BIOLOGY DEPARTMENT REPORT, 2007-2008
Submitted by Karen Haberman on August 1, 2008

Note: New additions for the 2007-2008 academic year include "Section I. Summary of Program Curriculum Changes" and "Section J. Program Assessment Activities and Results". This template also includes a copy of the Dean Scheck's "LAS Embedded Assessment Action Report", attached at the end. All copies of individual faculty/course "Embedded Assessment" reports for the year should be attached to the final department report for submission to the dean by the division chair.

A. With regard to process outcomes, provide a summation of unit highlights for the past year 2007-2008.

1. Our students (current and former) have been successful in their pursuit of biology-related careers. For example, several were accepted into professional schools and advanced degree programs. At least ten graduates were admitted into medically-related, graduate level professional schools (i.e. medical school, dental school, physician's assistant and pharmacy programs.) In addition, at least one student was accepted to a graduate program in biology, and several other students have contacted us about their success in obtaining biology-related jobs, internships and fellowships, including one 2008 graduate who was awarded a Howard Hughes Medical Institute Summer Research Grant. In addition, nineteen students were accepted into nursing programs.

2. The most significant teaching strides made by our faculty were in the area of laboratory teaching. Several faculty developed new labs or modified existing labs in a significant way, introducing new techniques, technologies and approaches. The overall effect is an overall increase in exploratory and research-based labs that promote experimentation, data analysis and critical thinking. These are key learning outcomes in our mission statement.

3. Collectively, department members published two papers in peer-reviewed journals, while others have papers in progress. We also gave six refereed papers at national meetings and workshops. Six of eight of these papers and presentations were co-authored by students who contributed significantly to them.

4. One of our faculty members, Sarah Boomer, received major grant support from both the National Science Foundation and the Department of Energy for her work.

5. Several biology faculty members contributed significantly to the governance of WOU. Most notably, every department member, except one on sabbatical, chaired a major university committee or served as department or division head. Some department members also contributed to the establishment of the OHSU Nursing program at WOU.

6. Biology faculty members continued to provide individualized advising geared towards each student's interest and career goals. One of our members received a national advising award. Our department members also continue to serve as the primary advisors for the Natural Science Club.

7. Several of our faculty served as mentors for undergraduate research projects.

8. We conducted two successful searches that resulted in the hiring of two new tenure-track faculty members:

A. Kristin Latham is our new Developmental/Genetics/Cell Biologist. Her presence in the department will allow us to maintain our breadth in core courses as well as upper-division specialties. In addition, her research systems are quite amenable to undergraduate research opportunities.

B. Erin Baumgartner is our new Biology Education Specialist. Her key role in the department will be to guide us in offering a non-majors sequence that is grounded in pedagogy and sound assessment practices, and that also appeals to students. Erin will be receiving release time specifically to evaluate the results of several years of pre- and post-test data and guide appropriate changes to the non-majors sequence.

9. The Biology Department continued its long-term assessment activities, including the administration of the Major Field Exam for Biology (from the Educational Testing Service) as well as pre- and post-tests in the non-majors biology sequence. We also conducted a department-wide embedded assessment of one of our learning outcomes. In addition, we have planned a Fall Retreat for September, 2008, during which the results of these assessments will be discussed.

B. With regard to intended student learning objectives, outcomes, please provide a narrative summary of significant student accomplishments (e.g. career placement, graduate school, scholarships, service learning, internships, study abroad) achieved by students in your unit (or students with whom your unit had significant interactions).

(NSM-Specific Student Placement Categories: Post-Baccalaureate Employment, Graduate School, Dental School, Pharmacy School, Internships, Nursing, Occupational Therapy, Optometry, Veterinary School, Radiation Therapy Technology, Medical School)

Many of our students have been admitted to professional schools and other programs, or have embarked on biology-related career paths. Please note that this is not a complete list, but rather a compilation of information received by faculty members.

Several of our students have been accepted into medically-related graduate programs. Specifically, three of our graduates have been admitted into programs in traditional or osteopathic medicine. They are Lincoln Ropp (Kansas City University of Medicine and Biosciences and Nova

Southeastern University College of Osteopathic Medicine in Florida) Adam Young (West Virginia School of Osteopathic Medicine) and Nicole Mullins (Midwestern University-- Glendale campus (MWU) and Arizona college of Osteopathic Medicine.) In addition, three students have been admitted into Physician's Assistant Programs. They are Lorie Austin, Michelle Swanick (Idaho State University) and Adam Reichold (Pacific University.) In addition, three students have been admitted to dental school. They are Catherine Dahl (Tuft's University) along with Alex Vo and Tyler Mack (both at OHSU.) Nathan Howell has been accepted into the OSU School of Pharmacy.

In addition to graduate programs in medical science, We placed 19 individuals into accredited nursing programs from our pre-nursing program this past year.

Nerea Hoffman	BSN	2008	NW Nazarene University
Shawna Backman	ADN	2008	Shoreline C. C. (Wash.)
Ellen Ylimiemi	BSN	2008	Marymount University
Katie Branam	BSN	2009	University of Portland
Julia Thomas	BSN	2009	University of Portland
Katrina Griffiths	BSN	2009	University of Portland
Daniel Lima	BSN	2008	University of Portland*
Nancy Ibarra	BSN	2008	University of Portland
Veronica Nunez	BSN (acc.)	2008	Linfield University
Kendra Fresh	BSN	2008	Linfield University
Harriet Blake	BSN	2008	Nor. Arizona University
Morgan Huffstutter	BSN (acc.)	2008	Linfield University
Rachel Bonham	ADN	2008	Oregon Coast C.C.
Karen Fredrickson	BS (nursing)	2008	OHSU – Monmouth
Andrea Cobb	ADN	2008	Walla Walla C.C.
Stephanie Sherman	BSN	2008	Concordia University
Sarah Skotte	BS (nursing)	2008	OHSU – Monmouth
Jennifer Pond	BS (nursing)	2008	OHSU – Monmouth
Stephanie Banford	BSN	2008	Linfield University

One of our students, Chelsea Miller, is working at a Clinic in Ecuador associated with Child Family Health International.

Our students have also been successful in other areas of Biology. For example, Amanda Cline will begin a Ph.D. program at the University of Nevada, Reno. Also, Emily Uhrig, a 2008 graduate, received a Howard Hughes Medical Institute Summer Research Grant. She is currently conducting research at OSU.

C. Please identify faculty who accomplished any of the following in 2007-2008:

1. **Significant recognition for exceptional and outstanding teaching.**

2. **Extensive innovations in curriculum and pedagogy (including course/program refinement, curriculum (re)design/revision, course modifications, new instructional**

materials, new methods of instruction, technological updating or other significant developments in pedagogy and methodology).

Bryan Dutton continued his refinement of laboratory exercises for Bi 312 (Evolution) utilizing and incorporating several new pieces of software "into" this course. The course continues to present significant challenges in terms of logistics and issues regarding the appropriate use of computer-based technology.

Bryan Dutton also invested a significant amount of time and energy in Biology 371 (Structure of Seed Plants. Specifically, he utilized technology for student-created digital atlases and also restructured the laboratory.

Karen Haberman continued to further integrate the laboratory component of Bi 357 (Ecology) with her research on water quality in the Little Luckiamute River. This year's students were able to base their term papers on four years of course data. She also modified the writing-intensive portion of this course in response to the difficulties students have in writing a scientific paper based on their own research. This included a refinement of the library instructional section in collaboration with our science librarian, Camila Gabaldon-Winningham, to address problems encountered in previous years.

Michael LeMaster developed new laboratories for the advanced and lower division Human Anatomy and Physiology courses. These courses utilized iWorx data acquisition equipment. Although the equipment had been previously utilized for the Human A & P sequence, the use of the equipment in upper division laboratories required the incorporation of more sophisticated techniques (e.g., nerve chambers for experimenting on isolated nerves). He also coordinated the remodeling of NS 005 (cadaver room) and NS 006 (physiology laboratory.)

3. **Extensive participation in the development of well-articulated student learning outcomes and assessment of outcomes.**

D. Please identify faculty who accomplished any of the following in 2007-2008, including the titles of the works/projects etc.:

1. **Wrote a book and/or scholarly monograph that was successfully submitted for editorial and/or peer review and eventually published.**

2. **Completed one or more articles, book reviews and essays that were published in peer-reviewed journals or presses.**

LeMaster, M.P., Stephani, A., Shine, R., and R.T. Mason. 2007. Cross-dressing in Chemical Cues: Exploring 'She-maleness' in Newly-emerged Male Garter Snakes. Chemical Signals in Vertebrates 11 (J.L. Hurst, R.J. Beynon, S.C. Roberts, and T.D. Wyatt, eds), Springer, New York, New York, 223-230.

Ziman, S.N., F. Ehrendorfer, C.S. Keener, W.T. Wang, S.L. Mosyakin, E.V. Bulakh, O.N. Tsarenko, **B.E. Dutton**, R.P. Chaudhary, and Y. Kadota. 2007. Revision of *Anemone* Sect. Himalayicae (Ranunculaceae) with Three New Series. *Edinburgh Journal of Botany* 64(1): 51-99.

3. Completed a textbook and/or a teaching manual for a textbook or original work that was peer review/juried and published.

4. Prepared peer-reviewed work or practice in the fine arts, including creative work in music, drama, artistic exhibits, productions and performances of artistic works or literature and subsequently performed.

5. Delivered a refereed paper at scholarly meetings or major professional symposia attended by specialists and leaders in the field.

Boomer, S.M., G. Geesey, **B.E. Dutton**, and K.L. Noll, 2008. Photosynthetic Mat Formation Studies *in situ*, 2nd Annual Yellowstone RCN Workshop, Bozeman, MT.

Noll, K.L., N.E. Hanson, **B.E. Dutton**, M.N. Parenteau, and **S.M. Boomer**. 2008. Geochemistry and Ecology of Red Mat Systems (GERMS) - A Long-Term Monitoring Project at Red Layer Microbial Observatory Sites in Yellowstone National Park, ASM General Meeting, Boston, MA

Noll, K.L., S.B. Taylor, **B.E. Dutton**, and R. Pirot. 2007. Spatial Distribution of Invasive Plant Species in the Luckiamute Watershed, Central Oregon Coast Range: Vegetative Response to Geomorphic Processes and Disturbance Regime in the Riparian Corridor. Geological Society of America Fall 2007 Meeting, Denver, Colorado.

M.N. Parenteau, **S.M. Boomer**, K.H. Knoll, S.L. Cady, and B.K. Pierson, 2008. Diversity of *Chloroflexus*-like Organisms in an Iron-Depositing Hot Spring in Yellowstone National Park, 2nd Annual Yellowstone RCN Workshop, Bozeman, MT.

Parenteau, M.N., **S.M. Boomer**, K.L. Noll, **B.E. Dutton**, S.L. Cady, L.L. Jahnke, and B.K. Pierson. 2008. Diversity of *Chloroflexus*-Like Organisms in an Iron-Depositing Hot Spring in Yellowstone National Park, ASM General Meeting, Boston, MA

Taylor, S.B., **B.E. Dutton**, K. Noll, R. Pirot. 2007. Riparian Plant Distribution in the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Analysis of Geomorphic and Anthropogenic Controls on Adventive Species Propagation in an Unregulated Watershed. Geological Society of America Fall 2007 Meeting, Denver, Colorado.

6. Secured an externally funded and peer-reviewed research grant.

Sarah Boomer contributed to the grant-writing and is one of 19 site leaders for the "Yellowstone metagenome project" recently funded by the Department of Energy for $1,000,000.

7. Participated as a named investigator in sponsored, peer-reviewed research.

Sarah Boomer is the Principle Investigator for continuing National Science Foundation-sponsored research on thermophilic bacteria in Yellowstone.

8. Securing competitive peer-reviewed external awards, grants/fellowships or other notable extramural support for scholarly endeavors.

Same as #6 above: Sarah Boomer contributed to the grant-writing and is one of 19 site leaders for the "Yellowstone metagenome project" recently funded by the Department of Energy for $1,000,000.

E. Please identify faculty (and/or approximate percentage of unit faculty) who made significant or extraordinary accomplishments in the following areas in 2007-2008. * Given the relative lack of data in these areas, please provide best estimates and or representative samples.

1. **Special contributions to the faculty governance of the institution, particularly including service activities as a very valuable departmental colleague and/or faculty mentor.**

Bryan Dutton chaired Provost Search Committee and was also a member of the Faculty Senate Executive Committee.

Irja Galvan chaired the Honors Committee.

Lonnie Guralnick served as Division Chair.

Karen Haberman served as Department Head. The most significant of her duties this year was her role as chair of two departmental search committees. She also chaired the Study

Abroad review subcommittee of the International Education and Service Committee.

Michael LeMaster chaired the Faculty Development Committee.

The outgoing biology department chair (Karen Haberman) also wishes to acknowledge the continued extraordinary service provided by Bryan Dutton to the overall functioning of the Biology Department. Bryan consistently volunteers his time and energy to address departmental needs in a proactive way, and also makes sure that important issues are effectively addressed in a timely manner.

2. **Extensive service to students outside of the formal classroom, beyond regular advising.**

Sarah Boomer led her final NSF-funded research trip to Yellowstone. The grant supported the participation of six undergraduates. All students performed field research while in the park and completed formal lab notebooks and related computer analysis and assignments. Dr. Boomer also advised two undergraduate research students, Nana Hansen (who completed her work in Summer 2007) and Katie Noll, whose work resulted in a first author presentation at the national ASM meeting.

Michael Lemaster advised two honors students (Zach Christopherson / Chelsey Miller) and one undergraduate (Emily Uhrig) in undergraduate research projects – all of which included much field work (E.E. Wilson – Oregon; Manitoba, Canada)

Lonnie Guralnick advised student Amanda Cline in undergraduate research in Plant Physiology.

Karen Haberman advised student Ashley King for a one-term independent research project on stream Ecology.

Michael LeMaster and Bryan Dutton provided all faculty advising to the Natural Science Club.

Michael LeMaster was honored by NACADA with a “Faculty Advisor” Award (one of seven individuals selected nationally) during the academic year. He currently advises approximately 100 pre-nursing students with whom he meets once a term to develop appropriate schedules so that they may apply to nursing schools in a timely manner. These students pre-register with the registrar; Mike sets aside one week each term to assist with this early registration process. In addition, he has developed a pre-nursing webpage, worked up general information sheets to send to perspective students, and compiled pre-requisite information for all the nursing programs in Oregon to assist with the scheduling of

students already in our pre-nursing program. This is in addition to advising approximately 5 – 10 biology majors with an emphasis in Zoology as well as several biology minors.

3. **Extensive participation in University fund raising, public relations or alumni development.**

Michael LeMaster attended events associated with the nursing program, including meeting one senator (Senator Smith) and several state / national congresspersons.

4. **Extensive participation in student recruitment/admissions and student retention activities and other special assignments related to the business of the University.**

Michael LeMaster served as point person for the university for both the pre-nursing program and the OHSU / WOU nursing collaboration. Lonnie Guralnick also played a major role in the establishment of the nursing program.

Irja Galvan and Michael LeMaster conducted cadaver tours for high schools and other groups.

5. **Developed new or innovative programs and active participation in the curriculum development, program review and assessment process.**

6. **Demonstrated leadership in local, state, federal or international agencies, professional and public interest organizations and other entities that substantially enhance institutional goals.**

Sarah Boomer served on a formal review panel for the National Science Foundation's Microbial Observatory program.

Bryan Dutton currently serves as Assistant Editor (2006-) of *The Vasculum*, The Society of Herbarium Curators' official Newsletter.

F. Personnel - please provide a summary of professional development activities provided for or undertaken by staff in your unit, including unit managers.

G. Personnel Status

Identify Special Staffing Situation:	**Explain Proposed Plan of Action:**
Sarah Boomer: sabbatical (Fall 2008)	1. Shifting of Majors Microbiology to Winter & Spring

	2009 2. Hiring of an adjunct to fill in for non-majors load 3. Postponement of new Microbial Ecology course to Spring 2011.
Karen Haberman: sabbatical (Fall 2008 – Spring 2009)	1. Hiring of adjuncts to fill in for General Ecology, Animal Behavior and Bi 212 labs 2. Shifting of Bryan Dutton's load to teach Bi 212 lectures. 3. Cancellation of Marine Ecology and Entomology. Addition of one Vertebrate Natural History lab to make up for the loss of field courses.
Michael LeMaster: shift to Department Head	1. Shift of Bi 212 labs and some A&P to adjuncts.

H. Strengths, Weaknesses, Opportunities and Threats: Looking ahead & Prioritizing for 2008-2009

With reference to strategic planning documents, identify specific that you believe constitute the greatest strengths, weaknesses, opportunities and threats for your unit going forward. Discuss your plans to address these matters.

OUR GREATEST STRENGTHS ARE:

1. Our emphasis on strong faculty and student connections that we foster via small upper-division courses, labs, independent research opportunities, and individualized advising.

2. Our advising program. We are proactive in making sure students make progress both in the major and toward pre-professional requirements. We work to match each student with the appropriate advisor, and in turn, each advisor maintains an expertise in a subset of pre-professional schools and career pathways. Michael LeMaster's national award for advising excellence underscores our department's strong commitment to advising.

3. The increasing attractiveness of our program for Biology majors. Our enrollment in the Bi 200 sequence is at an all-time high. For example, our enrollment in Bi 211 is 144 students for Fall 2009, up from approximately 100 five years ago. One reason for this may be our restructuring of the major that occurred approximately two years ago. The new format offers students a range of emphases, allowing them to tailor their biology degree to their interests and needs.

4. The broad and thorough set of core courses required for all Biology majors provide students with both a breadth and depth of knowledge as well as meaningful lab experiences designed and taught by Biology faculty.

5. Our contribution to non-majors via a rigorous lab-based liberal arts foundation series and advanced coursework for pre-nursing and pre-education students. Our pre-nursing program continues to grow.

OUR GREATEST WEAKNESSES ARE

1. The attrition of students during the Bi 200 series. We lose approximately half of our students over the course of the year-long sequence. This rate has remained relatively stable over the past several years. We also see attrition of student numbers in the Bi 100 series.

2. The relatively small number of upper-division electives we are able to teach every year. This means that students must carefully plan their schedules with their advisors, or they risk missing a critical course. This scheduling crunch is due, in part, to increasing FTE devoted to our Principles of Biology and Anatomy and Physiology sequences. Also, while the biology faculty has a breadth of knowledge that is impressive for its size, some specialties are outside our collective areas of expertise.

3. Related to the previous issue, an increasing majority of students recruited and retained as Biology majors are highly focused on pre-health professional training (e.g. medicine, nursing), putting pressure on the array of classes offered in the form of both over-enrollment (e.g. Anatomy and Physiology) and under-enrollment (e.g. Plant Ecology).

4. Biology faculty are increasingly over-burdened with demands involving recruitment and retention-based remediation efforts - all in addition to full-time teaching schedules, curriculum development and assessment activities, research expectations, and advising.

OUR BEST OPPORTUNITIES ARE

1. Working with our new hires, Kristin Latham and Erin Baumgartner, to strengthen our program. We anticipate that Dr. Latham will contribute especially to our major's offerings and undergraduate research program, while Dr. Baumgartner will help us assess and improve our non-majors biology sequence.

OUR MAJOR THREATS ARE

1. Dealing with the critical issue of space. We are at a point where not all new tenure-track faculty are able to have even one back lab space in which to conduct their research at a time when research expectations are increasing.

2. Funding for equipment and materials, especially for major lab equipment and technology, continues to be tight.

I. Summary of Program Curriculum Changes for 2007-2008

Please provide a summary of program curriculum changes that were initiated this past year. In your summary, provide a brief short title/description of the change, the status of the change (options: proposed, final approval pending, approved, in new catalog), and a list of program outcomes to which the change is linked.

Bi 318 (Microbiology for the Health Sciences) Prerequisite Change: Prerequisites were changed from Bi 102 and Bi 103 to Bi 102 or Bi 211. Status: Approved and in new catalog.

Modification of the Pre-professional Emphasis within the Biology Major: Students can now choose to take Bi 334 and 335 (Advanced Human Anatomy and Physiology) or Bi 324 (Comparative Vertebrate Anatomy) and Bi 434 (Comparative Vertebrate Physiology) as part of this emphasis. Status: Approved and in new catalog.

J. Program Assessment Activities and Results

Provide a summary of program assessment activities and results from the past year, include evidence that the assessment activities are leading to the improvement of teaching and learning. Departments are to keep written records of review/assessment discussions and actions. Please submit descriptions of such engagement in the annual departmental report to the division.

OVERVIEW:

Assessment has been an important component of our program for several years. Armed with several years worth of long-term assessment data (Bi 100 series pre- and post-tests and ETS Field Exam), and endowed with two new tenure-track faculty, the time is right to examine and discuss the results, and adjust our program (and assessment tools themselves!) as needed. Accordingly, assessment is a key topic for our Fall Retreat, scheduled for September, 2008.

> **1. Embedded Assessment Results.** Provide results of Spring 2008 embedded assessment activities mapped to one or more of the program's learning outcomes. Each faculty member is expected to participate in embedded assessment and to file an embedded assessment action report, submitted to division chair and forwarded to dean's office. As necessary, fill out the attached form (see below, at end of report template) for each participating faculty member and course(s).

This spring, the biology department chose to assess our progress towards our second learning outcome of our mission statement, "Engage in laboratory experimentation, data analysis and interpretation, and critical thinking at all course levels." We assessed all courses with a set of three questions (the same questions for all courses.) In addition, each faculty member filled out the questionnaire for their own courses. Although this was primarily an attitudinal assessment to gauge which courses in our program address this learning outcome, it can also be used to evaluate student perceptions of what is meant by experimentation and analysis. The data will be analyzed this summer and discussed by the department at our Fall Retreat in September, 2008.

In addition, the Biology Department has conducted pre- and post-tests in our Biology 100 series (Bi 101,102, & 103) for six years. These were conducted during the first and last session of each section of the course. This year's data will be analyzed and added to the dataset. The results and discussion of these analyses, as well as a discussion of the effectiveness of this assessment tool, are on the agenda for our upcoming Fall retreat. This department-wide discussion will serve to guide our new Biology Education Specialist, Erin Baumgartner, in evaluating the 100 series and revising it as necessary.

2. Other embedded approaches. Provide documentation of other assessment methodologies including capstone reports, oral presentations, senior theses, writing portfolios, service learning accounts, laboratory reports, creative arts portfolios, etc., mapped against a program learning outcome. Provide departmental evidence that these student works are being assessed, collectively, and tabulated for departmental program review and decision making. Representative samples and an assessment rubric should be collected and numerical data should be compiled on how many students performed above/at/below desired proficiency.

For the purposes of this report, provide a summary list of these activities, an overview of results, and faculty members who are responsible for archiving the documentation.

Department members are currently developing these types of approaches. For example, Karen Haberman is has transformed her grading rubric and evaluation of her final Ecology papers into such an assessment tool, but has not conducted the analysis for the past year's papers. These types of assessment tools will be a topic of discussion at our Fall retreat.

Faculty members conducting assessments are able to place the results in a special location on the I drive. In general, the faculty member who conducts the data analysis places it in this location.

3. Exit and Proficiency Exams. Provide a summary of results from any program-related exit or proficiency exams (e.g. ETS specialty exams, state licensing exams, etc.). Describe how these results are being used to map program outcomes and guide

improvements in teaching and learning. Include a list of faculty members who are responsible for archiving the documentation.

The Biology Department has given the Major Field Test from the Educational Testing Service for the past eleven years. The data is analyzed each year. Our ten-year average falls between the 85th and 90th percentile. This year's evaluation will be completed this summer and discussed at our Fall retreat.

LAS Embedded Assessment Action Report For Program Review

Degree Program(s): __**LACC, Biology non-majors sequence**_____

(BA, BS, BFA, MA, MS, LACC, etc.)

Course # / Title: __**Bi 101, 102, and 103**_____

Faculty name: ____**All department faculty have been involved in this assessment, either by contributing to questions or by administering within their laboratories**._____

Date: **Bi 101: Fall '07, Spring '08; Bi 102: Fall '07, Spring '08, Bi 103: Winter/Spring 2009**

A) State the program **learning outcome** or **general education goal** this assessment is linked to:

Understand key concepts from the many disciplines within the biological sciences.

B) Check the embedded assessment tool(s) used :

- ☐ Exam question
- ☐ Essay
- ☐ Oral presentation
- ☐ Thesis
- ☐ Portfolios
- ☐ Practicum / Service Learning
- ☐ Capstone paper / project
- ✓ Other _**Pre and post-tests consisting of 21-30 questions**.

Attach a copy of the actual question / assignment as it is presented to the student or a description of the embedded process.

Each test consists of 21-30 questions and is content-specific for each course. The pre- and post-test for each course ask the same questions. The integrity of the test is maintained because they are never returned to the students. Copies of all three pre- and post-tests are available upon request.

Attach a copy of this action report for each faculty member and/or course to the annual department report. These will be compiled by the division chair and submitted to the LAS dean's office.

LAS Embedded Assessment Action Report For Program Review

Degree Program(s): ___**B.A, B.S and LACC** _____
(BA, BS, BFA, MA, MS, LACC, etc.)

Course # / Title: __**All Biology courses were assessed**_____

Faculty name: __**All Biology faculty were involved in this particular assessment.**____

Date: __**June 9-13, 2008 (Spring term, finals week)**_____

A) State the program **learning outcome** or **general education goal** this assessment is linked to:

Engage in laboratory experimentation, data analysis and interpretation, and critical thinking at all course levels.

B) Check the embedded assessment tool(s) used :

- ✓ Exam question
- ☐ Essay
- ☐ Oral presentation
- ☐ Thesis
- ☐ Portfolios
- ☐ Practicum / Service Learning
- ☐ Capstone paper / project
- ☐ Other _____

Attach a copy of the actual question / assignment as it is presented to the student or a description of the embedded process.

See next page.

Attach a copy of this action report for each faculty member and/or course to the annual department report. These will be compiled by the division chair and submitted to the LAS dean's office.

Embedded exam questions for Learning outcome 2:
"Engage in laboratory experimentation [*question I*], data analysis and interpretation [*question II*], and critical thinking [*question III] at all course levels."**

*Critical thinking, as defined by the North Central Regional Educational Laboratory (www.ncrel.org/sdrs/areas/misc/glossary.htm#criticalthinking), is "logical thinking that draws conclusions from facts and evidence".

I. I have performed laboratory experiments during the laboratory portion of this course.

A) Strongly agree
B) Agree
C) Disagree
D) Strongly disagree
E) Not applicable to this course

II. I have analyzed and interpreted data for this course (this includes the lecture and/or laboratory portions of this course)

A) Strongly agree
B) Agree
C) Disagree
D) Strongly disagree
E) Not applicable to this course

III. I have used logical thinking to draw conclusions from facts and evidence during this course (this includes the lecture and/or laboratory portions of this course).

A) Strongly agree
B) Agree
C) Disagree
D) Strongly disagree
E) Not applicable to this course