time, the Land of Cal was ruled by wise and benevolent leaders. They wanted to make the best decisions for their people, but they were always hungry. Every day, they went to the executive dining room and ordered the most flavorful appetizers, entrees and desserts on the menu. Every night, they dreamed of sumptuous feasts and then special ordered the elaborate dishes of their dreams. But even though they had assembled the most talented team of chefs in the land, their stomachs still grumbled.

The chefs were tearing out their hair. They were used to well-stocked pantries and kitchens. But in the Land of Cal, the vegetables and grains were stored on Oxford, the meats were housed on Hearst, and the spices could only be found on Bancroft. All day long, instead of cooking delicious meals, they ran to and from these outlying buildings, porting ingredients back and forth to their many cramped and ill-equipped kitchens. Sometimes, when they arrived at the vegetable and grain pantry, the only person with the key was nowhere to be found. Other times, at the meat pantry, the staff were too busy preparing their own meals to provide just the right ingredient to finish a particular dish. And all too often, some relatively common yet essential spice could not be located anywhere on campus at all.

Meanwhile, the leaders lingered on and on in the dining room, waiting for meals that arrived cold or without a crucial ingredient or never arrived at all. Finally, one day, the leaders had had enough. They charged a team of talented chefs to tell them how to fix the problem, and this is what they said…

University of California, Berkeley

Temporary Academic Staff Proof of Concept Project

As part of the Institutional Data Management and Governance (IDMG) Initiative, a Temporary Academic Staff (TAS) Proof of Concept (POC) Team was charged to

- analyze the impact of TAS support on course enrollments, impacted courses and time-to-degree;
- identify the specific data related challenges we encountered along the way; and
- make recommendations for improving the accessibility, reliability, security and consistency of institutional data on the Berkeley campus.

The immediate importance of this charge was driven home by a course enrollment crisis that erupted during our work. In Spring 2009, the Physics Department received what the Chair described as "an overwhelming flood of distressed emails" from Engineering and Chemistry students unable to enroll in Physics 7 and 8 and from faculty administrators who reiterated their distress. This situation demonstrated the campus's difficulty in predicting enrollment demand accurately and in meeting this demand sufficiently, particularly in "common good" courses. The decision-making approach that had served us fairly well in the past was no longer working; clearly more precise and current information was urgently needed. The need for data-driven analysis to inform curriculum planning was underscored by interviews with key stakeholders[1] whose investments revealed sometimes competing interests that the campus must attempt to balance.

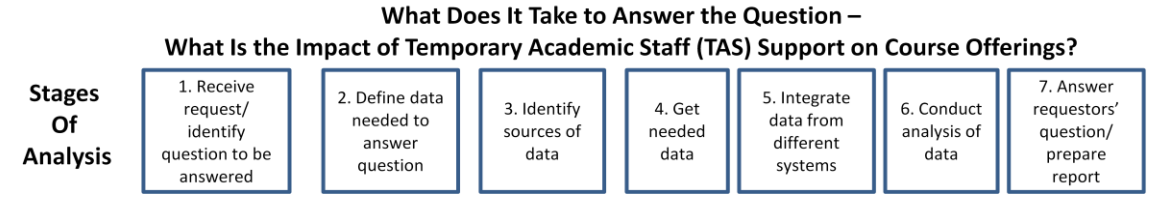
Summary of Findings from Customer Interviews
(Interests/Investments by Key Campus Stakeholders)

Central Administration	Department/Academic Units	Graduate Students	Undergraduate Students
• Maintaining Educational Quality • Stewardship of the Common Good • Meeting Enrollment Demand • Budgeting (Permanent, Temporary)	• Maintaining Educational Quality • Stewardship of the Curriculum • Meeting Student Enrollment Demand for Majors • Meeting Student Enrollment Demand for Non-Majors • Faculty Specialties, Teaching Preferences • Meeting Graduate Student Needs	• Professional Development Needs • Financial Support Needs • Academic Preferences, Availability of Courses	• Timely Graduation "Getting a Full Unit Load, Satisfying Pre-requisites and Other Required Courses" • Academic Preferences "Getting a Particular Major or the Courses I Want."

[1] Executive Vice Chancellor & Provost (EVCP) George Breslauer, Vice Chancellor for Administration Nathan Brostrom, Vice Provost – Academic Planning and Facilities Catherine Koshland, Vice Provost – Teaching & Learning Christina Maslach, Graduate Division Dean Andrew Szeri, University Registrar Anne DeLuca, Physics Department Chair Frances Hellman, College of Letters and Science Undergraduate Division Associate Dean for Advising Robert Jacobsen, and College of Engineering Undergraduate Dean Dennis Lieu.

This report documents the challenges encountered by the Office of Planning and Analysis (OPA) over the course of producing an analysis of how TAS support affects course offerings (see Appendix I). Our observations about these significant roadblocks resulted in a series of recommendations to campus leaders documented below. These observations and recommendations have relevance for the TAS POC question, as well as for the broader issue of improving the campus institutional data environment.

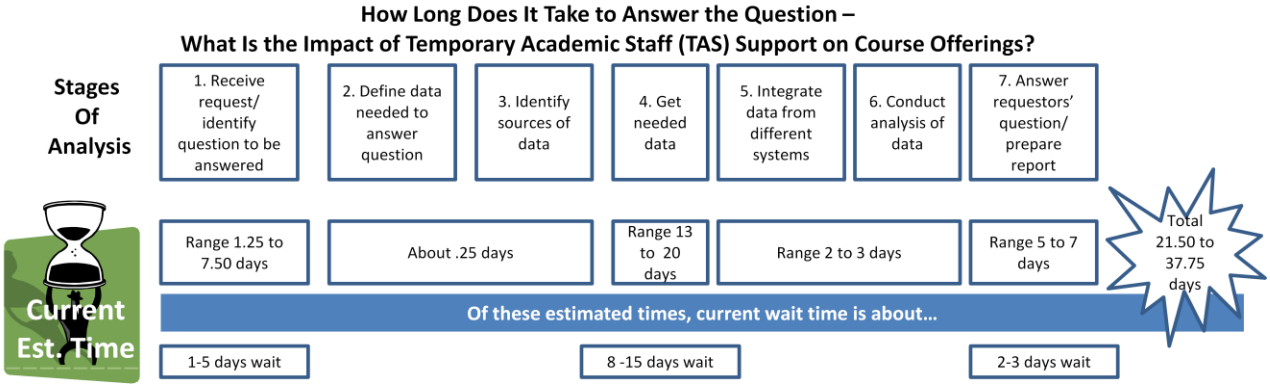
Stages of an Analysis



The process map above provides an abridged view to the standard steps an analyst undertakes in answering a question. The data analyst scopes the question by taking into account three things:

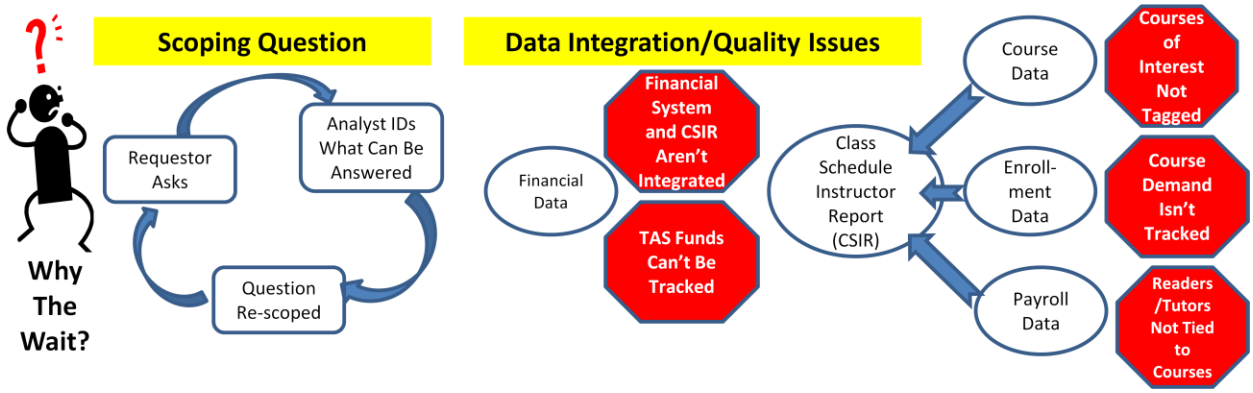
- the context for the administrator's request (*What does s/he want to know or to be able to do as a result of the data analysis?*);
- the robustness of the available data systems that will inform the analysis (*What can I actually answer in the data environment in which I am working?*); and
- the timeframe in which to conduct the study (*How soon is an analysis needed and how much time is available given my other workload constraints?*).

The analyst tries to maximize the usefulness of the analysis by addressing as many of the stakeholder's needs as possible within the constraints of the data environment and of the time allowed.



At Berkeley, data deficits and lack of data integration can result in analysts spending significant time and workload developing proxies or workarounds to provide the best response in the time allotted. Using a business process analysis methodology, we determined that conducting an analysis of the impact of TAS on the curriculum took between 21 - 38 days to complete, due to challenges in collecting and integrating data. Reduction in this response time will allow analysts to focus more on the actual analysis, to improve presentations of information, and to allow more timely response to decision-makers.

Why Does It Take So Long to Answer the Question –
What Is the Impact of Temporary Academic Staff (TAS) Support on Course Offerings?



Scoping the Question

The original charge for the POC Team to analyze the impact of TAS support on course enrollments, impacted courses, and time-to-degree was too broad to tackle in the time allotted within our existing data environment. Initial delay resulted from the team discussing the best way to re-scope this question with an eventual decision to focus on a subset of service courses known as "gateway courses" that depend on TAS support and are critical to students' time-to-degree, a factor that we knew was of paramount concern to administrators.

Gateway courses are commonly understood to be large enrollment lower division courses required for entry into multiple majors. However, the campus has no uniform definition of a gateway course; no flagging of such courses in the student system exists; and no one is charged with responsibility for maintaining an up-to-date gateway course dictionary. To save time, the analyst relied on an out-of-date dictionary supplied by a College of Letters and Science analyst, which represents a snapshot in time but not an accurate, current or complete inventory of such courses. When key data concerning gateway courses was not available in the Class Schedule Instructor Report (CSIR) system (OPA's local data integration system) or any other central campus data system, the analyst used a subset of gateway courses in Physics as a proxy, since it would have been prohibitively labor intensive to gather such data from every department offering gateway courses.

The team observed that the campus lacks a centralized mechanism for flagging and tracking "courses of interest" by category. This deficit significantly added to the project's time schedule and reduced the scope and usefulness of the final analytical project, an observation we return to below.

Data Integration/Quality Issues

In assessing what was meant by "impact," we identified three sub-questions, each of which presented data integration and quality issues (i.e., completeness, consistency, accuracy, and availability of institutional data), beyond courses of interest not being tagged centrally:

How well are we meeting enrollment demand for gateway courses? OPA can provide information on enrollments, course offerings, and course instructors through the CSIR system; however, to fully answer the impact question, we need to understand demand, i.e. the number of students who need or want a particular course relative to the number of students who actually enroll in that course. The CSIR system does not track such waitlist data, and the Office of the Registrar functional systems that manage enrollment are not designed to support enrollment demand analyses. Some of the specific challenges in using CSIR or existing waitlist data include:

- Students frequently waitlist themselves in multiple sections of the same class and waitlist data is reported as a total, not by individual student.
- Departmental practices with regard to use of enrollment waitlists vary widely (some do not use them at all, some manage them locally), making the use of waitlist data for analytical purposes even more unreliable.
- We do not have enrollment data for secondary sections (e.g. discussion sections or labs), only primary courses.
- No data are currently gathered on overall need, e.g., how many students have yet to complete prerequisites (such as Physics 7 or 8) for either majors or minors or whether these students have satisfied requirements during summer sessions or at community colleges.

Given these issues, we do not know to what extent waitlist data is or is not inflated. We also lack the ability to determine how much of the unmet demand is due to space constraints (e.g., classrooms that lack sufficient numbers of seats) and how much is due to an insufficient number of sections. In other words, what part of the supply side is failing to meet enrollment demand—space or TAS support or both?

Who is delivering and/or supporting instruction in gateway courses? The CSIR system provides information on who teaches courses. However, CSIR has several deficits that make it difficult to use to answer this question and that limit its usefulness more broadly:

- Due to challenges faced collecting data from academic departments and integrating data across systems, CSIR data is not available until after the close of the semester making it difficult to do just in time analysis on the current semester.
- CSIR does not include data on readers and tutors, and obtaining such data requires a labor-intensive process on the part of local departments. Even if we restrict our analysis to data from one department that offers gateway courses (Physics), the manual task of identifying readers supporting a particular course is still time-consuming and difficult to accomplish. Also, long-term historical data may be impossible to reconstruct.
- There is no dictionary of title codes specified as TAS, so OPA maintains a dictionary for its own use to support ad hoc analyses and it is not available to others on campus.
- In some cases, non-academic staff perform a crucial instructional support role. In gateway courses with laboratory sections, for example, non-instructional titles are critical to setting up labs. While these staff technically fall outside the scope of the question concerning TAS, they are integral to the delivery of instruction in such courses and are part of the larger financial picture. We have no easy way to collect information on the costs associated with this type support either.
- The CSIR system is a local OPA data integration system developed to support OPA's analytical and reporting needs. It is not accessible to other units to support local analyses and is not scalable for campus wide use.

What are the instructional costs and how are they funded? Ultimately, to understand the impact of TAS funding on the cost of delivering instruction, we would need to know how much it costs to mount a course; what fund sources (both permanent and temporary) are being marshaled to support those costs; where those fund sources originate (e.g., EVCP, Dean, salary savings, etc); and if there is an unmet "gap" in funding that needs to be filled. In essence, we need an activity-based budgeting approach to instruction. Currently, however, the campus does not track TAS support to specific fund providers, and there are no linkages between the financial system and the course enrollment systems. In the absence of data and linkages between campus systems, it is impossible to know with a sufficient level of granularity how academic salary dollars are being spent. Thus, for example, the EVCP cannot evaluate the impact of his TAS allocations on gateway courses, and units cannot readily determine if they are getting best use of their funds because they cannot associate fund sources with courses taught.

Some of the data gaps that make it difficult to answer this question include:

- The financial and CSIR system are not integrated making it impossible to state the actual cost of mounting a particular course.
- The primary fund source used to support instruction is 19900 general funds. The campus lacks a mechanism to differentiate 19900 funds derived from faculty salary savings, EVCP TAS allocations, Deans' allocations, carry forward, or other departmental support.

Overall Observations Feeding Recommendations

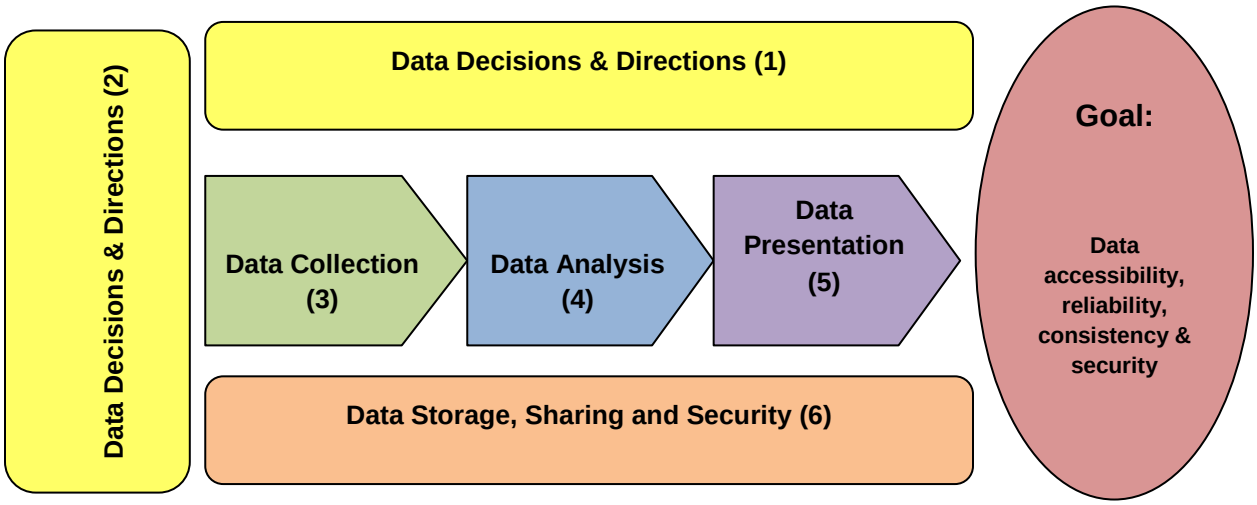
The TAS POC Team observed that answers to important Cabinet questions are eroded through the analytical journey by the lack of quality and availability of data rather than by the lack of skill of the analyst. These data deficits, at their extreme, lead to borderline anecdotal decision-making about key areas of priority and a lack of accountability for the outcome of such decisions. The specific challenges we confronted in undertaking this specific analysis highlighted overarching problems related to our current data environment and suggested a set of recommendations to address these problems.

Observations	Recommendations
Decentralization of key data related to curriculum makes it prohibitively labor intensive to answer critical questions centrally. Data decentralization can lead to gaps that make it difficult to conduct analyses that support the "common good."	**Leverage existing and developing systems to support curriculum analyses**
Absence of common data definitions can make data analysis challenging and ability to get consistent data difficult.	**Develop model to estimate TAS needs, income sources and Academic Student Employee benefit/fee remissions.**
Cabinet members do not always fully understand the constraint of the data environment and analysts do no always fully understand the context of the questions.	**Facilitate a common understanding of the campus data environment and decision-making context.**
Transactional data systems built for operational needs don't fully support analytical needs. Answers to complex questions frequently cross data systems and the absence of an integrated interface constrains the campus's ability to answer such questions. Delays in availability of transactional data for analytical purpose can make it difficult to do just-in-time reporting on time-sensitive questions. Data challenges translate into significant costs due to the amount of time it takes staff to conduct creative work arounds to get decision-makers answers to key questions.	**Develop an Enterprise Data Warehouse (EDW) to support both standardized and ad hoc reporting at the central and local levels.**

Recommendations

The four broad recommendations, identified above, are intended to make institutional data related to this POC accessible, reliable, consistent and secure and to support its use to produce timely analyses that inform strategic planning, decision-making and communication by campus leaders. Staff time and the costs associated with producing such analyses would also be significantly reduced. Based on our information about the most recent IDMG work, we have tied our recommendations to the IDMG roadmap through the shared color schematic provided on the next page.

Institutional Data Management and Governance (IDMG) Roadmap



Storage **Recommendation 1: Leverage existing and developing systems to support curriculum analyses.**

Storage **1.1 Utilize new Kuali Student Information System to identify, define, and track courses that the academic leadership deems critical to the common good to support curriculum analyses.**

Decisions Campus leadership in the Administration and the Academic Senate should jointly prioritize, identify and define courses that serve the "common good." These courses could include gateway, reading and composition, foreign language, American Cultures, service courses, or other types of courses.

Collection Successful implementation would require a consistent definition for these courses and a clear mechanism for tagging them and maintaining an up-to-date dictionary in our data systems. Depending on the available resources, the campus may wish to limit this activity to an initial set of common good courses, and if successful, to expand to other types of courses that would improve our ability to track student learning outcomes and to analyze the curriculum more broadly. (See Appendix II for examples of course attributes to tag.)

Analysis **1.2 Mandate 100% use of DARwin (i.e., Degree Audit Report system) to allow analysts to evaluate shifts in enrollment patterns resulting from changes in admission policies and/or curricular revisions in order to predict demand for particular courses.** EVCP Breslauer recently announced his goal of making DARwin the single campus degree audit system by Spring 2011. The implementation of this goal will enable central analysts to better estimate enrollment demand and departmental analysts to better plan staffing needs for courses.

Analysis **Recommendation 2: Develop model to estimate TAS needs, income sources and Academic Student Employee benefit/fee remissions.**

Decisions **2.1 Create a common understanding (i.e., definition) of what sources of funds can and ought to be used to support TAS.** Campus leaders need to develop a common agreement on what funds are appropriate to use for TAS (e.g., salary savings, carry forward, discretionary funds, Dean or EVCP allocations). By knowing all the funding streams that are available and expected to be used to support TAS, the EVCP will be in a better position to evaluate where to allocate his funds and have the greatest impact on course availability and enrollment seats. Changes in this area would require significant shifts in campus funding expectations and would require careful review of complex issues.

Collection **2.2 Establish a process to track the various origins of TAS funding.** More granular tracking of 19900 funds is needed in order to account for the provider or source of such funds. For example, EVCP TAS funds could be allocated under a separate fund code and then tracked to see exactly where and how they are spent.

Collection **2.3 Couple instructor and reader and tutor appointments/expenses between the payroll and the CSIR system.** CSIR coordinators within the unit could be instructed to assign readers to specific courses, so that tables generated from the CSIR system for analytical use could include information on readers.

Analysis **2.4 Create a model, template or tools for the administration and departments to use in estimating their curriculum and TAS needs.** Senior campus administrators have indicated an interest in being able to model TAS resources and expenditures. A TAS model can clearly delineate what should be provided centrally and what should be provided at the departmental level. Once the previous three recommendations are implemented and with appropriate support, a team could be charged to determine an appropriate set of TAS reporting requirements, with information gathered at both the central and unit level.

Presentation **Recommendation 3: Facilitate a common understanding of the campus data environment to decision-making content.**

Decisions **3.1 Identify the top 80% of critical questions/metrics needed to evaluate "campus health" or "resources requiring careful monitoring."** Campus leadership must identify and prioritize the critical questions that need to be answered on an annual basis and support the development of standardized tools that address that 80%.

Analysis **Encourage the use of cross-unit teams with complementary expertise to address the 20% of ad hoc questions more effectively.** For critical questions that cannot be answered easily through the central systems, collaborative teams, similar to this TAS POC Team, provide a way leverage the appropriate subject expertise to determine proxies, work-arounds, and local data sources that can be used to support ad hoc analyses.

Collection **3.3 Develop a common understanding of what is needed when submitting an ad hoc request for information.** Ad hoc requests should clarify (a) the question at hand, (b) the context for asking it, (c) how the information will support the decision making process and (d) the criticality of the question being asked to help evaluate the time/effort needed to respond to the request.

Storage **Recommendation 4: Develop an Enterprise Data Warehouse (EDW) to support both standardized and ad hoc reporting at the central and local levels.**

4.1 Develop an EDW to produce standard reports that answer the critical 80% of common questions/metrics and support analytical needs to conduct ad hoc analyses on the remaining 20%. The EDW should be able to answer the critical questions for campus leadership and provide sufficient detail to allow analyst to do necessary ad hoc analyses for additional questions that may be generated from review of the metrics associated with these top line questions. The EDW should support the analytical needs of local as well as central campus units, while improving campus data security.

Our POC team also believe that while identifying the overall goal of each recommendation, it was important to acknowledge each recommendation actually relied on successfully walking through multiple stages of the IDMG roadmap as identified in the graphic below.

	Data Decisions & Directions	Data Collection	Data Analysis	Data Presentation	Data Storage, Sharing & Security
Recommendation 1: Leverage existing and developing systems to support curriculum analyses.					
1.1 Utilize new Kuali Student Information System to identify, define and track courses that the academic leadership deems critical to the common good.	✓	✓	✓		✓
1.2 Mandate 100% use of DARwin to allow analysts to evaluate shifts in enrollment patterns resulting from changes in admissions policies and/or curricular revisions in order to predict demand for particular courses.	✓	✓	✓		✓
Recommendation 2: Develop model to estimate curriculum and TAS needs, income sources and Academic Student Employee benefit/fee remissions.					
2.1 Create a common understanding (i.e., definition) of what sources of funds can and ought to be used to support TAS.	✓		✓		
2.2 Establish process to track the various origins of TAS funding.	✓	✓	✓		
2.3 Couple instructor and reader and tutor appointments/expenses between the payroll and the CSIR systems.		✓	✓		
2.4 Create a model, template, or tools for the administration and departments to use in estimating their curriculum and TAS needs.	✓	✓	✓	✓	
Recommendation 3: Facilitate a common understanding of the campus data environment and decision-making context.					
3.1 Identify the top 80% of critical questions/metrics needed to evaluate "campus health" or "resources requiring careful monitoring."	✓	✓			
3.2 Encourage the use of cross-unit teams with complementary expertise to address the 20% of ad hoc questions more effectively.	✓	✓	✓	✓	
3.3 Develop a common understanding of what is needed when submitting an ad hoc request for information.	✓	✓	✓	✓	
Recommendation 4: Develop an Enterprise Data Warehouse (EDW) to support both standardized and ad hoc reporting at the central and local levels.					
4.1 Develop EDW to produce standard reports that answer critical 80% of common questions/metrics and support analytical needs to conduct ad hoc analyses on the remaining 20%.	✓	✓	✓	✓	✓

Success Factors

The successful implementation of these recommendations will depend on three key success factors: leadership, funding and trust.

Leadership: Both academic and administrative leadership are critical to solving the challenges identified above. Curriculum management and budgeting are of primary concern with regard to the academic mission of the University. Successful planning requires the joint leadership and buy-in of the Academic Senate, of Deans and Departments Chairs, and of the Executive Vice Chancellor and Provost. Decisions such as the identification of "common good" courses and the prioritization of funding for such courses require shared leadership and a willingness to make tough decisions in a limited resource environment. Such decisions will inevitably entail tradeoffs. Administrative support units can provide analyses and make recommendations to inform such decisions, but the decisions themselves, with the inevitable compromises that will be entailed, must come from campus leaders.

Funding: While development of an EDW has begun, insufficient funding has limited its progress at a pace adequate to support campus needs. As a result, campus departments continue to waste significant resources on maintaining silo data warehouses. The development of a robust EDW and standard reports and models, as well as the programming requirements associated with existing data systems, will require an infusion of dedicated resources. Most of these expenses would be up-front and one-time costs, along with certain maintenance and upgrades required for improved technology solutions. The development of the requirements and funding model for an EDW is beyond the scope of the TAS POC Team's charge; however, we urge the campus leadership to charge the appropriate group to undertake these efforts. We further recommend that the EDW be implemented in carefully thought out phases. With a modest infusion of centrally provided funds supplementing departmental project contributions that would otherwise have gone to silo projects, we believe that significant progress can be made to establishing a baseline EDW.

Trust: Our vision for the campus data environment entails a radical restructuring of business as usual. In the course of our work, one team member proposed the metaphor of a kitchen (data warehouse), where the cooks (data analysts) could visit well-stocked pantries (data resources), create tasty dishes (analyses), and serve up satisfying meals to the campus leadership (data-driven recommendations to inform campus decision-making). The successful implementation of such a vision depends on building the trust of the talented staff across the campus to change the habitual ways of doing business. The first step in gaining trust will be initiating the resource support necessary to begin the staged implementation of this vision. The second step will emerge from the gradual shift from individuals working in silos to cross-unit teams tackling common problems with shared data resources. The TAS POC project itself demonstrated what is possible when a dedicated cross-unit team applies itself to a common challenge. We urge the campus leadership to create more such opportunities and to provide the support necessary for their success.

Appendix I – Proof of Concept Study

University of California, Berkeley

WHAT IS THE IMPACT OF TEMPORARY ACADEMIC STAFF (TAS) INSTRUCTORS ON COURSE OFFERINGS?

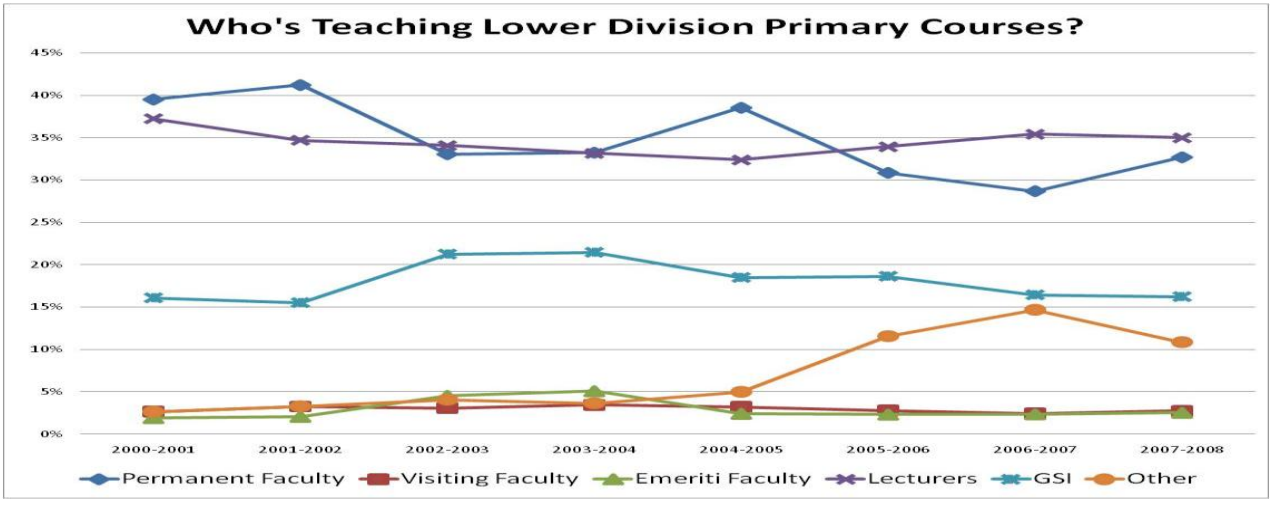
Overview

2007-08 Courses Offered

	Lower Division	Upper Division	Graduate	Total
Primary Courses	**2,240**	**3,297**	**3,439**	**8,977**
Visiting Faculty	3%	7%	7%	6%
Emeriti Faculty	3%	3%	2%	2%
Lecturers	35%	26%	17%	25%
GSI	16%	3%	0%	5%
Other	11%	6%	5%	7%
Total % Taught by TAS	67%	45%	32%	46%
Secondary Sections	**3,212**	**2,957**	**413**	**6,582**
Visiting Faculty	0%	1%	2%	1%
Emeriti Faculty	0%	0%	1%	0%
Lecturers	2%	3%	2%	3%
GSI	95%	82%	48%	86%
Other	2%	3%	16%	3%
Total % Taught by TAS	99%	89%	69%	93%

Permanent Faculty develop the curriculum and teach a majority of the primary and independent study courses and on occasion, secondary sections. Temporary Academic Staff (TAS), including Emeriti and Visiting Faculty, Lecturers, and Graduate Student Instructors (GSI), also play a key role in delivering the curriculum. Over the last 8 years, the number of total primary courses has increased 19% from just over 7,500 courses to almost 9,000 and total secondary sections has increased 10% from just under 6,000 to now almost 6,600, but the percent of courses taught by Permanent Faculty and TAS has remained relatively unchanged. Permanent Faculty teach approximately 55% of primary courses and 7% of secondary sections, TAS teach the remaining courses and these percentages vary greatly by course level.

As seen in the 2007-08 Courses Offered table, TAS instructors teach a majority (67%) of lower division primary courses and secondary sections at all levels. For primary courses, Lecturers tend to be the primary type of TAS faculty and GSIs teach almost all secondary sections. Only with lower division primary courses, do we see any variation over time in the reliance on TAS. In this case, there have been some changes between the percent of lower division courses taught by Permanent Faculty and Lecturers. *(Note: The increase in "other" is from head coaches and affiliates now being tracked in the CSIR system.)*



In addition to course level, the reliance on TAS may vary depending on the type of courses. For example, over 90% of foreign language and reading and composition courses rely on TAS. In addition, gateway courses rely heavily on TAS, particularly at the secondary section level.

Since TAS support varies by course level and type, this analysis will focus a subset of service courses offerings that are critical to students' ability to get into the major of their choice and their timely progress toward degree completion that depend on TAS support, namely gateway courses. As background, gateway course are lower division courses that are pre-requisites to declaring a major or advancing to upper division course work by at least two majors. For example, Physics offers five gateway courses (Physics 7A, 7B, 7C, 8A and 8B) which are required by majors within Letters & Science, Engineering, Chemistry and Natural Resources. (See Attachment I for currently available approximated dictionary of gateway courses.)

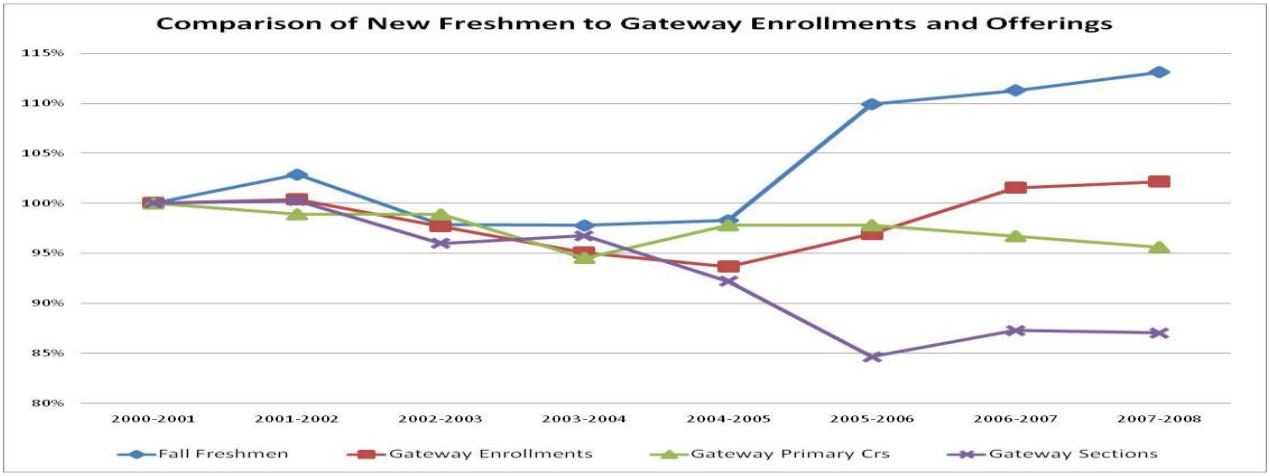
To better understand the impact of TAS on gateway courses, this analysis will focus on the following three questions:

1. How well are we meeting enrollment demand for gateway courses?
2. Who is delivering/supporting instruction in gateway courses?
3. What are the instructional costs of courses and how are they funded?

For each question, we begin with what is available at the campus level and then where necessary, focus on Physics to illustrate additional detail at a unit level.

How well are we meeting enrollment demand for gateway courses?

As a proxy, we examine data on new freshmen to provide some baseline on potential demand for gateway courses, coupled with gateway enrollment and course offering data as seen on the Comparison of New Freshmen to Gateway Enrollments and Offerings chart and table.



Comparison of New Freshmen to Gateway Enrollments, Primary Courses & Sections

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	% Chg
New Freshmen	3,735	3,842	3,655	3,652	3,671	4,105	4,157	4,225	13%
Gateway Enrollment	26,758	26,855	26,140	25,438	25,065	25,938	27,164	27,333	2%
Gateway Primary	91	90	90	86	89	89	88	87	-4%
Gateway Sections	1,500	1,508	1,439	1,449	1,386	1,279	1,337	1,339	-11%

As this data illustrates, while new freshmen and gateway course enrollments have both increased over this 8-year period, the percent increase in gateway enrollments (2%) has not met the increase in new freshmen (13%). In addition, there has been a decline in the primary course offerings (-4%) and secondary sections (-11%) for gateway courses. One might assume these trends are an indication that student demand may not be met with current gateway course offerings; however, this information is not conclusive. For example, some students may pass out of gateway courses by using AP courses, some new freshmen may not need these gateway courses if they are intending to go into majors where these courses are not a requirement, and some students may intend on taking courses during the summer or at another institution.

Attachments II, III and IV provide the additional detail on primary course offerings, enrollments and secondary sections for each gateway course. The table below provides the 8-year trend (from 2000-01 to 2007-08) in primary course offerings, enrollments and sections by course, however understanding what these variations mean often requires departmental input to fully understand whether changes are based on curricular decisions, funding constraints, or other reasons.

GATEWAY COURSES (8 YR CHG IN PRIMARY OFFERINGS, ENROLLMENTS AND SECTIONS)

	Prim	Enr	Sec		Prim	Enr	Sec		Prim	Enr	Sec
Anthropology 1	↓	↓	↓	Comp Sci 61C	↔	↓	↓	Physics 7B	↔	↔	↔
Biology 1A	↔	↑	↓	Economics 1	↓	↑	↓	Physics 7C	↓	↓	↓
Biology 1B	↔	↑	↑	Math 1A	↑	↑	↑	Physics 8A	↔	↑	↑
Chemistry 1A	↔	↑	↑	Math 1B	↔	↓	↓	Physics 8B	↔	↑	↑
Chemistry 1B	↔	↓	↓	Math 16A	↔	↑	↔	Poli Sci 1	↔	↑	↔
Chemistry 3A	↓	↑	↓	Math 16B	↔	↑	↑	Poli Sci 2	↔	↓	↓
Chemistry 3B	↑	↑	↓	Math 53	↑	↑	↑	Psychology 1	↔	↑	↑
Chemistry 5	↓	↓	↓	Math 54	↑	↑	↑	Statistics 2	↔	↓	↓
Comp Sci 61A	↔	↓	↓	Math 55	↔	↓	↓	Statistics 20	↓	↑	↔
Comp Sci 61B	↓	↓	↓	Physics 7A	↔	↔	↓	Statistics 21	↓	↓	↓
								All Gateway	↔	↔	↓

Scale: ↔ + or - 5% ↑ > 5% ↓ < -5%

For example, there have been changes in enrollment and offering patterns among the Physics 7 and 8 series. As the Physics 7 series has seen a decline in enrollment, the unit has cut one primary course for Physics 7C and multiple secondary sections across Physics 7A and 7C. At the same time, there has been an increase in enrollment for the Physics 8 series and while the unit has maintained the number of primary courses, secondary sections have increased. Physics analysts indicate these changes are due to more Engineering and Chemistry students coming in with AP credit for 7A (*although this may have changed with the recent increase in demand for these courses by continuing Engineering and Chemistry students)* and these two Colleges no longer requiring 7C for their majors. With the decline in the Physics 7 series, resources were then shifted to the Physics 8 series where there was increasing demand, some from transfer students

Physics 7 Series (7A, 7B, 7C)

	2007-08	Low	High	8-Yr Trend
Enrollments	2036	1914	2196	
Primary Courses	13	13	14	
Secondary Sections	204	204	248	

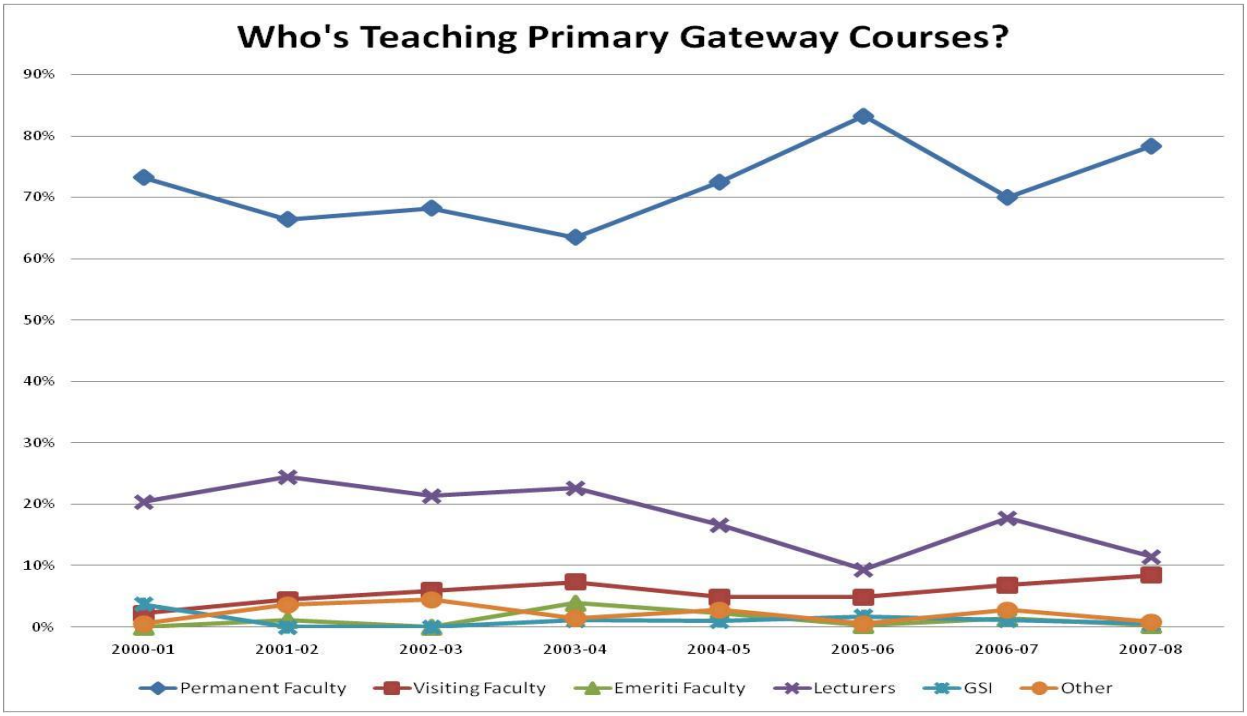
Physics 8 Series (8A and 8B)

	2007-08	Low	High	8-Yr Trend
Enrollments	2012	1783	2046	
Primary Courses	8	8	8	
Secondary Sections	196	120	202	

who might have satisfied the Physics 7 series but not the Physics 8 and some possibly from non-biology students becoming interested in pre-med and taking these courses to provide that background.

Who is delivering and/or supporting instruction in gateway courses?

Instructors who teach primary gateway courses can vary year-by-year. As seen in the figure and table below, TAS support for primary gateway courses has ranged from 17% to 37% with the primary TAS instructors being Lecturers and Visiting Faculty.



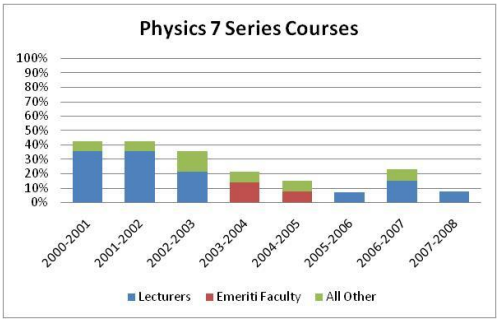
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
% Primary Courses Taught by TAS	**27%**	**34%**	**32%**	**37%**	**28%**	**17%**	**30%**	**22%**
Visiting Faculty	2%	4%	6%	7%	5%	5%	7%	8%
Emeriti Faculty	0%	1%	0%	4%	2%	0%	1%	0%
Lecturers	20%	24%	21%	23%	17%	9%	18%	11%
GSI	4%	0%	0%	1%	1%	2%	1%	1%
Other	1%	4%	4%	1%	3%	1%	3%	1%

TAS teach almost all secondary sections and over time, Graduate Student Instructors have become the primary type of TAS supporting these sections.

Which TAS Support Gateway Secondary Sections?

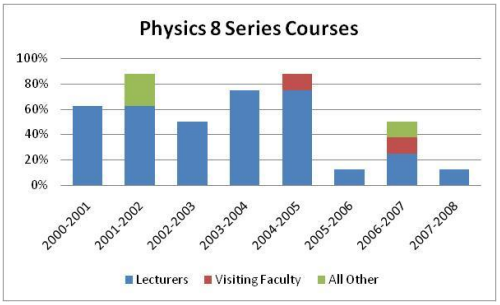
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
% Sedondary Sections Taught by TAS	**100%**	**100%**	**100%**	**98%**	**100%**	**100%**	**100%**	**100%**
Visiting Faculty	0%	0%	0%	0%	0%	0%	0%	0%
Emeriti Faculty	0%	0%	0%	1%	0%	0%	0%	0%
Lecturers	1%	6%	4%	1%	0%	1%	2%	1%
GSI	77%	87%	92%	92%	93%	95%	97%	98%
Other	21%	7%	4%	4%	6%	4%	1%	0%

Attachments V and VI provide the detail for all gateway courses on the percent of primary and secondary sections taught by TAS. While there is no real variation with secondary sections, there is some variation on who teaches primary gateway courses. For example, within the Physics Department, TAS faculty (Lecturers, Emeriti and Visiting Professors) teach a fewer primary gateway courses (i.e., Physics 7 and 8 series) than they have in the past while permanent faculty teaching increases. GSIs primarily teach Physics 7 and 8 series secondary sections with a few exceptions noted below.



Physics 7A, 7B, and 7C have on-average 25% of their primary courses taught by TAS, ranging from 7% to 43% in early 2000. GSIs taught almost all secondary sections with a few exceptions seen in the table below.

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
GSI's	79%	94%	97%	94%	100%	100%	100%	100%
Readers/Tutors	18%	0%	0%	0%	0%	0%	0%	0%
Lecturers	0%	4%	2%	5%	0%	0%	0%	0%
All Other	3%	1%	1%	0%	0%	0%	0%	0%



Physics 8A and 8B have on average had 55% of primary courses supported by TAS instructors, particularly Lecturers, though recently Permanent Faculty have taught more. Physics 8 secondary sections have primarily been supported by GSIs with the few exceptions seen below.

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
GSI's	83%	98%	95%	100%	100%	100%	100%	100%
Readers/Tutors	14%	2%	4%	0%	0%	0%	0%	0%
All Other	3%	0%	1%	0%	0%	0%	0%	0%

In examining the impact TAS has on providing gateway courses, it is important to step back and try to understand the impact providing gateway courses has on the overall curriculum for a unit. Because the curriculum is not categorized at the campus level, it is difficult to conduct this type of analysis. However, the Physics Department analysts were able to categorize the Physics curriculum into important groupings to provide a way to examine how providing gateway courses affect other aspects of their curriculum.

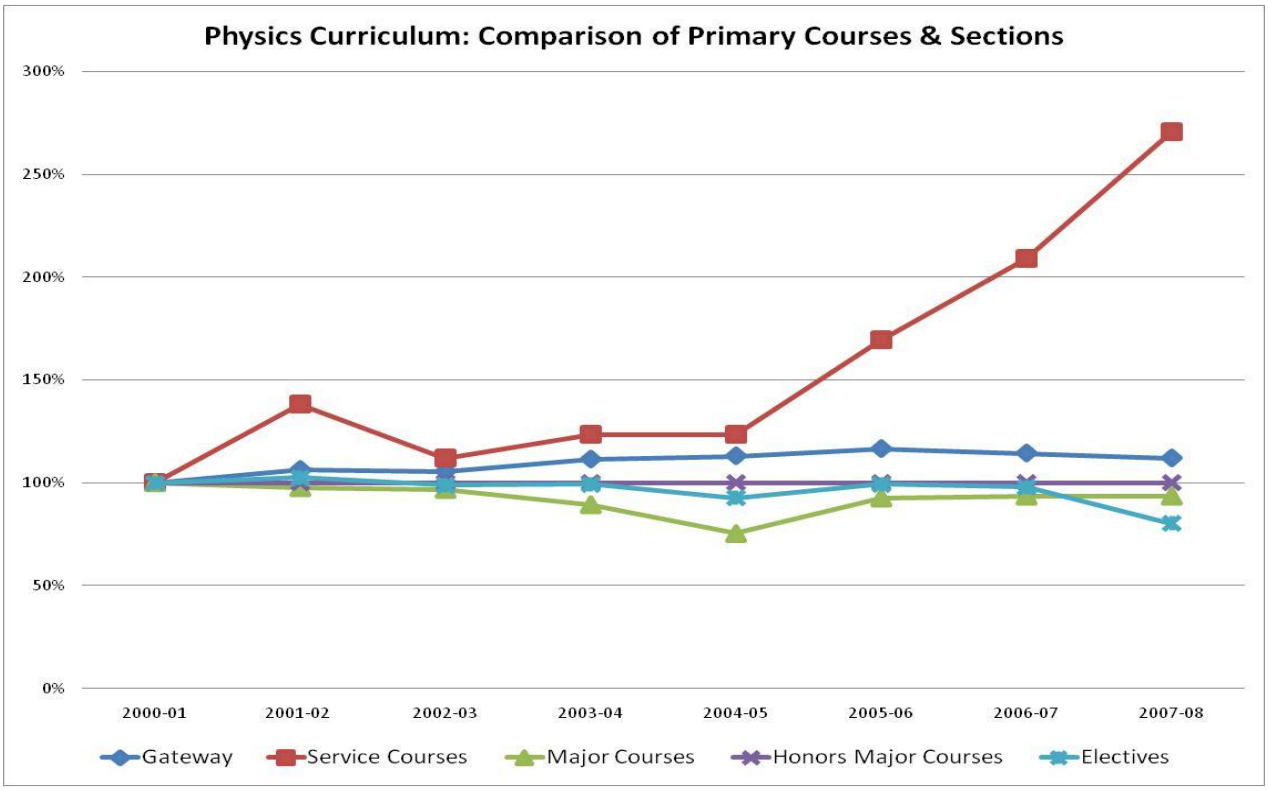
Attachments VII and VIII provide that list of primary course offerings and secondary sections by class type. Based on this categorization, classes could fall in one or more of the following categories: gateway, major requirement (Physics), major requirement (Other Department), prerequisite for the major, breadth requirement, service courses, independent studies, electives, electives (no degree credit), honors major requirement, and GSI instruction in teaching. To illustrate the impact providing gateway courses has on the Physics curriculum, we limited our examination to one class type per course (seen in bold on Attachment VII) and focused on gateway, service courses, major courses, honor major courses and electives (both for and not for degree credit).

The Physics Curriculum table and chart show the total number of primary courses and secondary sections by those groupings. Compared to 2000-01, Physics has provided a larger percent of gateway and other service courses over time, while courses specific for majors, honors majors, and electives has remained

about the same or declined from that base year. This trend illustrates an increasing service workload for Physics to provide gateway course and Letters and Science Discovery Courses, like Physics 10 and Physics 21, while not increasing and sometimes cutting other major courses or electives.

Physics Curriculum: Comparison of Primary Courses and Sections

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	# Chg	% Chg
Gateway	376	400	397	419	425	438	430	421	45	12%
Service Courses	17	23	19	21	21	29	36	46	29	171%
Major Courses	122	119	118	109	92	113	114	114	(8)	-7%
Honors Major Courses	1	1	1	1	1	1	1	1	-	0%
Electives	98	101	97	97	91	97	96	79	(19)	-20%
Total (excl Ind Stdy)	614	644	632	647	630	678	676	661	47	8%



What are the instructional costs of courses and how are they funded?

While it is possible to estimate instructor expenses by department, it is harder to tie those expenses directly to specific courses or types of courses in the curriculum, which is important if we want to ensure that we are meeting university or college requirements and providing sufficient access to required courses. On the budget side, when state funds (i.e., 19900) are used, it is almost impossible to determine who has provided the TAS funds that were used to support a specific portion of the curriculum. Furthermore, instructor salaries are not the only expenses associated with gateway courses, there are other associated costs (e.g., lab fees) that are not easily tied to courses. To illustrate one way to estimate TAS instructor expenses, this analysis will again focus on the Physics Department to estimate what instructor costs might be for the Physics 7 and 8 gateway course series.

2007-08 Physics Expenditures

	Avg Salary	Actual FTE	Expenses
Visiting Faculty	$ 88,938	0.13	$ 11,562
Emeriti Faculty	$ 95,625	0.35	$ 33,469
Lecturer	$ 51,381	1.20	$ 61,657
GSI	$ 33,609	41.81	$ 1,405,192
Reader	$ 27,741	2.82	$ 78,231
TOTAL			$ 1,590,110

The 2007-08 Physics Expenditure table provides October-April average actual FTE and *estimated* annual payroll expenses based on those two months associated with those TAS title code groupings. Average salaries for these TAS instructors are calculated by comparing expenses and FTE.

The TAS Needs for 2007-08 Physics Gateway Course table then provides the number of primary and secondary Physics gateway courses taught by TAS. Using the expected workload of these types of instructors (e.g., Courses/FTE), an estimated TAS FTE needed to staff these courses is calculated. Estimated TAS expenses are then calculated by multiplying the average salaries (taken from the 2007-08 Physics Expenditure Table) by the estimated FTE. Walking through this example, Physics had lecturers staff 2 primary courses and GSIs support 216 secondary courses which works out to .33 Lecturer and 27 GSI FTE; the corresponding TAS expenses are then approximately $925,000 in salaries, not including benefits or fee remissions which according to the Graduate Division could be as high as $500,000 for this number of GSIs. (Note: Physics 7 and 8 secondary sections are divided into lab and discussion components and while these class types are counted separately when describing offerings, they are counted as one section for workload purposes because the same GSI supports both class types as one appointment).

TAS Needs for 2007-08 Physics Gateway Course

	Primary	Secondary	Total	Course/FTE	Est FTE	Avg Salary	Est Exp
Visiting Faculty			-	4.0	-	$ 88,938	$ -
Emeriti Faculty			-	4.0	-	$ 95,625	$ -
Lecturer	2		2	6.0	0.33	$ 51,381	$ 17,127
Other Teaching			-	6.0	-	$ 33,609	$ -
GSI		216	216	8.0	27.00	$ 33,609	$ 907,443
Reader			-			$ 27,741	$ -
TOTAL	2	216	218				$ 924,570

Through focusing on Physics, it is possible to estimate the majority of TAS expenses related to instructor salaries associated with these gateway courses for that year which could be used to project the needs in

the future by indicating what types of instructors might be needed to staff the estimated number of courses. However, because the financial system is not integrated with the curriculum system, these estimates are incomplete (e.g., no reader expenditures are tied to courses, lab expenses are unknown) and it is impossible to know how these TAS expenses are funded. For example, while it appears that Physics has some permanent funds (i.e., $199,000 in Non-Recurrent and $548,000 in GSIs), as well as permanent faculty salary savings (around $900,000), those funds actually reside with the Deans in Letters & Science where they are combined with funding from EVCP and others, and then returned to Physics as a pooled allocation. With our current systems, we cannot indicate what portion of EVCP TAS allocations support these gateway courses or specifically track where EVCP TAS allocations go to support the curriculum.

Attachment I

GATEWAY COURSES

Sources: Departmental websites and General Catalogue
review date: 1/2005 (additions by Rob Holliday to reflect Public Health reqs)
review date: 12/2006 (additions by Rob Holliday to reflect Envecon's Stat requirement)
revision date: 2/11/08: Chem 5 removed because it's no longer offered: it's been replaced by Chem 15 for non-COC stuudents who need analytical chem, per Herb Strauss, email 2/11/08
Feb 2008: revisions to CNR per Kimberly Johnson

For the purposes of this report gateway courses are defined as lower division courses that are pre-requisite to declaring a major or advancing to upper division course work in at least two majors. This report identifies courses that two (2) or more majors (in any school or college) require as pre-requisites.

Course	L&S	Bus Ad	Engineering	CNR	CED	Chem	Total
Anthro 1	1.5						1.5
Biol 1A	5.0		1.0	7.0			13.0
Biol 1B	5.0		0.5	5.0			10.5
Chem 1A	5.5		8.0	7.0			20.5
Chem1B	3.5		4.5	0.3			8.3
Chem 3A	3.0		2.0	6.0			11.0
Chem 3B	2.5			4.0			6.5
Com Sci 61A	2.0		1.0				3.0
Com Sci 61B	1.0		1.0			2.0	4.0
Com Sci 61C	1.0		0.5				1.5
Econ 1	4.0	0.5		0.5			5.0
Math 16A	4.0	0.5		4.5	2.0		11.0
Math 16B	3.0	0.5		2.5	1.0		7.0
Math 1A	9.5	0.5	9.0	3.5		2.0	24.5
Math 1B	8.5	0.5	9.0	3.5		2.0	23.5
Math 53	4.5		9.0			2.0	15.5
Math 54	6.0		9.0			2.0	17.0
Math 55	1.5						1.5
Physics 7A	4.5		9.0	0.5		2.0	16.0
Physics 7B	4.5		9.0	0.5		2.0	16.0
Physics 7C	4.0		4.5			2.0	10.5
Physics 8A	3.5			5.0	1.0		9.5
Physics 8B	3.0			1.0			4.0
Poli Sci 1	2.0						2.0
Poli Sci 2	3.0						3.0
Psych 1	2.0						2.0
Stat 2	3.5				1.0		4.5
Stat 20	1.5						1.5
Stat 21	1.0	1.0					2.0

Note: The number in each cell represents the number of major programs in a given College that require the course in question. Major programs that offer more than one option to fulfill a given prerequisite are signalled by fractional numbers: .5 if there are two options, .33 if there are three. If the list of courses fulfilling a prerequisite was more than three, those coures were not counted in this report.

Attachment II

Gateway Primary Course Offerings

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	% Chg
Anthropology 1	2	2	2	2	2	1	1	1	-50%
Biology 1A	2	2	2	2	3	2	2	2	0%
Biology 1B	2	2	2	2	2	2	2	2	0%
Chemistry 1A	5	5	5	5	5	5	5	5	0%
Chemistry 1B	1	1	1	1	1	1	1	1	0%
Chemistry 3A	4	4	4	4	3	3	3	3	-25%
Chemistry 3B	2	2	2	2	3	3	3	3	50%
Chemistry 5	2	1	1	1	1				-100%
Comp Sci 61A	2	2	2	2	2	2	2	2	0%
Comp Sci 61B	2	2	2	2	2	2	1	1	-50%
Comp Sci 61C	2	2	2	2	2	2	2	2	0%
Economics 1	3	2	2	2	2	2	2	2	-33%
Math 1A	3	4	4	4	4	4	4	4	33%
Math 1B	5	5	5	5	5	5	5	5	0%
Math 16A	3	3	3	3	3	3	4	3	0%
Math 16B	3	3	3	3	3	3	3	3	0%
Math 53	2	2	2	2	3	4	4	4	100%
Math 54	2	2	2	2	3	4	4	4	100%
Math 55	2	2	2	2	2	2	2	2	0%
Physics 7A	5	5	5	5	5	5	5	5	0%
Physics 7B	5	5	5	5	5	5	5	5	0%
Physics 7C	4	4	4	4	3	4	3	3	-25%
Physics 8A	4	4	4	4	4	4	4	4	0%
Physics 8B	4	4	4	4	4	4	4	4	0%
Poli Sci 1	2	2	2	2	2	2	2	2	0%
Poli Sci 2	2	2	2	2	2	2	2	2	0%
Psychology 1	2	2	2	2	2	2	2	2	0%
Statistics 2	4	4	4	4	4	4	4	4	0%
Statistics 20	6	6	6	2	4	4	4	4	-33%
Statistics 21	4	4	4	4	3	3	3	3	-25%
TOTAL	**91**	**90**	**90**	**86**	**89**	**89**	**88**	**87**	**-4%**

Attachment III

Gateway Course Enrollments

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	% Chg
Anthropology 1	858	805	820	793	682	358	377	384	-55%
Biology 1A	932	939	948	1069	1131	1096	1154	1287	38%
Biology 1B	855	974	1120	1156	1196	1278	1409	1469	72%
Chemistry 1A	1667	1720	1778	1836	1724	1964	2004	2087	25%
Chemistry 1B	184	108	132	108	143	104	127	125	-32%
Chemistry 3A	1178	1238	1273	1280	1384	1506	1575	1535	30%
Chemistry 3B	858	900	1029	1028	1213	1153	1383	1160	35%
Chemistry 5	103	61	48	40	31				-100%
Comp Sci 61A	1046	885	692	555	464	521	553	551	-47%
Comp Sci 61B	651	559	422	360	244	224	190	137	-79%
Comp Sci 61C	674	651	459	469	361	333	323	330	-51%
Economics 1	1321	1351	1393	1255	1324	1359	1458	1426	8%
Math 1A	1326	1347	1257	1147	1103	1207	1359	1437	8%
Math 1B	1600	1786	1545	1508	1441	1515	1555	1482	-7%
Math 16A	1023	1116	998	882	947	1060	1010	1138	11%
Math 16B	729	762	792	760	701	809	788	958	31%
Math 53	793	830	839	778	878	1183	1311	1127	42%
Math 54	951	935	675	921	986	1211	1267	1226	29%
Math 55	619	431	314	276	206	157	137	138	-78%
Physics 7A	895	989	863	859	818	938	961	918	3%
Physics 7B	819	813	808	832	753	722	853	856	5%
Physics 7C	467	394	389	391	343	305	254	262	-44%
Physics 8A	1080	1117	1176	1221	1203	1167	1228	1196	11%
Physics 8B	703	755	870	753	760	802	782	816	16%
Poli Sci 1	743	843	927	844	787	754	794	839	13%
Poli Sci 2	1132	987	1102	1099	1135	1062	1036	1062	-6%
Psychology 1	935	939	1002	1038	931	911	976	1060	13%
Statistics 2	1331	1270	1247	1116	1112	1084	1104	1108	-17%
Statistics 20	437	421	399	261	290	336	374	476	9%
Statistics 21	848	929	823	803	774	819	822	743	-12%
TOTAL	**26758**	**26855**	**26140**	**25438**	**25065**	**25938**	**27164**	**27333**	**2%**

Attachment IV

Gateway Course - Secondary Sections

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	% Chg
Anthropology 1	64	60	62	64	56	26	28	22	-66%
Biology 1A	94	93	91	80	80	40	43	50	-47%
Biology 1B	94	94	100	121	132	148	172	172	83%
Chemistry 1A	64	63	64	65	63	70	72	71	11%
Chemistry 1B	8	4	5	4	6	4	5	5	-38%
Chemistry 3A	88	92	94	96	42	2	2	2	-98%
Chemistry 3B	57	61	64	65	43	4	3	3	-95%
Chemistry 5	5	4	3	2	2				-100%
Comp Sci 61A	62	58	42	42	38	36	40	42	-32%
Comp Sci 61B	55	48	32	30	20	14	14	10	-82%
Comp Sci 61C	50	50	32	34	30	26	28	28	-44%
Economics 1	58	57	57	44	46	46	49	53	-9%
Math 1A	56	58	56	48	48	52	60	60	7%
Math 1B	72	74	68	64	67	68	67	68	-6%
Math 16A	45	44	39	36	39	43	42	45	0%
Math 16B	33	33	34	33	32	33	33	39	18%
Math 53	33	32	33	31	38	49	52	46	39%
Math 54	39	39	28	36	40	49	53	55	41%
Math 55	28	20	14	12	10	8	8	7	-75%
Physics 7A	100	110	92	93	94	104	94	89	-11%
Physics 7B	88	91	88	92	80	80	82	84	-5%
Physics 7C	46	47	39	36	32	30	31	31	-33%
Physics 8A	65	76	102	120	122	122	122	118	82%
Physics 8B	55	54	54	56	76	80	80	78	42%
Poli Sci 1	33	34	37	37	36	32	32	32	-3%
Poli Sci 2	45	41	44	48	52	43	40	40	-11%
Psychology 1	45	46	47	48	47	44	48	48	7%
Statistics 2	40	44	41	39	38	36	33	31	-23%
Statistics 20	12	12	12	8	8	9	9	12	0%
Statistics 21	30	29	27	29	25	26	23	20	-33%
TOTAL	**1564**	**1568**	**1501**	**1513**	**1442**	**1324**	**1365**	**1361**	**-13%**

Attachment V

Gateway Primary Course Offerings - % Taught by Temporary Academic Staff

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	% Chg
Anthropology 1	100%	100%	50%	25%	0%	0%	100%	0%	-100%
Biology 1A	0%	38%	38%	29%	50%	38%	38%	38%	38%
Biology 1B	0%	0%	17%	17%	17%	17%	25%	29%	29%
Chemistry 1A	50%	20%	60%	60%	43%	47%	53%	0%	-50%
Chemistry 1B	33%	0%	0%	100%	100%	0%	0%	0%	-33%
Chemistry 3A	0%	0%	50%	100%	33%	0%	33%	33%	33%
Chemistry 3B	100%	100%	50%	50%	33%	0%	33%	100%	0%
Chemistry 5	0%	0%	0%	0%	0%				0%
Comp Sci 61A	25%	50%	0%	0%	0%	0%	0%	0%	-25%
Comp Sci 61B	0%	0%	0%	0%	0%	0%	0%	0%	0%
Comp Sci 61C	0%	25%	25%	0%	0%	0%	0%	0%	0%
Economics 1	0%	50%	50%	50%	50%	100%	100%	100%	100%
Math 1A	0%	25%	25%	50%	0%	0%	0%	0%	0%
Math 1B	0%	0%	0%	0%	20%	20%	0%	0%	0%
Math 16A	0%	0%	33%	0%	0%	0%	13%	33%	33%
Math 16B	0%	0%	0%	0%	0%	0%	0%	0%	0%
Math 53	0%	0%	50%	0%	0%	0%	0%	0%	0%
Math 54	0%	0%	0%	0%	0%	0%	0%	0%	0%
Math 55	0%	0%	0%	0%	0%	0%	50%	0%	0%
Physics 7A	20%	60%	40%	0%	0%	20%	20%	0%	-20%
Physics 7B	80%	20%	40%	40%	20%	0%	40%	20%	-60%
Physics 7C	25%	50%	25%	25%	33%	0%	0%	0%	-25%
Physics 8A	75%	75%	0%	100%	100%	0%	75%	25%	-50%
Physics 8B	50%	100%	100%	50%	75%	25%	25%	0%	-50%
Poli Sci 1	0%	100%	0%	50%	0%	0%	50%	25%	25%
Poli Sci 2	0%	0%	0%	50%	50%	25%	0%	0%	0%
Psychology 1	0%	0%	0%	0%	0%	50%	0%	0%	0%
Statistics 2	50%	0%	50%	75%	75%	75%	75%	75%	25%
Statistics 20	33%	50%	33%	50%	38%	25%	100%	75%	42%
Statistics 21	50%	75%	75%	75%	33%	33%	33%	67%	17%
TOTAL	**27%**	**34%**	**32%**	**37%**	**28%**	**17%**	**30%**	**22%**	**-5%**

Attachment VI

Gateway Secondary Sections - % Taught by Temporary Academic Staff

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	% Chg
Anthropology 1	100%	100%	100%	100%	100%	100%	100%	100%	0%
Biology 1A	100%	100%	100%	65%	100%	100%	100%	100%	0%
Biology 1B	96%	98%	98%	98%	97%	99%	99%	98%	3%
Chemistry 1A	100%	100%	98%	100%	100%	100%	100%	100%	0%
Chemistry 1B	100%	100%	100%	100%	100%	100%	100%	100%	0%
Chemistry 3A	100%	100%	100%	100%	100%	100%	100%	100%	0%
Chemistry 3B	100%	100%	100%	100%	100%	100%	100%	100%	0%
Chemistry 5	100%	100%	100%	100%	100%				-100%
Comp Sci 61A	100%	100%	100%	100%	100%	100%	100%	100%	0%
Comp Sci 61B	98%	100%	100%	100%	100%	100%	100%	100%	2%
Comp Sci 61C	100%	100%	100%	100%	100%	100%	100%	100%	0%
Economics 1	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 1A	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 1B	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 16A	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 16B	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 53	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 54	100%	100%	100%	100%	100%	100%	100%	100%	0%
Math 55	100%	100%	100%	100%	100%	100%	100%	100%	0%
Physics 7A	100%	100%	100%	99%	100%	100%	100%	100%	0%
Physics 7B	100%	100%	100%	98%	100%	100%	100%	100%	0%
Physics 7C	100%	100%	100%	100%	100%	100%	100%	100%	0%
Physics 8A	100%	100%	100%	100%	100%	100%	100%	100%	0%
Physics 8B	100%	100%	100%	100%	100%	100%	100%	100%	0%
Poli Sci 1	100%	100%	100%	100%	100%	100%	100%	100%	0%
Poli Sci 2	100%	100%	100%	100%	100%	100%	100%	100%	0%
Psychology 1	100%	100%	100%	100%	100%	100%	100%	100%	0%
Statistics 2	100%	100%	100%	100%	100%	100%	100%	100%	0%
Statistics 20	100%	100%	100%	100%	100%	100%	100%	100%	0%
Statistics 21	100%	100%	100%	100%	100%	100%	100%	100%	0%
TOTAL	**100%**	**100%**	**100%**	**98%**	**100%**	**100%**	**100%**	**100%**	**0%**

Attachment VII

PHYSICS CURRICULUM - PRIMARY COURSES OFFERED

	Gateway Course	Major Req (Physics)	Major Req (Other Dept)	Prerequisite for Major	Breadth Requirement	Service Courses	Independent Study	Elective	Elective - No Deg Credit	Honors Major Req (Physics)	GSI Instruction in Teaching	*2000-2001*	*2001-2002*	*2002-2003*	*2003-2004*	*2004-2005*	*2005-2006*	*2006-2007*	*2007-2008*	*% Chg*
PHYSICS 007A	x	x	x	x	x	x						5	5	5	5	5	5	5	5	0%
PHYSICS H007A		x	x	x	x	x						2	2	2	2	2	1	1	1	-50%
PHYSICS 007B	x	x	x	x	x	x						5	5	5	5	5	5	5	5	0%
PHYSICS H007B		x	x	x	x	x						2	2	2	2	2	2	2	2	0%
PHYSICS 007C	x	x	x	x	x	x						4	4	4	4	3	4	3	3	-25%
PHYSICS H007C		x	x	x	x	x						2	2	2	2		2	2	2	0%
PHYSICS 008A	x	x	x	x	x	x						4	4	4	4	4	4	4	4	0%
PHYSICS 008B	x	x	x	x	x	x						4	4	4	4	4	4	4	4	0%
PHYSICS 010/C010					x	x						2	2	2	2	2	2	2	2	0%
PHYSICS 021/C021					x	x							1	2			1		1	
PHYSICS 024						x						5	9	1	2	3	3	3	5	0%
PHYSICS 039						x											3	2	3	
PHYSICS 084						x							1	2	2	1				
PHYSICS 098							x									4	2	4	4	
LOWER DIVISION TOTAL												**35**	**41**	**35**	**34**	**35**	**38**	**37**	**41**	**17%**
% TOTAL												**26%**	**28%**	**25%**	**24%**	**25%**	**25%**	**25%**	**31%**	**5%**
TOTAL PRIMARY COURSE OFFERINGS												**137**	**144**	**139**	**141**	**140**	**151**	**148**	**134**	**-2%**

PHYSICS 100			x			x						1	1	1	1	1	1	1	1	0%
PHYSICS 105		x	x									4	3	4	2	2	4	4	3	-25%
PHYSICS 108*							x					1		1						-100%
PHYSICS 110A		x	x									3	4	4	3	4	3	3	3	0%
PHYSICS 110B												3	2	2	2	2	2	2	2	-33%
PHYSICS 111		x	x									12	13	11	12	11	11	9	9	-25%
PHYSICS 112		x	x									4	3	3	3	3	4	4	4	0%
PHYSICS 129			x					x											1	
PHYSICS 129A			x					x				1	1	1	1	1	1	1		-100%
PHYSICS 129B			x					x					1							
PHYSICS 132		x											1		1		1		1	
PHYSICS 137A		x	x									4	4	4	4	4	4	4	4	0%
PHYSICS 137B		x	x									4	4	4	3	3	4	4	4	0%
PHYSICS 138			x					x							1	1	1			
PHYSICS 139			x					x				1	1	1	1	1	1	1	1	0%
PHYSICS 141A			x					x				2	2	2	2	2	2	2	2	0%
PHYSICS 141B			x					x				1	1	1	1	1	1	1	1	0%
PHYSICS 142			x					x					1	1				1		
PHYSICS C160A								x				1	1	1						-100%
PHYSICS C160B								x				1	1							-100%
PHYSICS C161								x						1	1	1	1	1	1	
PHYSICS 177								x					1		1		1		1	
PHYSICS C191								x							2	1	1		1	
PHYSICS H190										x		1	1	1	1	1	1	1	1	0%
PHYSICS 198							x									5	2	3	4	
UPPER DIVISION TOTAL												**44**	**46**	**43**	**42**	**44**	**46**	**42**	**44**	**0%**
% TOTAL												**32%**	**32%**	**31%**	**30%**	**31%**	**30%**	**28%**	**33%**	**1%**
TOTAL PRIMARY COURSE OFFERINGS												**137**	**144**	**139**	**141**	**140**	**151**	**148**	**134**	**-2%**

	Gateway Course	Major Req (Physics)	Major Req (Other Dept)	Prerequisite for Major	Breadth Requirement	Service Courses	Independent Study	Elective	Elective - No Deg Credit	Honors Major Req (Physics)	GSI Instruction in Teaching	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	% Chg
PHYSICS C201								x									1	2	1	
PHYSICS C203								x									1		1	
PHYSICS 205A								x					1			1		1		
PHYSICS 205B								x							1			1		
PHYSICS 208A*								x				1	1	1	1	1	1			-100%
PHYSICS 208B*								x				1				1				-100%
PHYSICS 209		x											1	1	1	1	1	1	1	
PHYSICS 210A*		x										1								-100%
PHYSICS 210B*		x										1								-100%
PHYSICS 211		x										1	1	1	1	1	1	1	1	0%
PHYSICS 212								x				1	1	1	1	1	1	1	1	0%
PHYSICS 216								x					1	1		1		1		
PHYSICS 221A		x										1	1	1	1	1	1	1	1	0%
PHYSICS 221B		x										1	1	1	1	1	1	1	1	0%
PHYSICS 222*								x							1					
PHYSICS 223*								x				1		1			1			-100%
PHYSICS 226								x				1	1	1	1	1	1	1	1	0%
PHYSICS C228								x							1	1	1	1	1	
PHYSICS 229A								x				1	1	1	1	1	1	1		-100%
PHYSICS 229B								x				1	1	1	1	1	1	1		-100%
PHYSICS 229C								x				1	1	1	1	1	1	1		-100%
PHYSICS 230A								x				1	1	1	1	1	1	1		-100%
PHYSICS 230B								x				2	1	1	1	1	1	1		-100%
PHYSICS 231								x				1	1	1	1	1	1	1	1	0%
PHYSICS 232A								x											1	
PHYSICS 232B								x											1	
PHYSICS 233A								x											1	
PHYSICS 233B								x											1	
PHYSICS 234A								x											1	
PHYSICS 234B								x											1	
PHYSICS 240A								x				1	1	1	1	1	1	1	1	0%
PHYSICS 240B								x				1	1	1	1	1	1	1	1	0%
PHYSICS 242A								x					1		1		1		1	
PHYSICS 242B								x					1		1		1			
PHYSICS 250								x				1	2	5	3	4	4	6	2	100%
PHYSICS 251									x				1	1	2	1	1	1	1	
PHYSICS C252								x				1								-100%
PHYSICS C254								x					1		1				1	
PHYSICS C285								x				1		1	2	1	1	1	2	100%
PHYSICS 290B									x			2	2	2	2	2	2	2	2	0%
PHYSICS 290C/C290C									x						2	4	4	4	3	
PHYSICS 290D									x					1	1	1	1			
PHYSICS 290E									x			2	2	2	2	2	2	2	2	0%
PHYSICS 290F									x			2	2	3	2	1	2	2	2	0%
PHYSICS 290G									x			2	2	2	2	2	2	2		-100%
PHYSICS 290H									x										1	
PHYSICS 290K									x			2	2	2	2	2	2	2	2	0%
PHYSICS 290L									x			1								-100%
PHYSICS 290N									x								1	2		
PHYSICS 290P									x			2	2	2	2	2	2	2	2	0%
PHYSICS 290S									x			14	12	13	12	7	11	13	6	-57%
PHYSICS 290T									x							1				
PHYSICS 290X									x			2	2	2	2	4	4	4		-100%
PHYSICS 290Y									x			2	2	2	2	2	2	2		-100%
PHYSICS 290Z									x			4	6	6	6	6	5	4	4	0%
GRADUATE TOTAL												**58**	**57**	**61**	**65**	**61**	**67**	**69**	**49**	**-16%**
% TOTAL												**42%**	**40%**	**44%**	**46%**	**44%**	**44%**	**47%**	**37%**	**-14%**
TOTAL PRIMARY COURSE OFFERINGS												**137**	**144**	**139**	**141**	**140**	**151**	**148**	**134**	**-2%**

* Course withdrawn.

Attachment VIII

PHYSICS CURRICULUM - SECONDARY SECTIONS OFFERED

	Gateway Course	Major Req (Physics)	Major Req (Other Dept)	Prerequisite for Major	Breadth Requirement	Service Courses	Independent Study	Elective	Elective - No Deg Credit	Honors Major Req (Physics)	GSI Instruction in Teaching	*2000-2001*	*2001-2002*	*2002-2003*	*2003-2004*	*2004-2005*	*2005-2006*	*2006-2007*	*2007-2008*	*% Chg*
PHYSICS 007A	x	x	x	x	x	x						50	55	46	47	47	52	47	45	-10%
PHYSICS H007A		x	x	x	x	x						5	6	6	4	7	2	2	2	-60%
PHYSICS 007B	x	x	x	x	x	x						44	46	44	46	40	40	41	42	-5%
PHYSICS H007B		x	x	x	x	x						7	6	6	4	5	4	4	4	-43%
PHYSICS 007C	x	x	x	x	x	x						43	46	34	32	29	27	31	31	-28%
PHYSICS H007C		x	x	x	x	x						19	24	19	17		17	21	22	16%
PHYSICS 008A	x	x	x	x	x	x						58	54	64	60	61	61	61	59	2%
PHYSICS 008B	x	x	x	x	x	x						57	43	56	47	38	40	40	39	-32%
PHYSICS 010/C010					x	x						9	9	10	10	11	18	26	32	256%
PHYSICS 021/C021					x	x							1				1		1	
LOWER DIVISION TOTAL												**292**	**290**	**285**	**267**	**238**	**262**	**273**	**277**	**-5%**
% TOTAL												**77%**	**77%**	**78%**	**77%**	**76%**	**76%**	**78%**	**78%**	**1%**
TOTAL SECONDARY SECTIONS												**380**	**378**	**366**	**346**	**314**	**344**	**352**	**357**	**-6%**
PHYSICS 105		x	x									9	6	8	5	4	8	8	6	-33%
PHYSICS 108							x					2		2						-100%
PHYSICS 110A		x	x									6	8	8	7	8	6	6	6	0%
PHYSICS 110B												7	4	4	5	5	4	4	4	-43%
PHYSICS 111		x	x									2	2	2	2	2	2	2	2	0%
PHYSICS 112		x	x									8	6	6	6	6	8	8	8	0%
PHYSICS 129			x					x											2	
PHYSICS 129A			x					x				1	2	2	2	1	1	1		-100%
PHYSICS 129B			x					x					1							
PHYSICS 132		x											2		2		1		1	
PHYSICS 137A		x	x									8	8	8	9	9	8	8	8	0%
PHYSICS 137B		x	x									9	8	9	6	6	8	8	8	-11%
PHYSICS 138			x					x							1	1	1			
PHYSICS 139			x					x				2	1	1	1	1	1	2	2	0%
PHYSICS 141A			x					x				4	4	3	3	4	3	4	4	0%
PHYSICS 141B			x					x				2	2	1	1	1	1	2	2	0%
PHYSICS 142			x					x					2	1				1		
PHYSICS C160A								x				1	1							-100%
PHYSICS C160B								x				2	2							-100%
PHYSICS C161								x						2	2	2	1	2	2	
PHYSICS 177								x					1		1		1		1	
PHYSICS C191								x									1			
UPPER DIVISION TOTAL												**63**	**60**	**57**	**53**	**50**	**55**	**56**	**56**	**-11%**
% TOTAL												**17%**	**16%**	**16%**	**15%**	**16%**	**16%**	**16%**	**16%**	**-1%**
TOTAL SECONDARY SECTIONS												**380**	**378**	**366**	**346**	**314**	**344**	**352**	**357**	**-6%**

	Gateway Course	Major Req (Physics)	Major Req (Other Dept)	Prerequisite for Major	Breadth Requirement	Service Courses	Independent Study	Elective	Elective - No Deg Credit	Honors Major Req (Physics)	GSI Instruction in Teaching	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	% Chg
PHYSICS C201								x									1			
PHYSICS 205A								x					2			1		1		
PHYSICS 205B								x							1			1		
PHYSICS 208A								x				1	1	1	1	1	1			-100%
PHYSICS 208B								x				2				1				-100%
PHYSICS 209		x											2	2	2	3	2	2	2	
PHYSICS 210A		x										2								-100%
PHYSICS 210B		x										2								-100%
PHYSICS 211		x										2	2	2	1	2	2	2	2	0%
PHYSICS 212								x				2	1	1	1	1	1	1	1	-50%
PHYSICS 216								x					2	2		1				
PHYSICS 221A		x										1	2	2	2	2	2	2	2	100%
PHYSICS 221B		x										2	2	2	2	2	3	2	2	0%
PHYSICS 222								x							1					
PHYSICS 223								x				1		1						-100%
PHYSICS 226								x				1	1	1	1	1	1	1	1	0%
PHYSICS 229A								x				1	1	1	1	1	1	1		-100%
PHYSICS 229B								x				1	1	1	1	1	1	1		-100%
PHYSICS 229C								x					1	1	1	1	1	1		
PHYSICS 230A								x				1	1	1	1	1	1	1		-100%
PHYSICS 230B								x				1	1	1	1	1	1	1		-100%
PHYSICS 231								x				2	2	1	1	1	1	1	1	-50%
PHYSICS 232A								x											1	
PHYSICS 232B								x											2	
PHYSICS 233A								x											1	
PHYSICS 233B								x												
PHYSICS 234A								x											1	
PHYSICS 234B								x											1	
PHYSICS 240A								x				1	1	1	1	1	1	1	1	0%
PHYSICS 240B								x				2	1	1	1	1	1	1	1	-50%
PHYSICS 242A								x					1		1		2		2	
PHYSICS 242B								x					1		1		1			
PHYSICS 300								x					2	2	4	3	3	3	3	
GRADUATE TOTAL												**25**	**28**	**24**	**26**	**26**	**27**	**23**	**24**	**-4%**
% TOTAL												**7%**	**7%**	**7%**	**8%**	**8%**	**8%**	**7%**	**7%**	**-1%**
TOTAL SECONDARY SECTIONS												**380**	**378**	**366**	**346**	**314**	**344**	**352**	**357**	**-6%**

Appendix II – Kuali Student Information System – Initial Listing of Course Attributes

Required University Courses	Service Courses	Other Courses of Interest
• American Cultures • Reading & Composition	• Gateway • Foreign Language • Freshmen Seminar • Breadth Courses • DECAL	• Major Requirements • Capstone • Honors • Senior Seminar • Undergraduate Research