



Annual Program Review 2010-2011

Instructional Programs

Division:

Physical Sciences

Authorization

After the document is complete, it must be signed by the Division Chair and Dean before being submitted to the Program Review Committee.

Signature-Division Chair

Signature of Dean

Date Submitted to
Program Review
Committee

Describe the relationship of your program to the college's [Mission Statement](#):

All of the courses taught in the Physical Sciences Division transfer to four-year institutions and apply toward an A.A. or A.S. degree. Some of the courses are general education courses that fulfill a student's physical science requirement and others also serve as foundation courses for students who intend on pursuing professional careers in the sciences (for example, medicine and other health fields, engineering, earth and environmental sciences). As such, the courses "...provide students with the opportunity and support to gain the knowledge and skills necessary to meet their educational, career, and personal goals" and they "...prepare students for their many evolving roles in and responsibilities to our community, our state, and our society."

1.0. Trend Analysis

For each program within the division, use the data provided to indicate trends (e.g., steady, increasing, decreasing, etc.) for each of the following measures.

Program	FTES Trend	FTEF Trend	WSCH/ FTES	Full-Time % Trend	Fill Rate Trend	Success Rate Trend	Awards Trend
Astronomy	+ 7.8%	-5.9%	+14.5 %	+2.2%	+17.8 %	-0.1%	na
Chemistry	+32.4 %	+17.4 %	+12.7 %	+3.9%	+18.5 %	+2.0%	na
Geology & Oceanography	+15.7 %	- 15.3%	+36.7 %	-2.3%	+25.1 %	+0.4%	na
Physical Science (a program with just one course)	- 100%	- 100%	na	na	na	na	na
Physics	+52.9 %	-1.3%	+54.9 %	-21.2%	+19.8 %	-1.7%	na
Division Total	+25.4 %	+2.2%	+22.7 %	+1.0%	+21.7 %	0.7%	na

1.1. Describe how these trends affect student achievement and student learning:

Overall, success rates in the Physical Sciences are similar to college-wide success rates, ranging from 67.5 to 69.6%. No dramatic changes in success rates have occurred. The largest variation in success rate over the 2006-2010 interval was in physics: 68.7% to 75.6%. Physics also had the highest success rates of the four primary programs in the division in three out of the four years. Interestingly, very little variation in this measure has occurred despite the staffing issues outlined in 1.2 below.

Fill rates are very high, over 100% in every program except physics which had a fill rate of 92.2% in 2009-2010. Scheduling efficiency has worked to increase student access to all these programs without compromising student success rates.

In looking at success rates, a few questions come to mind. In measuring success rate, how do we assess failure? Could the college survey those students in a class who did not succeed with the aim of increasing student success? How much of a change in success rate would point to a real problem in a program or a real success? It seems that a 10% change would be notable, given the variation of 1-3 percentage points around a mean value that occur in the data above. It would be interesting to have some institutional guidance on understanding the meaning of variations in these numbers and how they compare to trends at other community colleges.

Given the fairly flat trends in success rate in all programs, it would not seem that there is any clear correlation between trends in FTEF and success within the Physical Sciences Division. Also, the success rate measure itself does not measure a program's academic quality. If there is a large increase in student success in a program it could be linked to an unmeasured but very real decline in academic standards. The best way to ensure appropriately high academic standards is to have a stable base of full-time faculty.

1.2. Is there any other relevant quantitative/qualitative information that affects the evaluation of your program?

2.0. Student Learning and Curriculum

For each program within the division, provide the following information.

Program	% of Courses with Identified SLOs	% of Courses with Ongoing SLO Assessment	% of Courses Reviewed for Outline Changes	% of Courses Whose Prerequisites Were Validated in 2009-2010	% of Courses Whose Textbooks Were Reviewed in 2009-2010	Degree/Certificate SLO* If your division has defined other program SLOs, please indicate below
Astronomy	100%	33.3%	100%	100%	100%	na
Chemistry	100%	71.4%	100%	100%	100%	na
Geology & Oceanography	100%	75%	100%	100%	100%	na
Physical Science	100%	na	100%	na	100%	na
Physics	100%	16.7%	100%	100%	100%	na
Division Total	100%	50%	100%	100%	100%	AA in Physical Science—SLO is written

* A program (for purposes of Degree/Certificate SLOs) is a cohesive set of courses that lead to degrees and certificates. Divisions may further delineate and define programs based on their assessment needs.

2.1. Would you like to comment on your percentages outlined above?

All course SLO's are written for all 20 courses currently being taught in the division (the Physical Science 131 course has not been taught since Fall 2008 due to budget cuts, but SLO's for that course are written also). Of those, half are in the assessment cycle and the other half are being encouraged to begin the assessment cycle. All course outlines were reviewed last year and textbook changes are always reviewed by the division. Currently all textbooks are up to date.

2.2. How has assessment of course-level student learning outcomes led to improvement in student learning?

We are too early in the SLO assessment cycle to evaluate this.

2.3. How has assessment of program-level student learning outcomes led to certificate/degree program improvements?

We have not assessed this yet.

2.4. Does the student assessment data indicate overall program needs that may require support from the institution? Define these observed needs and support your answer using your assessment data.

In general, all the instructors in the Physical Sciences Division constantly work to improve student learning of material in their courses. What we have observed without using SLO's is that we share these concerns: many students have poor study skills, many students are not regular readers and have poor language skills, and some students lack basic preparation in science (especially in the courses targeted at the general education students). Without overall improvement in those areas, it is unlikely that there will be a meaningful improvement in student learning in our courses. Some instructors teaching general education science courses such as geology, oceanography, and astronomy have worked to incorporate teaching basic study skills into our courses. However, a minimum competence in basic science and language is still required. Interestingly, there is a nationwide emphasis on math and English, but not on basic science literacy. Perhaps our campus could introduce the idea of a non-credit science preparatory class or use a combination of English and basic science in one course to promote science literacy and better prepare students for science courses in general.

Secondarily, there is the widespread observation that no matter what improvements we make to our courses, there is a group, sometimes 20 to 30% of the students enrolled in the class, who stop attending or otherwise demonstrate a lack of commitment. These unsuccessful students are fewer in number in the higher level physics and chemistry courses. We believe this relates to student motivation more than anything else, with students in the more advanced courses being more committed to success because of their professional goals. Is improving student motivation among "unsuccessful" students key to improving the success rate? Perhaps the campus should consider evaluating unsuccessful students in the sciences and cross-referencing their attempts in other courses to see if there are any patterns.

3.0. Evaluation of Previous Goals

This section is an evaluation of program goals and activities from previous years.

3.1. List actions identified in your last program review or any other related plan(s).

The five departments in the Physical Sciences Division are treated separately below. The commentary on their past goals is discussed holistically below rather than broken into sections 3.2, 3.3, and 3.4.

Physical Science (department—not the division)

No program review has been performed for this department in the last five years and no goals identified. The department's sole course offering has been suspended since Fall 2008 due to low demand and budget cuts. When the budget is healthy and/or if demand increases, the course will be offered.

Astronomy

The 2005 program review document lists 6 goals. Several of the goals have been met, such as teaching the Observational Astronomy lab course every semester, the hiring of a full-time professor in Astronomy (Dr. Jennifer Krestow) and the hiring of a planetarium technician (Mr. Paul Buehler). Dr. Krestow does not teach 100% of the time, as 30% of her time is released for educational outreach functions. An additional full-time instructor in Astronomy would be beneficial to the health of the program and its outreach efforts. Other goals have not been met. Astronomy 103 was to be taught once a year, but has not been listed in the print schedule of the Fall or Spring semester for at least 7 years. Another goal is currently contentious: to teach all astronomy classes in the planetarium "during all of their meetings." Competition for use of the planetarium and disagreement between involved parties remains unresolved. This issue points to the serious need for clear vision and management of the planetarium as a resource. Hopefully, the involved parties can reach enlightened settlement as the issues of the planetarium's mission, its funding, and its management are resolved. Storage of astronomy equipment (telescopes, etc.) has been resolved by the installation of a cargo container near the campus viewing platform in the northeastern notch of the campus. Ongoing issues of mold growth and dampness in that container are being addressed but may be intractable and may require the development of a different storage option in the future.

Geology & Oceanography

The 2007 program review for this program listed a number of goals. Many involved the expansion of the current course offerings and the revival or addition of courses not frequently taught. Due to the budget problems of the last several years, these goals have not been met. However, the scheduling issues of the past (offering too many courses at odd times that don't fill) have been remediated and the current offerings in the program are extremely robust. Goals to fund the running of regular ocean cruises were achieved but now instructors are opting to use the funds for field trips to the Long Beach aquarium rather than ocean cruises. Ocean cruises may still be offered in the future if instructors see fit. Rental of a bus for a geology field trip is expensive and costs more per student than we are interested in charging as a lab fee. Unless the college can subsidize at least half this cost, this expense remains a barrier to bus-guided field trips. Currently, field trips are conducted but students provide their own transportation (which is currently a model that is working well). If the budget does permit in the future, the department would like to offer the Geology of California course or the Field Geology course for which a van or bus would be necessary. The department did lose both a full-time faculty person and a half-time stockroom technician. The positions remain vacant. An IHAC request to fill the faculty position was submitted, but a CHAC request will not be submitted for the part-time stockroom position at this time due to the constraints on the budget. A faculty position in this area is needed more urgently.

Physics

The 2005 program review document identified of revamping Physics 110 curricula and upgrading labs. Both have been achieved and Physics 105 curricula are currently being improved. The night program in physics has been stable and successful. The internship program with JPL continues, although the number of GCC students accepted has decreased as JPL increased its outreach to other competing colleges across the country. However, GCC physics students are still obtaining internships at JPL and the program continues. FTES growth in physics has been strong and the program will definitely need a new faculty hire soon if the sole full-time faculty member, Mr. Rick Guglielmino, becomes the Division Chair of Physical Sciences as expected starting July 2011. He currently teaches 21 hours/week and he will reduce to 6 hours/week, necessitating a 15 hour/week hire to replace him. Given that the department only has one full-time faculty member who will be reduced to 40% teaching (with the assumption of Division Chair duties) and is nearing retirement, it is imperative that a full-time tenure track hire be made in physics for 2011-2012. The loss of Markus Duran, a classified employee in the Physics stockroom, has reduced the number of people in that stockroom from 2 to 1. Currently, the position is filled by an hourly employee, but a CHAC request is being made to replace this position.

Chemistry

The 2008 program review listed extensive needs and goals. Staffing remains the most critical of these. The department has seen a 35% increase in FTES and has suffered a decline in full-time faculty from 7 to 6.27. If no action is taken on hiring in chemistry, that full-time faculty number will fall to 5.6 by July, 2011, with the termination of the 1 year contract hire in chemistry (currently at 67%). Difficulties with classified staffing in the chemistry stockroom have required the hiring of temporary hourly employees to cover one full-time classified position for one of the two shifts required to fill the chemistry stockroom's 7:30 AM to 10:00 PM (14.5 hour) day. Currently, only one full-time classified employee, Ms. Anahit Tosunyan, is working in the chemistry stockroom. The other classified employee, Ms. Yelena Zakaryan, has been on prolonged leave at various times over the last 1.5 years. A CHAC request is being made to fill her position. It is not possible to staff the stockroom with student workers only—they must be supervised to satisfy safety laws. The two stockroom technicians provide service to labs that run all day and into the night. It is not possible to run labs at night or during the day without the presence of a stockroom technician. The chemistry stockroom technicians serve a vital function in supporting chemistry instruction. Many of the supply needs for chemistry have been funded by the student voucher fees. Other equipment, furniture, and infrastructure needs remain unfunded and are requested separately. Some curricular goals for the chemistry department have been met—one being the completion of a GCC Chemistry 110 lab manual. Continued discussion of quality, standards, and curriculum continue among the faculty in the chemistry department. Goals stated include the development of a Chemistry 101 lab manual, oversight of each chemistry course by one full-time instructor in chemistry, and responsible growth of curricular offerings to meet the high demand for chemistry courses.

3.2. What measurable outcomes were achieved due to the actions completed?

See 3.1 above.

3.3. Evaluate the success of the completed actions. Did the completed actions lead to improved student learning or improved program/division processes?

See 3.1 above.

3.4. What modifications do you plan to make to your program/division in the future to improve student learning and/or program/division processes?

See 3.1 above.

4.0. Action Plans

Based on trends and student learning outcomes, describe your program plan for the next academic year. Include necessary resources.

Action	Related EMP Goals and SLOs	How action will improve student learning	Resource Needs
Maintain physics program	Serves transfer and AA students.	Will maintain high academic standards and quality of education to physics students.	Physics faculty hire
Maintain chemistry program	Serves transfer and AA students.	Will maintain high academic standards and quality of education to chemistry students.	Chemistry faculty hire
Maintain geol/oc program	Serves transfer and AA students.	Will maintain high academic standards and quality of education to geology and oceanography students.	Geology& Oceanography faculty hire
Maintain chemistry stockroom support	Serves transfer and AA students.	Inaccurate or faulty materials lead to inability to learn. Will assist in maintaining the quality of instruction in labs.	Chemistry stockroom technician hire
Maintain physics stockroom support	Serves transfer and AA students.	Breakdown of equipment and poor set up of experiments leads to poor learning outcomes for students. This will maintain the high quality of service delivered to students in physics.	Physics stockroom technician hire at 50%
Update old teaching technology	Serves transfer and AA students.	Will speed up and make more reliable the delivery of lecture and lab content during class time to students. These faculty use programs not loaded on classroom computers (because too costly to get a site license for number of users) to aid learning in the classroom and need the laptops for this purpose.	Purchase laptop computers used by requesting faculty
Storage for chemistry	Serves transfer and AA students.	Provides ready access of materials in lab and increases or maintains safety for staff and students.	Purchase storage furniture for chemistry
Improve efficiency in chemistry stockroom	Improves service to transfer and AA students.	Student learning in chemistry is facilitated by chemistry stockroom personnel so increasing efficiency for them releases their time to perform other tasks needed to serve chemistry students.	Purchase dishwasher for washing chemistry glassware. Will replace one removed many years ago.

Increase access to chemistry visualizing tools for students	Serves transfer and AA students.	Tactile and visual learners benefit from access to 3-D models of molecules.	Purchase inorganic/organic model sets and VSEPR models.
Increase chemistry students' ability to see details of reactions demonstrated in lab and lecture.	Serves transfer and AA students.	Improves access to the details of a demonstrated chemical reaction for all students in a lecture or a lab.	Purchase small hand-held cameras that can be hooked up to computers connected to projectors so details of reactions can be seen by all.
Improve linkage and communication about linkage of lecture and lab curricula in the Oceanography 115/116 series and the Geology 101/111 series.	Serves transfer and AA students.	The direct impact on student learning will be in coordinating the timing of the teaching of particular topics in these sets of courses so reinforcement and augmentation can take place in the associated labs. Outcome will also be a web-based set of lab and lecture materials that will be categorized and shared among the geology and oceanography instructors here at GCC.	Access to the current Blackboard system for posting materials and schedules for instructors. We already have this set up.
Facilitate the astronomy department's needs to use the planetarium for teaching.	Serves transfer and AA students.	Current competition among users has made planetarium access an issue for the astronomy department. A reasonable balance needs to be achieved so more astronomy students have better access to the planetarium in class.	The college administration continues to work on developing a process to manage the situation. The planetarium's mission statement, maintenance schedule, usage schedule, and cost of use need to be considered to resolve this issue.

PROGRAM REVIEW Division:**CHEMISTRY****I: PS-1****Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO OR course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

A full-time chemistry hire would fulfill EMP goals 1.3 and 3.5 by increasing or maintaining student success rates in the chemistry program while maintaining academic rigor and by writing new curricula based on the latest effective teaching methods in chemistry.

The core competencies emphasized in chemistry include communication, quantitative reasoning, information competency, critical thinking, scientific complexities, study skills, and application of knowledge.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

A full-time, tenure-track faculty person in chemistry will write new labs and create new methods and materials for lectures in established chemistry courses. New SLO's or assessments of current SLO's will be conducted by this new faculty person.

5.3. Describe the resource request in detail.

To hire a full-time, tenure-track faculty person in chemistry

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel	1	FT		
Facilities				
Equipment				
Supplies				
Software				
Training				
Other				
Total				

2010 PROGRAM REVIEW

Division:

Geology &
Oceanography

I: PS-2

Section 5.0. Resource Request

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO
- A course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

A full-time geology/oceanography hire would fulfill EMP goals 1.3 and 3.5 by increasing or maintaining student success rates in the geology/oceanography program while maintaining academic rigor and by writing new curricula that work to bring more hands-on learning into lecture and to take students on field trips.

The core competencies emphasized in geology/oceanography include written communication, information competency, critical thinking, scientific complexities, environmental issues, and study skills.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

A full-time, tenure-track faculty person in geology/oceanography will write new labs and create new methods and materials for lectures in established courses. New SLO's or assessments of current SLO's will be conducted by this new faculty person.

5.3. Describe the resource request in detail.

To hire a full-time, tenure-track faculty person in geology/oceanography

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel	1	FT		
Facilities				
Equipment				
Supplies				
Software				
Training				
Other				
Total				

2010 PROGRAM REVIEW

Division:

Physical Sciences/
Physics**I: PS-3****Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO
- A course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

A full-time physics hire would fulfill EMP goals 1.3 and 3.5 by increasing or maintaining student success rates in the physics program while maintaining academic rigor and by writing new curricula that work to bring more hands-on learning into lecture and keep up with contemporary physics education research.

The core competencies emphasized in physics include communication, quantitative reasoning, information competency, critical thinking, scientific complexities, study skills, and application of knowledge

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

A full-time, tenure-track faculty person in physics will write new labs and innovate new methods and materials for lectures in established physics courses. Current physics education research shows that student learning increases in lecture with the use of hands-on exercises. This blurs the boundaries between lecture and lab; the new physics instructor would be expected to have experience in these new teaching methodologies and work to implement them here. New SLO's or assessments of current SLO's will be conducted by this new faculty person.

5.3. Describe the resource request in detail.

To hire a full-time, tenure-track faculty person in physics

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel	1	FT		
Facilities				
Equipment				
Supplies				
Software				
Training				
Total				

2010 PROGRAM REVIEW

Division:

Chemistry

I: PS-4**Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

A full-time classified hire in the chemistry stockroom supports fulfillment of EMP goals 1.3 and 3.5 by increasing or maintaining student success rates in chemistry by facilitating student learning in chemistry labs.

The core competencies emphasized in physics include communication, quantitative reasoning, information competency, critical thinking, scientific complexities, study skills, and application of knowledge.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

Loss of a full-time classified technician in the chemistry stockroom would require that we continue to use hourly help in a position that involves safety (for students and staff) and supervision of student workers. The position also involves the use and management of considerable supplies and equipment which are expensive to replace if mismanaged. Maintaining two full-time chemistry stockroom technicians is absolutely vital to maintaining the quality of chemistry instruction at GCC and in ensuring safety.

5.3. Describe the resource request in detail.

To hire a full-time replacement in the chemistry stockroom for Ms. Yelena Zakaryan (pending HR's action).

5.4. What resources are needed to fill this request?

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel	1	Classified		
Facilities				
Equipment				
Supplies				
Software				
Training				
Total				

2010 PROGRAM REVIEW

Division:

Physical Sciences/
Physics**I: PS-5****Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:
The [Educational Master Plan](#) or other related plan goal.

- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

A 50% hire of a physics stockroom technician would fulfill goals 1.3 and 3.5 by increasing or maintaining student success rates in the physics program by facilitating the maintenance and setup of equipment for physics labs.
The core competencies emphasized in physics include communication, quantitative reasoning, information competency, critical thinking, scientific complexities, study skills, and application of knowledge.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

Student learning in physics involves a tremendous amount of hands-on learning. This is assessed in written labs and in tests. The physics stockroom technician facilitates the ability of the instructors to deliver high-value hands-on learning opportunities to physics students at GCC.

5.3. Describe the resource request in detail.

To hire a 50% physics lab technician to replace Markus Duran, a 100% physics lab technician who resigned earlier this year.

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE

funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel	1	Classified		
Facilities				
Equipment				
Supplies				
Software				
Training				
Total				

2010 PROGRAM REVIEW

Division:

Geology/
Oceanography **I: PS-6****Section 5.0. Resource Request****Description: Two Laptops**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO
- A course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

These laptops are used to directly deliver content to students in both lectures and labs in the geology and oceanography courses. These courses are fully transferable and AA degree applicable. Visual aids are critically important in teaching geology and oceanography and the field is rich with educational programs (both free and licensed) that would be too burdensome (in terms of time and flexibility) or costly to download to the computers in the classrooms.

These computers help to fulfill EMP goals 1.3 and 3.5 by increasing or maintaining student success rates in the geology and oceanography programs by introducing opportunities for visualization of complex phenomena (using unusual software not installed on the computers in level 3 classrooms).

The core competencies emphasized in geology/oceanography include written communication, information competency, critical thinking, scientific complexities, environmental issues, and study skills.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

Loss of this resource could very well cause a decrease in the ability of students to learn the basic concepts outlined in the disciplines' SLO's as well as all the other content in the courses taught.

5.3. Describe the resource request in detail.

Two laptops for use in the classroom by Dr. John Leland and Dr. Poorna Pal. Dr. Leland does not have a desktop computer and only uses a laptop both for general office work and for classroom presentations. He uses the laptop rather than the computer available in class because he uses programs such as Starry Night and Atomic Microscope (for which he has a single user license) to aid in instruction in his classes. He also downloads free programs that are designed for aiding in visualizing or teaching other aspects of geology and oceanography in both lecture and lab. Dr. Pal does have access to a desktop computer in his office but also likes to use a laptop in the classroom for reasons similar to Dr. Leland's. Loss of access to this resource would severely impact both instructors' teaching performance and their access to the latest educational software in their field. The laptops currently used by these faculty

are 6-7 years old and showing signs of age (buttons that no longer work, batteries and cords that have been replaced three or four times at our own expense, and especially glitchy or slow operating speeds despite our best optimization efforts).

Premier.dell.com log-in: <http://premier.dell.com>

E-Quote number: 1011042716825
 Description: Dell Latitude E6510 Premium
 Customer Name: Midwestern Higher Education Compact (MHEC)
 Latitude E6510, Genuine Windows® 7 Ultimate, 64-, no media TOTAL: \$2,474.71

5.4. What resources are needed to fill this request?

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel				
Facilities				
Equipment	\$5000	For 2 Dell Latitude E6510 laptop computers with specs attached	Used in the classroom for delivery of lecture and lab content using unique programs as described above. Also, the only computer that Dr. Leland has for work.	
Supplies				
Software				
Training				
Other				
Total				

2010 PROGRAM REVIEWDivision: **Chemistry I: PS-7****Section 5.0. Resource Request****Description: Storage Cabinets**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

These storage cabinets facilitate safety of students and staff and reduce transport distance of expensive items. These items do not relate directly to EMP or core competencies but are basic components of a safe chemistry lab environment.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

These are basic components of a chemistry lab.

5.3. Describe the resource request in detail.

1) tennsco, 78" High Jumbo Cabinet, SKU TNNJ478PU
1 cabinet. #345.00, no delivery fee, Sevada will transport
<http://www.biggestbook.com/details.jsp?R=4806881>

2) Justrite 893020 Flammable Cabinet, 2 Self Closing Doors, 30
Gallon, 44" x 43" x 18"
1 cabinet Price: \$574.50 SKU: JUS-893020
<http://www.safetysupplyamerica.com/p-595-justrite-893020-flammable-cabinet-2-self-closing-doors-30-gallon-44-x-43-x-18.aspx>

5.4. What resources are needed to fill this request?

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Other	\$1100	78" high Jumbo Cabinet and a Flammable contents cabinet	One cabinet will be used to store hotplates and other breakable equipment in one of the chemistry labs to minimize transport of these items. The other cabinet is to replace the current flammable contents cabinet which is corroding and no longer safe.	
Total				

2010 PROGRAM REVIEW**Division:****Chemistry
Model Sets****I: PS-8****Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

These molecular models are used to help students visualize the complex 3-D shapes of molecular bond orbitals and molecular shapes in chemistry lab and chemistry lecture. Visual and tactile learners especially benefit from access to such materials. The models requested will augment some models the chemistry department already has and will replace some that have been damaged or lost.

These models help to fulfill EMP goals 1.3 and 3.5 by increasing student success rates in chemistry.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

Student learning of VSEPR theory and molecular shapes in all chemistry classes is assessed in the exams given in class. These visual concepts are key links to understanding the functionality of different components in molecules.

5.3. Describe the resource request in detail.

1a) Student inorganic/organic model sets: 15 sets @\$31/60 = \$474.00, Part # 62009
 b) 30 purple, 5-hole atoms @\$0.72 = \$21.60, Part # 60510E Total = \$495.60 + \$19.80
 shipping = \$515.40 Indigo Instruments <http://www.indigo.com/>

Distribution & Mail Or ORDER toll-free at: 1 (877) 746-4764
 169 Lexington Court, Unit I
 Waterloo, ON, N2J 4R9 Distribution Only
 Niagara Falls, NY 14305

2) Unit Lecture Models-VSEPR At least one set, preferably 2 sets @\$279.00 = \$558.00, Part #
 69175V Shipping \$15.00 Indigo Instruments <http://www.indigo.com/>

Distribution & Mail Or ORDER toll-free at: 1 (877) 746-4764
 169 Lexington Court, Unit I
 Waterloo, ON, N2J 4R9 Distribution Only
 Niagara Falls, NY 14305

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Other	\$1600	Molecular models (see 5.3)	Will be used to assist tactile and visual learners in chemistry courses. Will be used to augment learning for all students in both lecture and lab. These models will specifically help students visualize the 3-D shapes of different molecular orbitals and of different molecular shapes in all chemistry courses.	
Total				

2010 PROGRAM REVIEW**Division:****Chemistry
Dishwasher****I: PS-9****Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

This dishwasher will help increase the time chemistry stockroom technicians have to devote to other duties in assisting chemistry students.
This item does not relate directly to EMP or others but is a basic item of a chemistry stockroom.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

This is a basic component of a chemistry stockroom and replaces a dishwasher removed several years ago.

5.3. Describe the resource request in detail.

Dishwasher-- A possibility: Kenmore Stainless Steel 24" Built-In Dishwasher with Ultra Wash® System (1321) ENERGY STAR® item #02213213000, Mfr. model #1321, stainless steel tub; possibly some plastic parts; nylon racks, non-adjustable Reg Price: \$655.99, Sears delivery fee \$70.00 without installation

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel				
Facilities				
Equipment				
Supplies				
Software				
Training				
Other	\$800	Dishwasher for washing chemistry glassware in chemistry stockroom	Increases efficiency by reducing time spent washing massive amounts of glassware in the chemistry stockroom.	
Total				

2010 PROGRAM REVIEW

Division:

PHYS. SCI.**CHEMISTRY****Two Cameras****I: PS-10****Section 5.0. Resource Request**

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

Facilitates students' view of chemical reactions being demonstrated in lecture and lab by allowing them to be projected on a screen.
Relates to EMP 1.3 and 3.5 by increasing student success in chemistry.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

Will help chemistry students to see the demonstration taking place in more detail from their seats so there will be more opportunity for all students to see and question what is being shown to them in the demonstration. This improves students understanding of the chemistry concept being demonstrated. Testing on the demonstrated concepts can then be more confidently conducted given the more equal access students have to seeing the demonstration.

5.3. Describe the resource request in detail.

1) IPEVO Point 2 View USB Document Camera (this has last priority on our list; other items on list were not discussed for order of priority--except the tennsco cabinet should be #1) 3 @ \$69.00 = \$207.00, Item Id: CDVU-03IP
Educational purchase orders:
1. email to sales-america@ipevo.com .
2. Fax to: 1-408-516-8168
http://www.ipevo.com/Point-2-View-USB-Camera_p_70.html

5.4. What resources are needed to fill this request?

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Equipment	\$250	2 small view cameras	For use in the chemistry classroom and lab to show project demonstration reactions on a screen.	
Total				