Department Annual Report

Non-Perkins Programs

2012-2013

Biological Sciences

Document Prepared By: Dr. Robert Long
Goals and Accomplishments for 2012-2013

Department Goals (set at beginning of the Fall 2012 semester) and Accomplishments:

1. Develop two to three student research projects (independent study) in the newly created Biology Research Lab.
   
   *Pam Laureto had two students working in the research laboratory this year. Jessie Jones, a Genetics student, undertook an honors contract in which he worked on learning molecular techniques such as PCR and gel electrophoresis that are commonly used in genetics research.*
   
   *Christine DeVries accomplished preliminary work for the Pierce Cedar Creek Institute research grant which she subsequently received.*

2. Revise the Biology Scholarship program.
   
   *Preliminary efforts to revise the program have resulted in a change in the application form completed by the student and a revision of the scholarship descriptions. It was decided that a broader look at the scholarships needed to be taken in terms of updating what they can be used for, when they should be offered, and the mechanism by which they are administered. This has turned into a bigger project than anticipated. An initial meeting was held with the Grants and Scholarships Department which resulted in a possible change in the way that grants are awarded. This issue and the restructuring of some scholarships with the GRCC Foundation will be the subject of a major goal for the Department’s 2013-2014 academic year. The descriptions of the scholarships and application form can be seen on the Biological Sciences Website.*

3. Market the Biology Department.
   
   *As part of a marketing project, the department decided to update and improve the department’s website as it is likely to be one of the first contacts students have with the department. The website needs to be inviting, informative, and direct students to their areas of interest. This work will continue into the next academic year. It also precipitated curricular work which is presented later in the curriculum section of this report.*
   
   *Marketing the department also is tied to department scholarships. The department is looking at ways of attracting students and retaining them here at GRCC for graduation. More thought and effort will need to be put into this goal.*
   
   *An open house was proposed with thought of incorporating the Physical Sciences in the effort, but this did not work out.*
Involvement at various community events including: Girls Science Day, Meijer Gardens, GRPS Science advisory committee, Darwin Day, John Ball Zoo, VARI poster session, etc. all serve to remind GRCC’s constituents of our presence and influence on science literacy.

4. Conduct an open house for the public.
   This is related to #3.

5. Revise catalog description of Biology programs.
   This was accomplished. The catalog description now reads:
   “The Biological Sciences Department is an integral part of the GRCC community. The department is here to serve the community by offering courses that will transfer to other colleges and universities, prepare students for pre-professional and Nursing and Allied Health careers, and to provide community enrichment. The courses offered are “right for the times” and allow for students to become self-actualized, lifelong learners, independent thinkers, and explorers of science. Additionally, the department provides courses that support other departments and programs.”

6. Continue to conduct an Advising Day (two days) each semester.
   This was accomplished. See “Description of departmental advising plan and outcomes” later in this document.

7. Create a makeup testing area in room 304 CSC.
   This was accomplished and has been very successful. We now have a place, that can be monitored, where students can make up exams. A storage room was cleared and tables and chairs were placed in the room.

8. Increase the number of Adjunct Faculty office rooms.
   The Older Learner Center moved out of its three rooms on the second floor and those rooms are now beginning to be occupied by biology adjunct instructors as they become equipped with computers. Full usage will begin in Fall 2013.

   Dr. Laureto assumed responsibility for this course and is its instructor. Changes have been made to make it more human oriented and fit the needs of the pre-nursing students that transfer to GVSU.

    BI 127 was revised. BI 126 revision will occur at the first meeting of the next academic year. It was decided that BI 210-204 will no longer be needed so they have been put on an inactive list and will not be going through the CARP.

11. Explore new honors course within the department.
    An honors course was discussed for the Anatomy and Physiology courses. While it was thought to be a worthwhile project to pursue, it did not generate any action.
Department Accomplishments (not stated initially as goals for 2012-13).
1. Created a department document that outlines how and under what conditions faculty names can be placed on classes in the schedule prior to those classes being guaranteed by the Dean’s office. All members of the department signed this agreement. S:\School of Arts and Sciences\Biological Sciences\BI Department Documents\Overload Assignment Signed Document.pdf.

2. Guidelines for Substitutes and Time-for-Trade Substitutes between faculty members were drafted and implemented. S:\School of Arts and Sciences\Biological Sciences\BI Department Documents\Guidelines for Sub and T for T.docx.

BI 101 Goals and Accomplishments:
1. Create additional common assessments to promote a common curricular experience independent of instructor.
   *This was accomplished through the course-wide use of MasteringBiology.*
2. Increase offerings of on-line hybrid courses.
   *This was accomplished. Two additional sections were added in the Winter 2013 and three additional sections were added in the Summer 2013.*
3. Create an on-line learning curriculum that contains common assessments.
   *This was accomplished through the use of MasteringBiology.*
4. Continue assessment projects into the 2012-13 academic year.
   *This was accomplished as the common final assessment project has continued.*
5. Promote the use of chapter objectives in daily lessons.
   *Chapter outcomes and objectives are provided via Bb content system. As new learning activities were shared with all BI 101 faculty throughout the year, they were tied to the objectives for the course.*
6. Provide training for all Biology 101 faculty members on using the on-line homework program, Mastering Biology.
   *This was accomplished.*
7. Continue to evaluate and update laboratory exercises.
   *This was accomplished and a newly revised lab manual was created for use in Fall 2013.*

BI 117 Goals and Accomplishments:
1. Integrate “MasteringBiology” into both lecture and laboratory portions of the course.
   *MasteringBiology was integrated into the laboratory portion of this course for the Fall semester 2012. Due to issues about effectiveness, cost, accessibility, student compliance, and difficulty in administration, its use was not continued the next semester. An alternate to MasteringBiology is being explored summer 2013. More information is given on this effort in the “Assessment” portion of this document.*
BI 121 and 122 Goals and Accomplishments:
1. A new textbook has been adopted that will require all instructors to modify their lecture content and presentation modalities to accommodate the new pedagogical format of the new textbook. A new interactive website, associated with the new textbook, will also be incorporated into all instructors teaching.  
   *The textbook has been adopted and is being successfully utilized.*
2. The final phase of a laboratory pedagogical review will be completed in the Fall of 2012. The BI 122 laboratories were modified to incorporate the new physiology equipment that was acquired via Perkins funding. *BI 122 laboratory modification will continue into the Fall of 2013.*
3. With the completion of an effort to acquire new plastinated cadavers, a plan will be developed to fully integrate these specimens into the laboratory instruction. *The plastinated cadavers have become the focal point of our cadaver labs and we continue to explore new pedagogical techniques to utilize them. We have and will continue to use a limited number of “wet” cadavers.*
4. Due to the purchase of new physiology, the laboratory directions and Students Performance Objectives for four lab sessions of BI 122 will be rewritten.  
   *This has been accomplished.*
5. The former multiple Student Performance Objectives will be rewritten and condensed into one document for use by all BI 121 and 122 instructors.  
   *This goal has not yet been achieved.*
6. A common assessment for all BI 121 and 122 lectures will be created.  
   *This goal has not yet been achieved.*
7. Continue common assessment project in BI 121 laboratories.  
   *This has been accomplished.*
8. Course Curriculum Documents for BI 121 and 122 will be revised using the new CARP.  
   *This goal is in progress.*
9. Continue efforts to acquire additional full-time faculty positions for BI 121 and 122.  
   *This goal has not yet been achieved.*

BI 126/127 Goals and Accomplishments:
1. Complete development of common final exam in BI 127 including questions designed to assess the Critical Thinking/Problem Solving ILO.  
   *This was accomplished.*
2. Acquire and implement photomicrography capability in Microbiology labs.  
   *Technology was acquired and implementation is in progress.*
3. Create repositories in blackboard for BI 126/127 course documents.  
   *This was accomplished.*
4. Revise BI 126 and 127 Course Curriculum Documents.  
   *BI 127 was accomplished. BI 126 revision is in progress, to be accomplished at the first meeting of the new academic year.*
 Goals for Year 2013-2014

Departmental Goals
1. Develop a Wetland Ecology field course to be held at PCCI.
2. Revise the Department Scholarship program.
3. Develop a Textbook/Materials policy for the department.
4. Engage in a BI 121, BI 122, and BI 125 CARP.
5. Implement curriculum changes made in Winter 2013.
6. Complete the updating of the department website.
7. Continue exploring how to market the department.

BI 101 Goals
1. Principle instructors will attend a MasteringBiology conference in September.
2. Explore assessment techniques for determining effectiveness of MasteringBiology.
3. Pilot unlinked online/hybrid sections and compare student performance against linked sections.
4. Continue the common final assessment project, focusing on improvement in key topics.
5. Pilot a new laboratory exercise.
6. Continue refinement and enhancement of existing laboratory exercises.

BI 103/153 Goals
1. Incorporate an on-line learning component into the Plant Biology Course.

BI 104/154 Goals
1. Completely redo the entire course, updating the fossil laboratory, the monarch laboratory, and the new development laboratory.
2. Add a complete and new lab on human evolution.
3. Update all exhibit material and reduce dependency on preserved dissection material by ordering fresh materials locally (e.g., freshwater sponges, jellyfish, leeches, segmented worms, parasitoids, grasshoppers, all fishes, and some birds).

BI 117 Goals
1. Develop an in-house generated, pre-lab homework assignment program to replace the MasteringBiology program that was used Fall 2012.

BI 121/122 Goals
2. Develop one set of common student performance objectives for all labs.
3. Make revisions to the new 122 Labquest physiology labs.
BI 126/127 Goals
1. Implement photomicrograph capability in Microbiology labs, including ability to project microscopic images on-screen.
2. Continue common final exam in BI127 and identify topics needing improved instruction.

BI 232 Goals
1. Put paper assignments on Blackboard.

Internal Collaborations and Partnerships
The Biological Sciences Department collaborates with the Physical Sciences and Mathematics Departments to conduct two, two-day Academic Advising sessions for students. This event is held on the first floor of the Calkins Science Center. See attachment for promotional material.

Laurie Foster and Robert Leunk led a classroom session of the Influenza Pandemic of 1918 and World War I as part of a history seminar course in the Social Sciences Department.

Partnered with the Physical Sciences Department to offer a Girls Science Day.

Worked with the Department of Experiential Learning to develop an Honors Program Parents Night. Presented three times on the particulars and ancillary experiences that the Honors Biology course provides to learners.

External Collaborations and Partnerships
BI 104/154 students participate in field trips to the John Ball Zoo and Meijer Botanical Gardens. Dr. Douglas and Laureto work with students and their research projects that are sponsored by programs through the Pierce Cedar Creek Institute.

First-year students at Michigan State University College of Human Medicine hold a microbiology lab in GRCC lab space. Dr. Leunk serves as a facilitator for this lab and Jan Colvin and Anesa Behrem assist with preparation for the lab activities.

Laurie Foster served as a reviewers for the annual Poster Session of VARI college research. Laurie Foster served on the Advisory Board of the GRPS Science Academy. Laurie Foster worked in conjunction with the Catholic Schools to offer a Girls Science Day.
Departmental needs for support from other departments within the College
The Biological Sciences Department provides support courses for the Nursing and Allied Health programs. For this reason, the Microbiology and Anatomy and Physiology courses must articulate with these programs. Communications between these programs and the department is critical for student success. The Biology Department also receives Perkins funding for some of its materials such as cadavers and microscopes.

Program accreditation Updates
There are none in this department.

Description of Departmental Advising Plan and Outcomes
The Biological Sciences, Physical Sciences, and Mathematics Departments conducted Science and Math Advising Days in both the Fall and Winter semesters during the 2012-13 academic year. Each semester the event was held for two days in the southwest entryway on the first floor of the Science Building. This year was the first year Mathematics participated in the event. In the Fall event, representatives from Grand Valley State University were also present. These events allowed students an opportunity to meet with faculty and to ask questions regarding science and math course offerings, scheduling, programs, transferring, and careers. A total of 21 students visited with Biology faculty, while 27 visited Physical Sciences faculty and 20 visited Mathematics faculty. See the following links: J:\Website\1213-10002 Science and Math Advising Day Poster_2_2.pdf and J:\Website\Description of Advising Days_1.docx

Student Achievements & Awards
Every year, the Biological Sciences Department selects one or two students for its “Outstanding Biology Student of the Year” award. This year, the following, very deserving, student was: Brent Folsom.

Dr. Forbes represented the Department at the awards ceremony.

The Biological Sciences Department offers a number of scholarships for Grand Rapids Community College students who plan to continue in the Summer and/or Fall at Grand Rapids Community College. For descriptions of individual scholarships, their requirements and an application please see the following link. http://cms.grcc.edu/money

This year, the following students were awarded scholarships:
  Corbin Jensen - $500 from the Harvey Meyaard
  Valerie Stehle - $500 from the Gayle E Long
  Susan Murphy - $500 from the Anne Miller Health Related Studies
Other Department Updates
Perkins funding was obtained for the procurement of a plastinated specimen of a dissected human arm and a dissected human head and neck specimen from the University of Michigan.

Faculty & Staff

Departmental Professional Development Activities (Contractual Obligations for Departmental Faculty Development/6 hours)
The Department’s Professional Development Activity for this past year was also a part of its effort to market the Department, revise the website, and create a way of explaining how the courses of the department fit in various career pathways. All three of these had to be addressed together as there were deadlines for the new on-line catalog to be met. The initial action was to improve the appearance and utility of the Department’s website. This included the expansion of information about full-time faculty, scholarships, advising day, honors program, research opportunities, student clubs, etc. The biggest task was to create course pathways that both illustrated and explained to students, faculty members, counselors, and transfer institutions, how courses in the department are organized to meet specific career pathways. This action resulted in a significant curricular change for the Pre-professional/Biology Majors pathway. The Biological Sciences Program Pathways will be described in more detail in the “Curriculum” section of this document.

Another aspect of faculty development for this year was to help connect both full-and part-time faculty to other aspects of the College. To this end, three presentations were made at separate Department meetings. These included:

Eric Williams – Department of Equity, community, and Legislative Affairs
Jose Mora – Department of Experiential Learning (cancelled due to bad weather)
Lynnae Selbert – My Degree Pathway
Stacy Heisler – Counseling and Career Center – Faculty advising

Faculty Professional Development Activities- Year End Summary
Paul Krieger attended the 2012 Human Anatomy & Physiology Society (HAPS) conference in Oklahoma.

Paul Krieger attended the Fall 2012 Michigan Community College Biologists (MCCB) conference in Ann Arbor.
Laurie Foster did a pilot study on the utility of Respondus lockdown with webcam interface. Assessments for online/hybrid learning are currently completed in the Testing Center. This tool offers the potential to have a student not have to come to campus but still be observed during the course of testing. It was shared with colleagues and will continue to be explored for merit in enhancing flexibility for students while helping to ensure integrity in the assessment process.

Faculty Development Plans for Upcoming Year
Take time during department meetings to plan, review, and update department, course, and individual instructor assessment projects. This may also be done in the following format.

Create an opportunity to share specific content area successes and challenges in a forum akin to the Great Teachers Model. Consider a retreat for a day off campus where the entire department (full time and adjunct) can roundtable on strategies and best practices.

Faculty professional development on new evaluation system – schedule sessions with CTE for the Biology Department specifically (examples – Developing Faculty Performance Evaluation Plans & Reports, Developing Substantive Projects, Understanding Teaching and Assessment Projects in the GRCC Faculty Evaluation System)

EOL/Release Time Work
Dr. Laureto receives EOL for maintaining the greenhouse. This is essential for maintaining plants for classroom use.

Dave Chesla (adjunct instructors) receive EOL for maintaining the wet cadavers. This is crucial to the operation of the Anatomy and Physiology courses.

Robert Long receives EOL for participation in the AGC Executive Committee. This connection helps the Department stay current with College-wide initiatives.

Faculty & Staff Accomplishments/Awards

Paul Krieger’s YouTube video – *Ten Tips for Studying the Skeletal System* – has 115,000 views, making it the second most viewed video produced at GRCC.

Paul Krieger served as faculty advisor for the Biomed Club.
Laurie Foster was invited to attend the Delta Pi Alpha awards ceremony. She was recognized from the podium by four award recipients for her work with Honors Biology students.

Paul Krieger served on the IIPD committee.

Paul Krieger collected fossils in Ohio and donated them to GRCC’s Biology Department for use in a new fossil lab for BI 104.

Dr. Forbes’ now has 10 public lectures hosted on YouTube.

Sarah Krajewski completed six credits of doctoral work in science education at WMU.

Sarah Krajewski conducted a review of *Science for Life* by Belk/Borden text and media.

Sarah Krajewski served as a Faculty Advisor on Mastering Biology website.

Sarah Krajewski worked closely with the education department to market Biology 101E.

Sarah Krajewski worked with the TriO program to apply for a NASA grant.

Sarah Krajewski volunteered to mentor students in the TriO program and attend the MICUP partner meetings.

Sarah Krajewski completed training for CLS 100 course.

Sarah Krajewski taught a semester of CLS 100.

Sarah Krajewski worked closely with the Biology 101 team to develop an assessment plan.

Sarah Krajewski worked closely with the Biology 101 team to develop a common learning experience for all students by designing and implementing common Mastering Biology assignments for all sections of Biology 101.

Sarah Krajewski invited speakers from the library, disability services, TriO program, and career counseling to come and speak to students regarding services available to assist them in being successful at GRCC.
Faculty & Staff Community Service
Paul Krieger participated in GRCC’s Science Camp where he conducted a workshop for inner city elementary school students.
Paul Krieger volunteered to dissect a shark at Central Woodlands Elementary.
Laurie Foster served on GRPS School of Health Sciences Advisory Board
Laurie Foster participated in the Science Day for Girls.
Leigh Kleinert’s Bi 117 students: developed science curriculum and led two sessions (one fall and one winter) for a class of cognitively-impaired teens from the Ottawa Area Center to fulfill their science education needs; developed curriculum and hosted a college science open house for the teens in the Baxter Community Center’s Teen Mentoring Program (fall); served as mentors for the City High Middle School Science Club as well as developed curriculum for their upcoming meetings; and served as facilitators and mentors for two STEM events in the fall-Girls Geniuses STEM event and Godwin Heights Middle School STEM event.
Dr. Forbes continued to serve on the following committees and boards in 2012:
   ACLU Western Michigan Advisory Board
   Skeptic Magazine Editorial Board
   Evolution Education Specialist for the Michigan Science Teachers Association
   Michigan Citizens for Science Advisory Board
   Center for Inquiry Advisory Board
   Greenville Area Aviation Association Board of Directors
   Captain U.S. Air Force Auxiliary; Civil Air Patrol
   Experimental Aircraft Association- Volunteer Pilot for the Young Eagles Programs for Youths.

Curriculum

Course Document (CARP) Updates completed this year
BI 103/153 and BI 127
BI 126 was scheduled to be revised but did not get on the agenda at the last meeting but will be on the agenda of the next academic year.

New Courses/Course Improvement Projects
As part of the Departmental Professional Development activity for this year (that included marketing, revision of the website, and curricular pathways), the department resolved a long-
standing issue about how to structure its Pre-professional/Biology majors curriculum. In a remarkable display of collaboration, consensus building, and collegiality, the department decided to change the numbering of BI 103 and BI 104 to BI 153 and BI154, respectively, and to drop the BI 151 prerequisite for BI 152. This action made all the courses in this pathway on the same level and opened up options for students. These changes along with the other department pathways can be seen at the following link: J:\Website\Biological Sciences Program Pathways v.2.docx

Assessment of Student Learning

The BI 101 and Bi 121 assessment projects that were identified in last year’s report are ongoing and will continue to yield results in the next academic year. The BI 117 assessment projects were finalized and changes successfully implemented as reported.

The BI 117 MasteringBiology assessment project will be reported here. This project is mostly completed with the exception of the student and faculty opinion surveys, which are still being summarized. Enough data was collected to bring this effort to a conclusion. The survey analysis will be amended to this report when it is accomplished. The current project description and data are found at the following link: J:\A & P 117\Assessment projects\117 Mastering Assessment Project_2.docx.

Program Learning Outcome(s) assessed this year
BI 117 Laboratory students are expected to review the material to be covered in class each week, prior to their lab class. Students are asked to review their Student Performance Objectives before lab class, consult their lab manual, and where appropriate, highlight in the lab manual, the required content for that week. The amount of lab content and time available are factors in the success of the students who are asked to perform their knowledge on an exit quiz and three lab practical examinations. Both faculty observations and examination scores indicate that the students are not performing as requested. The purpose of implementing MasteringBiology, was to provide a different way of engaging the students and providing rewards (points) for doing so. See the project description which is attached.

Measures of Student Learning
Student performance (number of students receiving each of the five letter grades) on the three laboratory practical examinations was used to measure student learning
Initial Data and Findings
Two years of pre-MasteringBiology laboratory examination results were summarized. See attachment of project data. Student performance was considered low when compared to their performance on the lecture unit exams and the lecture common cumulative final exam.

Curricular or Pedagogical Changes Implemented
Then software program MasteringBiology was implemented during the Fall 2012 semester. Students were required to access units related to the lab, prior to their class, and answer content related questions. Students received points which added up at the end of the semester, to equal one laboratory examinations. It was one fifth of their lab grade.

Data and Findings (post improvement/change)
Letter grades were collected from all students from all laboratory sections. No significant change in the student laboratory examination performance was identified between pre and post MasteringBiology. Refer to the above link for exam data and conclusion. Surveys to laboratory instructors and to students about the usefulness of MasteringBiology were also given. These data are still being summarized.

The practice of using MasteringBiology was discontinued for the subsequent Winter 2013 semester. The problem of low student achievement remains however. Anecdotal data would suggest that students who come more prepared to laboratory class are more successful in learning the material and achieving higher scores on the exit quizzes and laboratory practical examinations. Consequently, a pre-laboratory alternative to MasteringBiology is being investigated, perhaps one that is generate in-house using Blackboard.