

PPU DIVISION SUMMARY WORKSHEET FALL 2014

Division of Science, Technology, Engineering, Math, and Public Safety

Dean/Administrator	Other Readers
Lisa Everett	Nadiyah Taylor Catherine Suarez Tina Inzerilla

Division/Area	IPPUs (List Each Program)	NPPUs (List Each Program)
STEMPS <i>Approved by Division 11/18/2014</i>	Administrative Justice Astronomy/Physics Auto Biology (Biology, Ecology, Botany, Physiology, Anatomy) Chemistry Computer Studies (CIS, CNT, CS) Emergency Medical Services Engineering Environmental Studies Geology Math Welding Not yet received: Fire Service Technology Occupational and Radiation Safety	None

This summary should capture the key aspects of the Instructional Program Planning Updates (IPPU) and Non-Instructional Program Planning Updates (NPPU) in your division or area. This summary will be used for institutional planning purposes, as well as for general campus information.

INSTRUCTIONS:

- All PPU readers (including deans) for the division/area should fill out the PPU Reader Worksheet before beginning this summary.
- All PPU readers (including deans) for the division/area should meet to compare their worksheets.

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- Responses in the boxes below should reflect the joint responses of all PPU readers for the division (except the Executive Summary, which is written by the dean and the SLO Summary, which is written by the SLO committee). These responses will be shared with the division and posted publically.
- An asterisk indicates a question requiring a quantitative response.
- “Notable” refers to information from individual PPUs that is not captured by larger trends or themes but is important to mention because it is distinctive, impactful, or unusual.

Executive Summary: Please describe the most important themes, trends, and developments in your division or area. Your summary should identify accomplishments, objectives and barriers to success. Your summary should be approximately 250-500 words in length.

The Division of Science, Technology, Engineering, Math, and Public Safety currently houses 23 academic disciplines, 3 community service not-for-credit career technical education (CTE) programs, the applied technology tool room, the science laboratory stock/preparation rooms, the Open Math Lab, and the campus Computer Center. The Division is currently staffed by 1 dean, 1 administrative assistant, 32 full time faculty, 150+ part time faculty, 12 full time classified professionals, 4 part time classified professionals, and 20-30 professional experts.

The Division advances the mission of the college and the missions of its programs through effective and efficient services for faculty, staff, and students. The Division provides opportunities for communication to ensure collegiality, respect, and collaboration to support student completion of transfer, degree, basic skills, and career technical education goals. To support these goals, the Division of Science, Technology, Engineering, Math, and Public Safety pursues the following administrative unit outcomes (AUOs):

- Provide effective communication between the Division office and its programs as it relates to student needs, curriculum, policies, procedures and budgets.
- Produce a comprehensive schedule that meets the diverse and dynamic needs of our students.
- Inspire a culture of ongoing learning for faculty and staff through meaningful opportunities for professional development.

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Each program within the Division completed an annual Program Planning Update (PPU) in Fall 2014 which looked back at AY 2012-2013 and AY 2013-2014, for the purpose of planning for AY 2015-2016. The following section of this document attempts to capture the division-level themes that emerged from the of the program updates.

Several themes emerged from the Program Review Planning Updates. Most themes are consistent with the previous year's themes.

Most STEM programs noted that the percentage of Latino students is increasing. Also, there is an increase in the percentage of students indicating "transfer" as their educational goal.

There remains a tremendous amount of curriculum work to accomplish. AS-T Geology and AS-T Mathematics were approved. But, work towards C-ID and ADTs continues to be a challenge for other programs. There remains a need for CTE programs to update course outlines, certificates, and degrees.

Most programs expressed the desire to grow, and the need for additional FTEF in order to do so. The number of full time faculty has gone down in several programs. There is a need to hire FT faculty, rather than simply cover the increasing FTEF with part time faculty.

Additional classified support is needed across the Division, including instructional labs, CTE areas, and the Division office.

Current facilities do not meet the needs of many programs. There is a need for appropriately sized classrooms, additional computer labs, deferred maintenance of "older" buildings, and both formal and informal student work spaces.

Financial resources are insufficient to meet the needs of most programs. Most programs would like to see an increase in their program operating supplies budget. Additionally, as the college increases its FTES, program operating/supplies budget will need to be further augmented to support the increased number of students served (specific examples include instructional supplies for labs).

One new theme emerged this year. Many STEM programs, including Chemistry, Geology, Math and Physics, indicated a desire to make pedagogical shifts towards more conceptual understanding of material, graphical representations, and collaborative problem-solving, particularly for labs. Faculty time is the most significant barrier to completing this work. This is a potential grant funding area.

SLO Summary: This summary of division/area SLOs was prepared by the SLO committee. Please paste it in the box below.

SLO Assessment Review

1. What overall themes appear in the SLO Assessment Review?

AJ: The success rates are high (>75%). The reasons for not succeeding appear to be student driven such as not attending class or not turning in homework. The third factor hampering success is the lack of English skills.

Astronomy/Physics: Most of the SLOs are based on comprehensive finals. Overall, the success rates exceed stated criterion for success.

Auto: The program is adhering to their written SLOs and those created for certification by NATEF and more than 90% of students are meeting SLOs.

Biology: The SLOs are aligned with each course and the students are successfully meeting most if not all SLOs. Also, all but one course has been assessed within the last two years, but some assessments are not done frequently enough to determine success rates due to an adjunct teaching these courses. The assessments seem to depend on whether a fulltime or adjunct instructor is teaching the course.

Chemistry: Overall, assessment of SLOs are meeting or exceeding departmental set criteria.

Computer Studies: Student success rose from 84 to 86%. Due to cuts in course offerings and adjuncts, not all courses will be assessed in a timely fashion.

Engineering: In all of the ENGR courses, an average of 72% students score a 3 or higher on the SLOs supporting the success of students transferring to 4-year programs.

Environmental Studies: A practical SLO was developed and assessed. Development of an additional SLO is in progress.

Geology: SLOs were discussed in the broader context of student success. The dominant theme was the development of strategies to engage non-science students in the science of geology and to improve success in the quantitative areas of the course.

Math: This very large department (11 full-time, 32+ adjunct faculty) uses SLO assessments in developing best practices which are shared and discussed at faculty meetings. Many strategies have been implemented to make the SLO assessments easy to do and to ensure the information is useful.

Welding: That there is great success in avoiding work time loss with adherence to industry standards that are the basis for welding's SLOs.

2. What do the themes suggest?

AJ: The success rates are high (>75%). The reasons for not succeeding appear to be student driven such as not attending class or not turning in homework. The third factor hampering success is the lack of English

skills.

Astronomy Physics: The author noted that additional SLOs need to be developed for earlier assessment with a goal of retention.

Auto: That their SLOs are on track for their program.

Biology: That additional time and funding is needed to assist adjunct faculty to learn and complete SLO assessments as needed

Chemistry: Overall, assessment of SLOs are meeting or exceeding departmental set criteria.

Computer Studies: The need for increase in course offerings and faculty to teach them.

Emergency Medical Services: SLOs align with industry certification. Assessments show that 90-100% of students pass the industry certification test first take.

Engineering: In all of the ENGR courses, an average of 72% students score a 3 or higher on the SLOs supporting the success of students transferring to 4-year programs.

Environmental Studies: A practical SLO was developed and assessed. Development of an additional SLO is in progress.

Geology: SLOs were discussed in the broader context of student success. The dominant theme was the development of strategies to engage non-science students in the science of geology and to improve success in the quantitative areas of the course.

Math: With 32 adjunct faculty, the goal of assessing SLOs in all courses every semester is difficult. The department has attempted to make this process as easy as possible for the adjuncts with full-time faculty even offering to enter the data for the adjuncts.

Welding: An increase in industry standards to pass certification has lowered student success due to the higher standards and the limited repeatability allowed under the SSI.

3. How have disciplines responded to the themes?

AJ: Pedagogy has changed to include sharing of “best practices”.

Astronomy Physics: To improve student success, one course will be taught on campus instead of a hybrid. Overall though, pedagogy has not changed primarily due to the turnover in the department and lack of consensus.

Auto: Pedagogical changes are limited by the automotive industry, space considerations and a loss of adjunct faculty.

Biology: Pedagogical changes were made to microbiology as an example to better individualize instruction on microscope use which has improved students’ skills and reduced microscope damage.

Chemistry: Modification of current SLOs and/or additional SLOs is identified as a goal so that SLO assessment will provide meaningful feedback and perhaps lead to future changes in pedagogy.

Computer Studies: Changes in pedagogy are agreed upon by the faculty teaching the same courses.

Engineering: Two ENGR courses with assessed SLOs falling below the average have subsequently increased

the amount of time devoted to coverage of the assessed topics.

Environmental Studies: None

Geology: The quantitative portion of the class was changed as well as laboratory activities to include more hands-on assignments and student collaboration.

Math: The department uses SLO data to change pedagogy and examines the various modes of class delivery (full-paced lectures, half-paced lectures, online, hybrid, etc.)

Welding: The discipline is looking at ways to increase the number of lab hours/welds made to meet the change and introduce certain lab exercises earlier.

4. What additional resources are needed?

AJ/ AstronomyPhysics/ ENGR/ Environmental Studies/Math: None.

AUTO: Additional funding for equipment, adjuncts and replacing General Motors equipment that was moved/taken during the construction of building 1850.

Biology: Workshops and funding to assist with helping adjuncts to become better at SLO assessments of their courses.

Chemistry: The Department desires smaller class sizes to the American Chemistry Society recommended cap of 18 from the current 24 to boost student success rates.

Computer Studies: FTEF and increase budget.

Geology: Additional laboratory materials are needed to support the pedagogical changes of increasing the number of laboratory activities.

Welding: Additional budget to increase the amount of gasses needed for the added welds.

SLO Process

1. How do faculty members in the discipline reach consensus on SLOs and assessments?

AJ: Development and assessment falls primarily on the one and only full-time faculty member. Input from adjuncts is included during the development of SLOs. Discussion of SLOs occurs via email.

AstronomyPhysics: The one full-time faculty member receives input from the Dean, adjunct faculty and faculty from other departments. SLOs are discussed via email and informal discussions.

AUTO: Daily meetings. There are now only two fulltime faculty and they meet daily.

Biology: Meetings of the faculty and adjuncts who participate.

If there is more than one faculty teaching sections of a course, they will discuss the creation of new SLOs if it is deemed necessary.

Chemistry: The 3 full-time faculty discuss and reach consensus on the SLOs. Adjunct faculty were not mentioned. Departmental meetings as well as email.

Computer Studies: Informal meetings between instructors teaching the same courses to choose texts and decide on SLOs.

Emergency Medical Services: Passing the industry certification is used as SLO assessment. This is the purpose of the courses, so departmental consensus is not an issue.

Engineering: Not applicable as this is a one-person department.

Environmental Studies: The 2 faculty members met informally but regularly with SLOs as part of the discussion. Consensus is reached on all aspects of this department. The 2 faculty members met informally but regularly with SLOs as part of the discussion. Consensus is reached on all aspects of this department.

Geology: Development of SLOs appears to fall mainly on the full-time faculty who attempts to create far-reaching SLOs in recognition of various teaching styles and approaches to content. Adjunct faculty are given the option of inputting SLO assessments or giving the data to the full-time faculty for input into eLumen. SLOs are discussed via email.

Math: Collaborative work among sub-groups develops SLOs that are then presented to the entire department for consensus.

SLO assessment questions are not standardized allowing each faculty member to develop their own.

However, there is much support offered by course coordinators and with sample materials available on the departmental BB. SLOs are discussed at discipline meetings as well as an annual "Closing the Loop on SLOs" meeting. BB and the Department website offer a multitude of shared tools and information in support of the SLO process.

Welding: Using SLO assessments and instructor observations and student achievements and meeting once per semester to review these.

2. Were SLOs a topic of discussion at discipline meetings?

AJ, Astronomy/Physics, Auto, Biology, Chemistry, Computer Studies, Emergency Medical Services, Environmental Studies, Geology, Math, and Welding: Yes.

Engineering: Not applicable; one-person department.

PPU Section	Questions	Response
Data Review	1. What overall themes appear in the data reviews?	Increase in Latino student enrollments, particularly in science classes.
IPPU II.A	Increase in proportion of students who indicate goal of transfer.	

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<p>NPPU II.A</p>	<p>2. Describe any notable changes identified by particular programs. Increase in Latino student enrollments, particularly in science classes. Increase in proportion of students who indicate goal of transfer.</p>
<p>Program-Set Standard IPPU II.B NPPU N/A</p>	<p>1. How many IPPUs met their program-set standard for course success in 2012-13? * 11/16* (*number of “programs” varies through summary document because some quantitative data is reported by “program,” while other data is reported by discipline/rubric)</p> <p>2. How many programs met their program-set standard for course success in 2013-14? * 13/16</p> <p>3. What reasons were given (if any) for why programs did not meet their program-set standards? Variability in course standards (grading standards) between faculty.</p>
<p>Curriculum Review IPPU II.C NPPU N/A</p>	<p>1 .How many programs indicated impacts to their curriculum? * 11/11</p> <p>2. What trends appeared in these impacts? C-ID, TMCs, ADTs are continuously being updated. Alignment with C-ID and ADTs remains a challenge for some programs. CTE programs require curriculum updates every 2 years; this continues to be challenge for faculty. Industry standards and industry certifications are constantly changing, so CTE course outlines need regular updates. Collaborations with local industry (LLNL) are leading to 2 new AS degrees. Renewed national and state focus on workforce development in key sectors – advanced manufacturing (including Engineering and Engineering Technology), Information Communication Technology (including Computer Science and Computer Technology) and Bioscience impact the college and the need for faculty to redesign curriculum.</p> <p>3. Describe any notable impacts identified by particular programs. Collaborations with industry are leading to 2 new degrees:</p> <ul style="list-style-type: none"> • AS Engineering Technology (combines welding and engineering coursework) • AS Computer Information Technology (combines CIS, CNT, CS)

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<p>Human Resources</p> <p>IPPU II.D</p> <p>NPPU II.B</p>	<p>1. Based on the PPU's you read, have numbers of full-time and part-time faculty increased, decreased, or remained consistent overall? Full time faculty has decreased in Astronomy/Physics, Mathematics, Computer Science. Part-time faculty has increased to back fill reductions in full time, and to staff growing number of classes on schedule.</p> <p>2. Have numbers of full-time and part-time classified staff increased, decreased, or remained consistent? 1 Lab Tech (Bio/Chem) has been added. Other classified staffing has remained consistent at below optimal levels.</p> <p>3. What trends appear in how changes have affected the student experience? Hiring large numbers or part-time faculty has placed enormous burden on college to hire, mentor, and evaluate the part time faculty. This may affect quality of instruction for students.</p>
<p>Planning Update</p> <p>IPPU III.A</p> <p>NPPU III.A</p>	<p>1. What trends appear in program plans, initiatives and objects accomplished in 2012-13 and 2013-14? Since 2012- Biology has hired 2 full time faculty, implemented a cadaver program for students, and acquired additional biotech equipment through CTE grants. Chemistry was approved for new degree: AS – Teaching Chemistry. Geology was approved for new degree: AS-T –Geology. Engineering has proposed new degree: AS – Engineering Technology. Engineering has significantly increased number of Engineering transfers. Math X mode of delivery is undergoing revamp. Math Jam is being implemented. Emergency Medical Services would like to bring Paramedics program into credit instruction.</p> <p>2. Describe any notable accomplishments identified by particular programs. (see above)</p>
<p>SLO/SAO Assessments</p>	<p>1. What trends appear in how programs will use SLOs/SAOs to improve student learning or services? (See SLO Summary above provided by SLO Committee)</p>

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IPPU III.B.1	2. How many PPU's indicated that they will write new SLOs/SAOs?*
NPPU III.B.1	3. How many total SLOs/SAOs will be written?*
	4. Approximately how many part-time faculty plan to participate in the SLO process? *
Curriculum IPPU III.B.2	1. How many programs intend to make changes to existing curriculum? * 12/12
NPPU N/A	2. How many programs intend to submit proposals for new curriculum? * 12/12
	3. What trends appear in programs' plans to create or change curriculum? Compliance with C-ID, TMC, and ADTs continues to be a goal. Meeting industry/workforce demand requires curricular changes. CTE course outline updates continues to be challenge.
	4. Describe any notable curriculum changes or new curriculum proposals identified by particular programs. Pedagogical shift from skill/drill to conceptual understanding, graphical representations, and collaborative problem-solving is being discussed in Chemistry, Geology, Physics, and Mathematics. Math is working on alternative pathway through basic skills sequence; and accelerated models. Computer Studies (CIS, CNT, CS) working on curriculum updates to be current with industry certifications, and industry sectors. Biology integrating new content into curriculum – tissue culture, UV-Vis spectrophotometers & fluorospectrometers, and synthetic biology.

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<p>General Program Planning</p> <p>IPPU III.B.3</p> <p>NPPU III.B.3</p>	<p>1. What overall themes appear in the program plans? Many STEM programs (Physics, Chemistry, Math, Environmental Studies) would like to write/rewrite labs to unify sequence of classes, integrate new technology, and improve pedagogy.</p> <p>2. Describe any notable plans, initiative or objectives identified by particular programs. Biology consolidating rubrics (ANAT, BIOL, BOTN, ECOL, MICR, PHSI, ZOOL). Math for Liberal Arts course will take effect Fall 2015. Math is discussing restructuring of STEM math sequence – Trig, Pre-Calc, Calc.</p>
<p>Enrollment Management</p> <p>IPPU IV.A</p> <p>NPPU N/A</p>	<p>1. How many programs plan to request new FTEF?*</p> <p>9/11</p> <p>2. How much total FTEF is being requested? *</p> <p>5+ FTEF</p> <p>3. What trends and/or notable examples appear in the rationale for FTEF requests? Science classes are impacted. Math classes are in demand. CS is experiencing growth. Move Paramedics into credit EMS instruction.</p>
<p>Human Resources</p>	<p>1. How many programs plan to request new or replacement faculty positions?*</p> <p>3</p>

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IPPU IV.B	2. How many total new/replacement faculty will be requested? * 5
NPPU IV.B	3. How many programs plan to request new or replacement classified positions? * 4
	4. How many total new/replacement classified positions will be requested? * 4?
	5. What trends and/or notable examples appear in the rationale for human resources requests? Laboratory Technicians for applied technology programs are needed. Instructional Assistants for math classes and math labs are needed. Desire to increase PT classified positions to FT. Evening and weekend coverage is a challenge.
Financial IPPU IV.C	1. How many PPU's plan to request maintained budgets? * 0 would like to maintain existing budget.
NPPU IV.C	2. How many PPU's plan to request increased budgets? * All would like to increase budget.
	3. What trends and/or notable examples appear in the rationale for financial resources requests? Program operating supplies budgets were dramatically reduced several years ago. Budgets are slowly being restored to needed levels. Prior years spending may not accurately capture needs. Adding classes to the schedule requires additional supplies and materials, such as markers and lab materials. Procurement of instructional equipment such as new laboratory equipment will result in added operational expenses such as supplies that the equipment uses, maintenance, and repairs. Auto would like to recoup some of the facility use money from GM and KIA contracts for program needs.
Technology IPPU	1. How many PPU's plan to request software upgrades? * 6 - Astronomy/Physics, Auto, CIS, CNT, CS, Engineering

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IV.D NPPU IV.D	2. How many PPU's plan to request new software? * 0 3. What trends and/or notable examples appear in the rationale for technology requests? Software requires annual updates/upgrades.
Facilities, Equipment and Supplies IPPU IV.E NPPU IV.E	1. How many PPU's plan to request renovations or upgrades of existing facilities? * 7 - Welding yard, Building 1800 interior paint, Astronomy/physics storage, Auto more space or off site space, Engineering storage, Biology anatomy learning center, CNT computer workbench lab. (not sure there is a request process, but at least 6 programs have existing facility needs) 2. How many PPU's plan to request new facilities? * 3 - CS/CIS and Math need computer lab classrooms. EMS labs are scheduled predominantly on Saturdays because of lab space needs. (not sure there is a request process; but programs have significant facility needs) 3. How many PPU's plan to request upgrades to equipment? * 13/13 4. How many PPU's plan to request new equipment? * 13/13 5. How many PPU's plan to request new supplies? * 13/13 6. What trends and/or notable examples appear in the rationale for facilities, equipment and supplies requests? Facilities: Some programs have no designated space/facilities - math, computer science. Some have outgrown their facilities - Biology. Others have outdated facilities - auto, welding, CNT. Some just need more space - EMS. What is striking is that biology has outgrown its facility, even though it is one of the newest buildings on campus. Equipment: Many programs would like new technologies for labs - everything from computers and a laser welder to microscopes and chemistry glassware. Some equipment items are large expensive pieces of equipment, while others are smaller replacement items. Supplies: As described under financial section, all programs have a need for additional supplies. As the college

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	grows enrollments over the next few years, program operating budgets will need to be augmented to support the increased service to students.
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