Assessment Summary

Goals

1: Students will value our discipline  (Final)
2: Students will understand our discipline  (Final)
3: Students will appreciate the experimental basis of our discipline  (Final)
4: Students will implement the strategies of our discipline to solve problems  (Final)
5: Students will contribute to the wider community.  (Final)

Outcomes/Objectives

0: Fundamentals of physical and life sciences  (G:1, 2, 3, 4) (Final)

Students will demonstrate an understanding of the key principles of Biochemistry and Genetics, as well as the fundamentals of Chemistry, Biology, Mathematics, and Physics as applied to our discipline.

Student Learning Outcome/Objective: Yes
Established in Cycle: 2008-2009
Active Through: Keep Active
Entry Status: Final
Last Updated By: David Peterson on 9/28/2014
Established By: David Peterson on 8/1/2008
1: Problem solving

Students will demonstrate the ability to dissect a problem into its key features and to test hypotheses through interpretation of experiments.

Student Learning
Outcome/Objective: Yes
Established in Cycle: 2008-2009
Active Through: Keep Active
Entry Status: Final
Last Updated By: David Peterson on 10/14/2009
Established By: David Peterson on 8/1/2008

Relevant Associations

- General Education/Core Curriculum Associations
  2 Demonstrate critical thinking
  6 Prepare to engage in lifelong learning

- Strategic Plan Associations
  Texas A&M University
  3 Enhance the Undergraduate Academic Experience.

2: Research skills

3: Communication skills

Measures & Findings

(Numbers inside parentheses show related Outcomes/Objectives.) Toggle triangles to add/edit Target, Findings, or Action Plan.

1: Final Exams in Selected Upper Division Courses

Final exams in core upper division courses taught in our department will include questions designed to assess knowledge and comprehension of key principles. Other questions will be designed to assess application of key principles to analyze problems and synthesize solutions.

Source of Evidence: Other Acad Dir. - Academic direct measure of learning - other
Connected Documents:

- BICH 441 Sample Questions
- GENE 302 Sample Questions

Established in Cycle: 2008-2009
Active Through: Keep Active
Entry Status: Final
Last Updated By: David Peterson on 9/28/2014

Including sample questions provides context to reviewers.
Established By: David Peterson on 8/1/2008

Targets and Findings:

0: Fundamentals of physical and life sciences

- Target (Final) [Preview Formatting]  
  80% of students will correctly answer 80% of exam questions in core courses designed to assess knowledge and comprehension of key principles. (Questions uploaded to WEAVE)  
  Established in Cycle: 2008-2009  
  Active Through: Keep Active  
  Last Updated by David Peterson on 9/28/2014 Established by David Peterson on 9/28/2014

Findings:

2013-2014 Assessment Summary / Findings (Final)  
Target: Not Met  
In the final exam for BICH441 in spring 2014, 19/38 (50%) scored at least 80% on questions designed to assess knowledge and comprehension of key principles. The average score was 72%.  
In the final for GENE302 in spring 2014, 83/114 (72%) scored at least 80% on questions designed to assess knowledge and comprehension of key principles. The average score was 83%.  
[Preview Formatting]  
Last Updated by David Peterson on 9/28/2014 Established by David Peterson on 9/28/2014

2012-2013 Assessment Summary / Findings  
Target: Not Met  
Sample questions were selected by instructors of GENE 302 and BICH 441 that examined knowledge and comprehension of information. Questions used have been uploaded to WEAVE. For GENE 302 the average was 65% (range 35-84%). For BICH 441 the average was 71% (range 50-100%).  
[Preview Formatting]  
Last Updated by David Peterson on 8/1/2013 Established by David Peterson on 6/27/2013

2011-2012 Assessment Summary / Findings  
2010-2011 Assessment Summary / Findings  
2009-2010 Assessment Summary / Findings  
2008-2009 Assessment Summary / Findings

1: Problem solving

- Target (Final) [Preview Formatting]  
  1. 80% of students will correctly answer 80% of exam questions designed to assess application and analysis utilizing key principles.  
  2. 80% of students will correctly answer 75% of exam questions designed to assess synthesis and evaluation of new ideas based on their knowledge of key principles.  
  Established in Cycle: 2012-2013  
  Active Through: Keep Active  
  Last Updated by David Peterson on 9/28/2014 Established by David Peterson on 9/28/2014

Findings:

2013-2014 Assessment Summary / Findings (Final)  
Target: Not Met  
1. In the final exam for BICH441 in spring 2014, 20/38 (53%) scored at least 80% on questions designed to assess application and analysis using key principles. The average score was 75%. In the final for GENE302 in spring 2014, 19/114 (17%) scored at least 80% on questions designed to assess application and analysis utilizing key principles. The average score was 62%.  
2. In the final exam for BICH441 in spring 2014, 7/38 (18%) scored at least 75% on questions designed to assess students’ ability to utilize key principles to analyze problems and synthesize solutions. The average score was 49%.  
3. In the final for GENE302 in spring 2014, 73/114 (65%) scored at least 75% on questions designed to assess students’ ability to utilize key principles to analyze problems and synthesize solutions. The average score was 82%.  
[Preview Formatting]
2012-2013 Assessment Summary / Findings
Target: Not Met
1. Sample questions were selected by instructors of GENE 302 and BICH 441 that examined application and analysis of information. Questions used have been uploaded to WEAVE. For GENE 302 the average was 69% (range 27-85%). For BICH 441 the average was 77% (range 17-100%). 2. Sample questions were selected by instructors of GENE 302 and BICH 441 that examined synthesis and evaluation of information. Questions used have been uploaded to WEAVE. For GENE 302 the average was 59% (range 38-76%). For BICH 441 the average was 71% (range 13-100%). [Preview Formatting]
Last Updated by Jenna Kurten on 8/26/2013 Established by David Peterson on 8/1/2013

Related Action Plan(s)
Provide problem solving practice and instruction 2013-2014

2: Laboratory Research (O:0, 1, 2, 3) (Final)
3: Safety training (O:2) (Final)
4: Department Questionnaire (O:0, 1, 2, 3) (Final)
5: Biochemistry research discussion group (O:1, 3) (Final)
6: Core support courses (O:0) (Final)
7: Pre/Post Test in Upper Division Courses (O:0) (Final)
Provide problem solving practice and instruction

Description:

Based on the findings that many of our targets for measures related to problem solving and critical thinking have not been met, we will make some adjustments in our courses to provide students with more directed examples, as well as guided practice, in the skills we want them to develop. One change will be to increase the student credit hours in BICH 404 (Biochemical Calculations) from 1 to 2. The extra class period will be used as a problem-solving session with guided examples of the quantitative and analytical thinking we seek to develop. A second change will be an added emphasis in BICH 441 (Biochemistry II) and BICH/GENE 431 (Molecular Genetics) on analysis of research papers upon which textbook facts are based. By purposefully leading students through the logic of how facts became known, we hope to model the critical thinking that will be necessary in the analysis of their own experimental work described in their required 491W thesis. To provide additional guidance regarding the scope of written 491W thesis, we will provide students and faculty with a copy of the 491W assessment rubric.

Implementation Status: In-Progress
Priority: High

Relationships:
Measure: Final Exams in Selected Upper Division Courses | Outcome/Objective: Problem solving
Measure: Laboratory Research | Outcome/Objective: Problem solving
| Research skills
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