

INSTRUCTIONS

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B. INSTRUCTIONAL STAFFING

1. In the table below enter the number of sections offered and the number of full time and adjunct faculty in your program /discipline by term over the past several years .

Term	No. of Active Sections	Full-time Faculty	Adjunct Faculty
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2. What staffing have effectiveness

[Begin response

factors /challenges influence d the of the program?

here]

C. CTE PROGRAMS LABOR MARKET & ACHIEVEMENT

Please complete this section if the program is Career Technical Education (CTE). Go to subsection D if the program is not CTE.

1. Describe the demonstrated effectiveness on the program over the past several years with levels and trends of achievement data, including degree/ certificate completions (awards) and employment statistics.

[Begin response here]

2. Describe the number of, activities of, and recommendations resulting from advisory committee meetings that have occurred over the past two years. What information and/or data were presented that required or currently require changes to be made to your program?

(Please attach copies of meeting minutes over the past two years and a list of committee members and their respective industries)

D. PROGRAM GOALS

1. List and describe program/disciplinary goals for the next comprehensive review cycle Fall 2014 through Fall 2018. Be sure to highlight innovative, unique, or other especially noteworthy aspects.

A new mission and vision is currently before the board for approval in February. In considering your program's future goals, please review the proposed new mission and vision statements

VISION STATEMENT

Hartnell College will be nationally recognized for the success of our students by developing leaders who will contribute to the social, cultural, and economic vitality of our region and the global community.

MISSION STATEMENT

Focusing on the needs of the Salinas Valley, Hartnell College provides educational

This section must be completed for ALL academic programs, including those scheduled for a comprehensive review in spring 2014 .

A. COURSE DATA & TRENDS

1. Please evaluate the 3 -year trend of enrollment and success of courses in your program/ discipline. Identify the courses you are choosing to examine this current year in the list below. You do NOT need to evaluate trends for each course every year.

Course Number	Course Name	Does the course have any DE (online or hybrid) sections?
Biology 1	Fundamental Biological Concepts	No
Biology 5	Anatomy	No
Biology 30	Marine Biology	No

Please use the data that have been provided. Analyze trends that you observe with respect to the data for the identified courses and answer the following questions .

ENROLLMENT

2. Review the enrollment data. Describe and analyze any patterns or anomalies that you notice . What do you make of these patterns or anomalies? What actions should be taken to ensure continuous improvement ?

For Biology 1, the average enrollment per section for academic years 2011, 2012, and 2013 was 28 students. The enrollment was fairly steady d

SUCCESS

3. Review the success data . Describe and analyze any patterns or anomalies that you notice . What do you make of these patterns or anomalies? What actions

test before that date so that students can have some idea of how they will perform and the amount of time that must be invested to get a good grade. In addition, because BIG5 is a

1. Enter the number of Distance Education Courses, both fully online and hybrid sections, along with the number of full-time and adjunct faculty.

2. Compare student success in the DE teaching environment with success in the face-to-face teaching environment in the same course. Are there differences? To what do you ascribe the differences in your program?

C. CURRICULUM

Complete the following tables pertaining to courses scheduled for review.

Courses scheduled for review during AY 2013-14 as previously specified	Faculty member(s) responsible for coordinating	(a) Was the course reviewed and (b) taken
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For example, were data gathered at the course level? Was there review and analysis of the data? How did the discipline faculty engage in discussion? Were any interventions conducted? Are there any plans to make changes to certificate/degree programs or improvements in teaching and student learning?

Discipline faculty obtained and analyzed course-level data for all classes that were taught in Fall 2013. Classes that are taught in Spring 2014 will all be assessed at that time. We prepared an assessment schedule for all classes and will assess the relevant PLOs when the SLOs are assessed.

As we understand it, PLO assessment applies to major courses only. Our initial assessment included two of the three classes (BIO-2 and BIO-3) and dealt with classification. Each was assessed with a SLO form from the course that mapped to this particular PLO. The instrument was a multiple choice (BIO -2) or matching (BIO -3) question from the final exam.

In both cases, student performance substantially exceeded the m3ms, staram.

CORE COMPETENCIES

3. Describe how Core Competencies were specifically addressed by the program/discipline during the past year. For example, were data gathered at the course level? Was there review and analysis of the data? How did the discipline faculty engage in discussion? Were any interventions conducted? Are there any plans to make changes to courses or improvements in teaching and student learning?

We have mapped SLOs for all of our courses to Core Competencies. The SLOs that mapped to PLO 5 also map to the core competency concerning critical thinking. We did not discuss this result separately, but conclude that if student performance exceeds our program level outcome, it also meets the core competency.

COURSE LEVEL STUDENT LEARNING OUTCOMES

4. Please complete the following tables.

List courses scheduled for SLO assessment as previously specified	In what term was the course assessed?	Was the Course Assessment Summary Report completed?
BIO 1	Fall 2013	Yes
BIO 3	Fall 2013	Yes
BIO 3	Fall 2013	Yes
BIO 5	Fall 2013	Yes
BIO 6	Fall 2013	Yes
BIO 6L	Fall 2013	Yes
BIO 10	Fall 2013	Yes
BIO 11	Fall 2013	Yes
BIO 13	Fall 2013	Yes
BIO 20	Fall 2012	Yes
BIO 27	Fall 2013	Yes
BIO 30	Fall 2013	Yes
BIO 42	Fall 2013	Yes
BIO 47	Spring 2014	Pending
BIO 48	Fall 2013	Yes
BIO		

Course level assessment results vary considerably between classes, even for comparable SLOs measured on the same student population (i.e. Biology Majors). For instance, SLO#1 for General Zoology reads Given any animal phylum, the student will be able to describe the characteristics that define the group as well as illustrate its life cycle. The average score on the 6 representative assessment questions for this SLO was 93%. A comparable SLO for General Botany is Given any plant phylum, the student will be able to describe the characteristics that define the phylum as well as illustrate the life history of one of its representatives. On average students were able to match characters to the major plant phyla 78% of the time, but they were unable to accurately illustrate a selected life history. The range for the life history portion of this assessment was 0% (13 students), 29% (1 student), 43% (3 students), 71% (1 student), 86% (2 students), 100% (1 student).

Assessment results also indicate that success within classes varies substantially between SLOs. For example, results for SLO#2 for Fundamental Biological Concepts (BIO 1) found that given a cellular organelle, 67% of students answered 75% or more of the question correctly; 19% answered 50-74% correctly; and 14% answered less than 50%. These results differ from those from BIO 1 SLO#3 (biomolecule structure and function), which showed that only 15% of students answered 75% correctly; 57% answered 50-74% correctly; and 28% answered less than 50%.

Therefore, the above examples suggest that remediation at the course level will be dictated by individual SLO results within each of the biology courses. If remediation is necessary, then the use of further instructional resources, supplemental instruction, homework assignments, study guides, and tutorials on the subject will be implemented to improve success.

6. Describe assessment activities that need to be strengthened or improved. What are the challenges to achieving these improvements?

In the fall of 2013, when nearly all of the courses taught in the biology discipline were assessed, there was some confusion regarding the SLOs and criteria the faculty were to use to assess them. In the future there is a need to communicate in advance the SLOs and their criteria to all faculty teaching biology courses.

E. PREVIOUSLY SCHEDULED ACTIVITIES

This subsection focuses on activities that were previously scheduled. An activity can address many different aspects of your program/discipline, and ultimately is undertaken to improve or enhance your program/discipline, and keep it current.

Activity scheduled	What success has been achieved to date on this activity?	What challenges existed or continue to exist?	Will activity continue into AY 14-15?	Will activity continue into AY 15-16?*
1. Examination of prerequisites	<p>Prerequisites for listed courses were evaluated. The greatest concern was regarding appropriate chemistry prerequisites to prepare students for biology courses. The decision was made not to make CHM-23 a prerequisite for now. CHM-60 is undergoing course revision to better provide the prerequisite material applicability to chemical concepts necessary for biology courses.</p>	<p>The task is fairly consistent</p>	<p>f1-4.6 62276118(i)9.85501(m)-11.9958(es and)15.3f4 2</p>	
	<p>Directly related to the examination of prerequisites is our work on the STEM grid. The STEM grid is the master schedule which lists the STEM courses that are offered and the times and semesters that they are offered. We have been revising the grid to 2015 (a) 3 4540 (t)-3002(ent)3..07038(o)-5.we 055418.7J ET BT 11.02771(d)7.7]]</p> <p>now with the major goal being to reduce course schedule conflicts between courses that students are likely to be taking in the</p>			

satellite IT services maintained within any department for the departments specialized IT requirements. The department was told that the acquisition of new software programs by IT to make IT more responsive to our needs is in the works. Nothing has been implemented yet so all of our previous problems remain.

5. Collect and analyze data about student success, retention, persistence in STEM majors

At present only Dr. Wright and Dr. Edens are being trained on Cognos (a computer tool that can collect and analyze data such as student success and retention). This training is not yet complete. However, preliminary analysis of the data for all Biology courses considered together seems to indicate student retention may be a problem.

Cognos training will not be available to general faculty members until June 2014.

Yes

Yes

6. Upgrade, repair, and maintain existing laboratory equipment. Purchase of new equipment.

No new equipment has been acquired during the 2013-2014 academic year. Recently even the maintenance on existing microscopes scheduled for Spring break has been cancelled due to the colleges budget freeze on any spending because of non-compliance with the 50% Rule .

Lack of funding. Current uncertainty in the department regarding technical support for labs. New

respect to ability
to offer new labs in
the new building.

* For each activity that will continue into AY 2015-16 and that requires resources, submit a separate resource request in Section III .

1. Evaluate the success of each activity scheduled, including activities completed and those in progress . What measurable outcomes were achieved? Did the activities and subsequent dialogue lead to significant change in student learning or program success?

The success of each of the planned activities is summarized in the table above and will not be reiterated here. Since many of the planned activities were not funded and therefore were not completed no measurable outcomes with respect to those activities can be expected. There has been considerable dialogue among biology faculty regarding these projects and which ones should be continued into the next academic year. Projects to be continued were chosen based on common consensus by the faculty that the desired outcomes originally proposed for each project in the 2013-

This section must be completed for ALL academic programs, whether scheduled for annual or comprehensive review in spring 2014.

A. NEW ACTIVITIES

This subsection addresses new activities for, and continuing new activities into, AY 2015 -16. An activity can address many different aspects of your program/discipline , and ultimately is

upload
their own
lectures.

to make
screencasts of
their lectures.
The request we
are making in
this report is
for installing
screencasting
software on six
smart room
computer and
for six wireless
microphones
and six web
cameras to be
issued to any
instructors

new reagents to modernize microbiology and cell biology labs (at least)			research technologies in a cost-effective manner	Grant funds might be available to pay faculty or staff to develop experimental protocols.		
6. Conduct research on patterns of student retention and success in biology classes	1A, 2A, 2B, 5A	All of them	That we consciously devote time and effort to analyzing the effects of our efforts over the last several years, and use them to inform new and ongoing activities.	We can use research tools like COGNOS that are already up and running. At least two of us (Alex and Ann) will take the training this summer.	Alex and Ann will coordinate	Ongoing, but we should be able to complete analyses of the effects of prerequisites and advisories on student achievement by Spring 2015.

* See Appendix A for a list of the 11 goals in the college's Strategic Plan.

This item is used to describe how the new activity, or continuing new activity, will support the program/discipline.

1. Secure a second full-time biology technician.

Consider:

- Faculty
- Other staffing
- Facilities
- Equipment (non-expendable, greater than \$5,000), supplies (expendable, valued at less than \$5,000),
- Software
- Hardware
- Outside services
- Training
- Travel
- Library materials
- Science laboratory materials

- a) Describe the new activity or follow-on activity that this resource will support.

Pursuant to the job description, the technician will support instruction by setting up and dismantling lab exercises in an efficient manner; assist faculty with planning, coordinating, and supplying labs; support special activities like the science academy, summer bridge, and student research; support the institution by contributing to planning and safe use of equipment and facilities. In particular, the technicians will play a vital role in providing oversight, along with the faculty, of the construction and outfitting of the new building.

- b) Describe how this activity supports any of the following:

- 1) Core Competency- critical thinking, communication skills, global awareness
- 2) Program level Outcome -all of them (they have a laboratory component)
- 3) Course level Outcome - lots of them
- 4) Program/ Discipline Goal -all of them
- 5) Strategic Priority Goal - student access, student success, effective utilization of resources, innovation, partnerships

- c) Does this activity span multiple academic years? YES NO

If yes, describe the action plan for completion of this activity.

We hope that completion of the hire will be of short duration, but that we will reap the benefits of this additional expertise for a long time to come.

- d) What measurable outcomes are expected from this activity? List indicators of success.

The job description for this position clearly indicates that planning, coordination, and development of activities and procedures is part of the job. We expect to see more seamless support of lab

*** Please complete this page for each new activity.

Activity 3: Evaluation of open resource texts for BIO -5 and BIO -6.

This item is used to describe how the new activity, or continuing new activity, will support the program/discipline.

Consider:

- Faculty
- Other staffing
- Facilities
- Equipment (non-expendable, greater than \$5,000), supplies (expendable, valued at less than \$5,000),
- Software
- Hardware
- Outside services
- Training
- Travel
- Library materials
- Science laboratory materials

k) Describe the new activity or follow -on activity that this resource will support.

Activity 3: Evaluation of open resource texts for BIO -5 and BIO -6. This activity will involve identification of open resource texts covering the subjects of Human Anatomy and Human Physiology. There are many sources to review. The first level of review will be to identify those resources with texts available for these two subjects. The second level of review will involve evaluating all of the texts identified to select perhaps the top 5 in each area for in depth evaluation as the text for the subject. Final review will involve side by side comparison of these selected texts with the texts now being used to teach these courses to determine completeness of coverage, depth of coverage, and any availability of support materials, such as online material to accompany the text for the student and the instructor.

Follow-on activity would involve adoption of the text and its use in an upcoming semester. Performance with the new text would be evaluated using SLO data from before adoption of the open resource text and post adoption.

l) Describe how this activity supports any of the following:

- 11) Core Competency
- 12) Program level Outcome
- 13) Course level Outcome
- 14) Program/ Discipline Goal
- 15) Strategic Priority Goal

This activity supports course level outcomes if it can be shown to improve student success rates for these courses, especially anatomy.

This activity supports Hartnell College strategic goals 1A, 2A and 2B. These goals are designed to improve student access to higher education and to provide means for students to achieve success in their academic endeavors.

Ensuring that every student has the textbook available to them on the first day of class, at no cost, provides every student with an equal opportunity to be successful in these courses.

m) Does this activity span multiple academic years? NO

If yes, describe the action plan for completion of this activity.

n) What measureable outcomes are expected from this activity? List indicators of success.

Measureable outcomes will include evidence of increased retention in the class, higher success rates in the class and improvements in the statistics for SLOs for these classes.

o) What are the barriers to achieving success in this activity?

Possible barriers include lack of an adequate free resources to replace currently used publisher materials, and ease of the student in gaining access to the source.

This item is used to describe how the new activity, or continuing new activity, will support the program/discipline.

Note: since activity 4 does not require monetary resources, we have not submitted an analysis for that activity

Activity 5: . Develop new experiments and test/purchase new reagents to modernize microbiology and cell biology labs (at least)

Consider:

- Faculty
- Other staffing
- Facilities
- Equipment (non -expendable, greater than \$5,000), supplies (expendable, valued at less than \$5,000),
- Software
- Hardware
- Outside services
- Training
- Travel
- Library materials
- Science laboratory materials

p) Describe the new activity or follow -on activity that this resource will support.

This is a carry-over and refinement from last year. We would like to update some of our experiments to reflect the types of technology that are used in labs in academia and industry today. In microbiology, for example, there is increased emphasis on rapid identification and DNA technology. We need to develop instructional approaches that not only introduce the techniques but provide background and perspective on the value of these techniques. Thus, we expect to develop dry labs as well as experiments.

q) Describe how this activity supports any of the following:

- 16) Core Competency -
- 17) Program level Outcome -
- 18) Course level Outcome
- 19) Program/ Discipline Goal
- 20) Strategic Priority Goal

s) What measurable outcomes are expected from this activity? List indicators of success.

6. Conduct research on patterns of student retention and success in biology classes

Consider:

- Faculty
- Other staffing
- Facilities
- Equipment (non -expendable, greater than \$5,000), supplies (expendable, valued at less than \$5,000),
- Software
- Hardware
- Outside services
- Training
- Travel
- Library materials
- Science laboratory materials

u) Describe the new activity or follow -on activity that this resource will support.

x) What measureable outcomes are expected from this activity? List indicators of success.

Depending on the results of our work, we may see changes in curriculum and scheduling. Increased retention and success will be indicators of success.

y) What are the barriers to achieving success in this activity?

Like everything else we have proposed, it will take time and focused effort to complete the analysis. As for barriers to any changes that we might implement, it depends on what we decide to do.

B. RESOURCE REQUESTS

If new/additional resources are needed for your program/discipline, it is important that you identify them and project their cost, and that these resources and costs be considered through the College's integrated planning (governance, budget development, funding decision making, and resource allocation) processes. A resource is likely to be something needed to support an activity that you have identified in IIIA. above, in which case you must link the resource with a specific activity number (first column below). All resource requests completed in the various columns of a specific row must be linked to the new or continuing activity numbered on the first column of the same row. A resource could also be something necessary for your program/discipline to function properly to improve student learning, such as updated equipment in a classroom; in such case be sure to note that the resource is NOT tied to a specific activity.

Activity No.	Personnel Classified Staff/ Faculty (C/F/M)*	Supplies/ Equipment (S/E)**	Technology Hardware/ Software (H/S)***	Contract Services	Training	Travel	Library Materials	Science Labs	Projected Costs
1.	1C: One full-time science lab								

APPENDIX A . Strategic Priorities & Goals (from Hartnell College Strategic Plan 2013 -2018)

Priority 1: Student Access

Goal 1A:

Goal 5A: Hartnell College will provide programs and services that are relevant to the real-

BIO	12	Given a hypothetical family history, the student will be able to predict inheritance of genetic traits according to Mendelian and non-Mendelian laws.
BIO	12	Given a multigenerational family history displayed in a pedigree diagram, the student will be able to estimate probability of inheritance using pedigree analysis.
BIO	12	Given the processes of cell replication and organismal reproduction, students will be able to describe the flow of heritable information from DNA to protein.
BIO	12	Given access to these resources, students will be able to obtain and evaluate genetic information from major databases, as well as consider the ethical implications of using such data.
BIO	13	Given the DNA molecule, the student will be able to demonstrate a knowledge of its biochemistry.
BIO	13	Given allele frequencies, the student will be able to calculate the probability of a genetic match.
BIO	13	Given a forensic article, the student will be able to summarize the key findings.
BIO	13	Given a tissue sample, the student will be able to outline the methods of DNA extraction, amplification, and typing.
BIO	18	Given a disorder of the immune, endocrine, cardiovascular, nervous, or musculoskeletal system, the student will evaluate its origins and effects.
BIO	18	Given a genetic disorder, the student will delineate the cause, the symptoms, and the treatment.
BIO	18	Given an inflammatory disorder, the student will describe the contribution of the inflammatory process to the disease.
BIO	20	Given a biological specimen, the student will classify it.
BIO	20	Given a representative specimen from any of the major organisms, the student will describe its natural history.
BIO	20	Given representative producers and consumers, the student will construct a food web as well as predict potential human impacts on the community.
BIO	27	Given any microbe, students will be able to compare and contrast the various microbes with respect to environmental niche, biological characteristics, pathogenesis, growth characteristics and control of growth.
BIO	27	Given microbes from different habitats, students will be able to describe metabolic characteristics of microbes and implications for distribution in the environment and capacity to cause disease.
BIO	27	Given the human immune system, students will be able to describe the role of the immune system in preventing or controlling infection.
BIO	27	Given any laboratory protocol, students will be able to perform laboratory exercises that demonstrate good microbial isolation and culture, as well as safe

		laboratory practices.
BIO	30	Given representative producers and consumers, the student will construct a food web as well as predict potential human impacts on the community.
BIO	30	Given a mock experiment, the student will use the scientific method to answer a biological question.
BIO	30	Given any marine animal, the student will properly dissect a specimen for anatomical study.
BIO	30	Given any of the major marine organisms, the student will describe key characteristics.
BIO	42	Given a diagram of a cell, students will identify the major organelles and explain their functions at a molecular level.
BIO	42	Given an organ system, students will list the major organs and describe their functions.
BIO	42	Given the genotypes of two parents, students will predict the likelihood of all

BIO	48	Given a type of ecosystem, students will discuss the major impacts humans have had on that ecosystem.
BIO	48	Given an energy source, students will be able to describe how it is obtained, used, and its comparative effects.
BIO	48	Given the living components of an ecosystem, students will demonstrate understanding of their relationships to one another.
BIO	48	Given a non-living part of an ecosystem, students will discuss the sources and effects of manmade pollutants.
BIO	48L	Given an ecological principle, the student will be able to define and describe an example of it.
BIO	48L	Given human population data, the student will be able to use a logistic population growth curve to make a prediction as to how many individuals the Earth can support.
BIO	48L	Given a natural resource issue, the student will propose a mitigation plan.
BIO	48L	Given a list of lifestyle activities, the student will be able to provide examples of personal practices that reduce energy waste.
BIO	6L	Given the solute concentration of a solution, students will predict the movement of water by osmosis into or out of a cell.
BIO	6L	Given the results of standard laboratory blood tests, the student will demonstrate the ability to analyze and interpret the results.
BIO	6L	Given the name of a biological molecule, students will demonstrate understanding of the molecule's importance to life functions.
BIO	6L	Given an image of a tissue viewed at a microscopic scale,

