Sarah Havens, MS

Program Review

Health Science and Biology for Allied Health Report

1. **General Program Information**
2. **Mission Statements**
   1. **Biology Department Mission Statement:**

The mission of East Central College Biology Department is to instill in students the most current, accurate, and comprehensive content knowledge in the field; enhance critical thinking capacity; and impart information management skills and the skills to practice in the field of science.

**Health Science Department Mission Statement:**

The mission of East Central College Health Science Department offers coursework that provides a good foundation for health studies and encourages critical thinking while promoting interdisciplinary collaboration. The primary role of the Health Science Department is to support other health related degree programs.

1. **Organization and Structure:**

The Health Science and Biology departments are part of the Science Division. In addition to the department of Biology and department of Health Science, the Science Division also consists of the departments of Chemistry, Health Information Management, Medical Assisting, Geology, Biotechnology, and Chemical Technology. Division businesses are conducted through weekly department meetings and regular division meetings.

1. **Staffing and Credentials: Personnel, Facilities, and Equipment:**
   1. The Biology department currently has seven full-time instructors, as well as adjunct instructors. The Biology Department has divided the courses into units. Unit IIIA and IIIB include the Biology courses for Allied Health and the Health Science Department. Some classes in Unit IIIA and IIIB are regularly taught by adjunct instructors. Of the full-time instructors, 5 teach Unit III courses and all have either PhD (2) or research-based Master’s Degree with thesis option (3).
   2. The Health Science department currently utilizes 1 full time instructor and 2 adjunct instructors. Full time instructors from the Biology department will also teach Health Science courses when necessary. The full time instructor has a research-based Master’s Degree with thesis option and teaches other courses within the Biology department.
   3. The Biology department has a laboratory classroom specifically for use by the Anatomy and Physiology courses. Additionally, there are three preparatory spaces attached to these labs, with chemical hoods, snorkel ventilation, and a biosafety hood. There is also a centralized stockroom with chemical hood shared by Biology and Chemistry teaching laboratories. In the satellite location in Rolla, the teaching laboratories for conducting Biology courses have increased from one laboratory to two
   4. The Health Science Department has courses offered at both the Union and Rolla locations. The classes are offered through face-to-face, hybrid and online formats.
2. **External accreditation:**

Currently there are no external accreditation organizations for the Biology or Health Science programs.

1. **Learning Outcomes**
2. **Program Goals:**

**Biology for Allied Health and Health Science Program Goals**

The program goals are to provide quality, current instruction in biology for students. To aid in this effort, the program review process will identify areas that need improvement and develop action plans to resolve any deficiencies or areas of concern

1. **Course/Curriculum Information:**

Please see **Appendix 1** for the courses descriptions for Nutrition, Medical Terminology, Anatomy and Physiology I &II, Introduction to Human Anatomy and Physiology, Microbiology for Allied Health and Laboratory Safety for Students courses.

1. **Recent changes/Updates:**
   1. **Changes and Updates in Departments**
      1. Fall 2012 – Course numbers for Introduction to Human Anatomy and Physiology, Human Anatomy and Physiology I, Human Anatomy and Physiology II and Microbiology were revised so that lectures and labs are considered a single course. This reduces confusion regarding grades and co-requisite requirements.
      2. Fall 2012- A full time faculty member was hired to teach A&P I and A&P II in Union.
      3. Fall 2013- A full time faculty member was hired to teach IHAP and Health Science courses in Union and Rolla.
   2. **Changes and Updates based on assessment/last program review**

The Health Science Department underwent program review in the Fall of 2011 and some changes were made based on the findings in this program review. Some additional changes to our Biology courses for Allied Health were also made based on input from the Nursing Department’s board review and our own research of other institutions.

* + 1. Spring 2014-Microbiology for Allied Health was added to the course schedule.
    2. Spring 2014 - Fall 2013: Prerequisites for Microbiology and A&P I/II were changed to a C or better in General Biology or 2 years of high school Biology in the last 5 years with a “B” or better. This change was suggested by the Missouri State Nursing Board when they reviewed the nursing program.
    3. Nutrition has had an assessment test created and utilized to collect assessment data.
    4. A new nutrition textbook was chosen for the Fall of 2013.

1. **Students**
   * 1. **Biology for Allied Health**

The following information was compiled by East Central College’s Institutional Research Department.



The above table includes Introduction to Human Anatomy and Physiology, Anatomy and Physiology I, Anatomy and Physiology II, and Microbiology for Allied Health. The information includes data on enrollment (headcount), course offerings, course completion and success rates, class sizes, credits taught by full time faculty and adjuncts and department costs. In this data the department costs are inaccurate as they include all Biology Department classes cost rather than just the four that are under review. The enrollment numbers on the IR report appear to have decreased by 50% in 2013 however this was the first year that lab and lecture courses were combined in to one course. Prior to 2013 the students in the laboratory class and the lecture class were counted separately. This is also true of the class sections. Overall, the enrollment numbers have remained constant with a slight increase followed by a small decrease in AY2013-2014. However, the institution’s overall enrollment has decreased for the last two years. The trend of student success in these four classes has increased from 78% in 2009 to 85% over a five year period. This trend began in 2012 and may be due to the changes in enrollment, changes in faculty teaching the courses, or changes in prerequisites for some of the courses.

* + 1. **Department of Health Science**

The following information was compiled by East Central College’s Institutional Research Department.



Medical Terminology and Nutrition have rapidly grown in size and enrollment in the last 3 years. The number of course sections has grown along with it. Enrollment from 2012 to 2013 did show a 6.2% decline in enrollment. This correlates to the institutional decrease in enrollment during the same time period. The percent of credits taught in the Health Science Department by adjunct faculty was 80.8%. This has led to some inconsistencies in data collection that will be addressed in the next years of assessment collection through a streamlined report and the implementation of a data compilation event each year that includes full time and adjunct faculty.

1. **Advisory Committee Information**
2. **Minutes, Meetings:**

This is the first self-study

1. **Membership:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Role/ Institution |  | Name | Institution/Role |
| Sarah Havens | Program Review Coordinator, ECC |  | **Tracy Rusco** | Program Review Coordinator, ECC |
| Fatemeh Nichols | Science Division Chair, ECC |  | **Dennis**  **Pohlman** | Assistant Professor,  Government/History/Political Science, ECC |
| Jean McCann | Vice President of Instruction, ECC |  | **Dan Johnson** | Instructor, Biology, ECC |
| Robyn Walter | Nursing and Allied Health Division Chair, ECC |  | **Elizabeth Winters-Rozema** | Instructor, Biology, ECC |
| Kevin Dixon | Instructor, Biology, ECC |  | **Anne Mentz** | Instructor, Mathematics, ECC |
| William Huber | Professor, Allied Health and Natural Science, SLCC |  | **Amber Dunn** | Instructor, Medical Assisting, ECC |
| Stephanie Buchholz | Assistant Professor, Nursing, ECC |  | **Amelia Aaron** | Nursing Alumnus, ECC |
| Lucy Crain | Adjunct Instructor, Health Science, ECC |  | **Sharon Newberry** | Adjunct Instructor, Health Science, ECC |
| Lynn Bergman | Instructor, Health Science Academy, RTC |  | **Diane Oldfather** | Instructor, Respiratory Therapy, RTC |

1. **Assessment Plan and Data**
2. **Assessment Plan:**

Please refer to **Appendix 2** for the details of the Unit III assessment plan.

1. **Assessment Results:**

**Medical Terminology (HS 1113)**

**Course description is in Appendix I**

Medical Terminology is currently offered in Union as a web hybrid and online course. It also currently is offered in Union as an 8 week online course or as a 16 week online course. In Rolla, the course is offered as a web hybrid course only.

**Data Source:**

The assessment report is for Medical Terminology class sections taught as a web hybrid and as an online course during the Fall 2013 to the Spring 2014 period.

**Type of assessment:**

Assessment consists of comparing the scores made on a pre-test to those made on a post test in all the course sections. The exam is a 50 question multiple choice test that includes questions to test students’ knowledge in the concepts essential to the course. The exam was generated by the Health Science Coordinator using publisher and instructor generated questions. For online courses the test is posted on the Moodle platform for students to take at the beginning and the end of the course. In the hybrid courses the test is given in person at the first course meeting and then again during the final exam. It is the instructor’s choice to use the post-test as part of a final exam grade or not.

Comparison of overall scores made on pre-test and post-test and assessment of data for multiple sections of the course taught by multiple instructors, are being furnished.

**Comparison for Fall 2013 and Spring 2014 Medical Terminology Courses Web Hybrid/16 Week Online/8 Week Online**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Assessment** | **Fall 2013**  **Web Hybrid Average (%)** | **Spring 2014 Web Hybrid Average (%)** | **Fall 2013**  **16 week**  **Online Average (%)** | **Spring 2014 16 Week Online Average (%)** | **Fall 2013 8 week Online Average (%)** | **Spring 2014 8 week Online Average (%)** |
| Pre Test | **45.4%** | **47.5%** | **72%** | **53%** | **65.4%** | **51.4%** |
| Post Test | **75.6%** | **69.9%** | **74%** | **74.4%** | **85%** | **77%** |
| **Percent Change (%)** | **66.5%** | **38.2%** | **2.7%** | **33.6%** | **26.1%** | **39.9%** |

**Summary:**

Medical Terminology has been offered in a variety of course formats. During the period reviewed students were offered web hybrid, 16 week online and 8 week online. The 8 week online offering was the result of the MO HealthWins Grant that required courses for Health Information Management be offered in accelerated forms.

Students who completed the 8 week online course showed equal or greater improvement on the assessment test as that of other course formats. However, in these 8 week offerings there was greater withdrawal rate as students sometimes struggled to keep up with the fast pace while carrying a full load of courses.

Overall the course does well as an online or web hybrid offering as it is a subject that requires constant repetition of words and word parts used in the medical field and students are able to work on this repetition through the use of online resources and online assessments. Through spelling and pronunciation quizzes online students are in contact with the instructor which promotes quality interactions.

The course book has been replaced for the Fall of 2014 with a new textbook and a new web based learning system. This system should diversify online learning tools and offer greater insight to online student learning. Students will complete the same assessment tests as previously used and results will be analyzed after the 2014-2015 academic year. This will give data on the effectiveness of the new textbook and software.

**Nutrition (HS 1103)**

**Course description is in Appendix I.**

Nutrition is currently taught by adjuncts only at Union and Rolla locations. The course is offered as a web hybrid, online and traditional lecture course at the Union and Rolla locations.

**Data Source:**

The assessment report is for Nutrition class sections taught as a traditional, web hybrid and online course during the Fall 2013 to the Spring 2014 period.

**Type of assessment:**

Assessment consists of comparing the scores made on a pre-test to those made on a post-test in all the course sections. The exam is a 30 question multiple choice test with questions selected by the Health Science Coordinator. Questions are over the objectives covered in the course. For online courses the test is posted on the Moodle platform for students to take at the beginning and the end of the course. In the hybrid courses the test is given in person at the first course meeting and then again during the final exam. It is the instructor’s choice to use the post-test as part of a final exam grade or not.

Comparison of overall scores made on pre-test and post-test and assessment of data for multiple sections of the course taught by multiple instructors, are being furnished.

**Results:**

**Comparison for Fall 2013 and Spring 2014 Nutrition Courses Web Hybrid/16 Week Online/16 week face-to-face**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Fall 2013 Hybrid** | **Fall 2013 Face-to-Face** | **Spring 2014 Hybrid** | **Spring 2014 Online** |
| **Pre-Test (%)** | **64.5%** | **60.7%** | **61.3%** | **53.7%** |
| **Post-Test (%)** | **84.2%** | **70.0%** | **71.4%** | **80.2%** |
| **Percent Change (%)** | **30.5%** | **15.3%** | **16.5%** | **49.3%** |

**Summary:**

Nutrition was taught by adjunct instructors for the assessment period. This has led to gaps in data as there are several sections that failed to take a post-test during the Fall of 2013 and some data not turned in. During academic year 2014-2015 these items have been addressed by the Health Science Coordinator with current adjuncts and the expectations of them.

In Fall of 2013 a new Nutrition textbook was adopted as during the previous assessment there was a call for a new textbook and student input suggested a new textbook. The Nutrition assessment has also been developed since the previous program review. However, due to a change in full time faculty the assessment results from 2011-2012 are not available.

At this time Nutrition is being taught by 2 adjunct faculty that have been with the college for over a year. This change has improved assessment of the course as they have experience teaching the course and have begun to work to improve course delivery. In addition the Health Science Coordinator has begun to work closely with them to improve understanding of assessment and develop new and improved teaching methods. This also has improved input on additional resources for the online and hybrid sections.

The assessment test will also continue to be developed with more critical thinking type questions and look for questions that may be common knowledge. The students tend to struggle with the questions that pertain to the chemistry and macromolecule structures. These questions are being analyzed for wording and as indicators for improvement in student learning.

**Introduction to Human Anatomy and Physiology (BI 1804)**

Introduction to Human Anatomy and Physiology (IHAP) is a lecture and lab course that is a survey course of the topics of Human Anatomy and Physiology. It is a degree requirement for Health Information Management, Medical Assisting, Paramedic, Respiratory Therapy, and Radiation Technology students.

**Data Source:**

The assessment report is for Introduction to Human Anatomy and Physiology class sections taught during the Summer 2013 to the Spring 2014 period in Rolla and in Union.

**Type of assessment:**

Assessment consists of comparing the scores made on a pre-test to those made on a post test in all the course sections. The exam is a 50 questions multiple choice test. The exam was generated by the full time faculty instructors. The questions are aimed at testing students over knowledge in the course objectives. At this time it is the instructor’s choice to use the post-test as part of a final exam grade or not.

Comparison of overall scores made on pre-test and post-test and assessment of data for multiple sections of the course taught by multiple instructors, are being furnished.

**Results:**

**Comparisons for Introduction to Human Anatomy and Physiology Summer 2013/Fall 2013/Spring 2014 Overall**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Summer 2013** | **Fall 2013** | **Spring 2014** |
| **Pre-Test Average (%)** | 39.30% | 35.26% | 35.42% |
| **Post-Test Average (%)** | 66.40% | 57.67% | 56.88% |
| **Percent Change (%)** | 95.87% | 63.56% | 60.59% |

**Summary:**

Students showed the greatest improvement on questions in the areas of Cell Biology, Anatomical Position, Tissues, Integumentary, Bone Anatomy, Muscle Physiology, Special Senses, Cardiovascular, Urinary, Respiratory and Reproductive systems. Students showed the least improvement on questions in the areas of Tissues, Integumentary, Muscle Physiology, Lymphatic and Reproductive systems.

The full time instructors who teach the course have collaborated to discuss teaching strategies to improve student learning overall but particularly in the subjects that have proven most difficult. A common final is being developed by the instructors to help with assessment of courses. Also based on collaboration a Friday open lab session for students to review is being used at both the Union and Rolla locations.

In addition the assessment test has been reviewed for questions that reflect common knowledge and they are being converted to more critical thinking type questions. Also the assessment test will now be given as part of the common final rather that in addition to the final which may improve student effort.

Additionally this course is in the process of having an online laboratory developed for it. This will be the first online science lab at East Central College. This course section will be closely reviewed for effectiveness and assessed in relation to traditional sections.

**Human Anatomy and Physiology I (BI 2104)**

**Data Source:**

The assessment report is for Human Anatomy and Physiology I class sections taught as a sixteen week and an eight week course during the Fall 2012 to the Spring 2014 period.

**Type of assessment:**

Assessment consists of comparing the scores made on a pre-test to those made on a post test in all the course sections. The exam is a 50 questions multiple choice test. The exam was generated by the full time faculty teaching Anatomy and Physiology I. It is the instructor’s choice to use the post-test as part of a final exam or not.

Comparison of overall scores made on pre-test and post-test and assessment of data for multiple sections of the course taught by multiple instructors, are being furnished.

**Comparisons for Human Anatomy and Physiology I Spring 2012/Fall 2013/Spring 2014 Overall**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 16 week  Fall 2012 | 16 week  Spring 2013 | 16 week  Fall 2013 | 8 week  Fall 2013 | 16 week  Spring 2014 | 8 week  Spring 2014 |
| **Pre-Test Average(%)** | 36.45% | 35.87% | 30.74% | 45.60% | 29.11% | 39.80% |
| **Post-test Average(%)** | 65.84% | 64.72% | 69.26% | 75.4% | 65.33% | 70.42% |
| **Percent Change (%)** | 80.63% | 80.43% | 125.31% | 65.35% | 124.42% | 76.93% |

**Summary:**

The average percent improvement between pre- and post-test scores in the 16 week A&PI course for the AY2013-2014 was 124.86 percent. The average percent improvement between pre- and post-test scores in the accelerated 8 week A&PI course for the AY2013-2014 was 71.14 percent. The accelerated courses are new to the program and show similar improvement scores on the post- test as the 16 week courses. The average percent improvement between pre- and post-test scores in the 16 week A&P I course for the AY2012-2013 was 25.09 percent.

**Future directions for A&P I assessment:**

A detailed analysis by subject area will continue to be used to inform the improvement of the current pre and post-test used for assessment. In addition, the analysis will help formulate/design teaching strategies and identify areas of emphasis for instructors. A new textbook and lab manual were adopted for the AY2014-2015 that includes online technology including study tools for the students. These tools will be utilized to help students outside the classroom in topic areas that consistently receive lower scores. Changes will continue being made to the assessment to improve the depth of knowledge being tested, the accuracy of the questions as well as the statistical validity.

**Human Anatomy and Physiology II (BI 2115)**

**Data Source:**

The assessment report is for Human Anatomy and Physiology II class sections taught as a sixteen week and an eight week course during the Fall of 2012 to the Spring of 2014. Also included are the average scores of students during the Spring and Summer of 2013 and Spring of 2014 on the HAPS National Exam.

**Type of assessment:**

Assessment consists of comparing the scores made on a pre-test to those made on a post test in all the course sections. The pre and post-test assessment were generated by the full time instructors and is 50 multiple choice questions. It is the instructor’s choice to use the post-test as part of a final exam.

The Human Anatomy and Physiology Society standardized national exam is also given to students during the Spring semester. This assessment is 100 questions over concepts from human anatomy and physiology I and II and allows assessment of our students on a national scale.

Comparison of overall scores made on pre-test and post-test and assessment of data for multiple sections of the course taught by multiple instructors, are being furnished. HAPS standardized national exam results are also being furnished.

**Comparisons for Human Anatomy and Physiology II Spring 2012/Fall 2013/Spring 2014 Overall**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 16 week  Fall 2012 | 16 week  Spring 2013 | 8 week  Fall 2013 |
| **Pre-test Average (%)** | 42.03% | 28.04% | 46.3% |
| **Post-test Average (%)** | 67.12% | 56.16% | 78.5% |
| **Percent change (%)** | 59.70% | 100.20% | 69.55% |

**Comparisons for Human Anatomy and Physiology Society Nation Exam Scores**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **High Score** | **Low Score** | **Average** | **National Average** | | Spring 2013 - Rolla only (Paper Exam) | 66% | 38% | 53.60% | 56% | | Summer 2013 – Union only (Paper Exam) | 69% | 38% | 52.3% | 56% | | Spring 2014 – Rolla (Computerized Exam) | 77% | 34% | 49.30% | 43.30% | | Spring 2014 – Union (Computerized Exam) | 64% | 28% | 42.21% | 43.30% | |

***Summary for A&P II assessment:***

The average percent improvement between pre- and post-test scores in the 16 week A&PII course for the AY2012-2013 was 75.96 percent. The average percent improvement between pre- and post-test scores in the 8 week A&PII course for the AY2012-2013 was 69.55 percent. The 8 week course was offered for the first time in the Fall 2013 semester and only at the Rolla location. The percent improvement was slightly lower in the 8 week course than in the 16 week course. The average score for the HAPS exam was 48.37 percent which was near the national average of 49.65 percent. Currently, it is evident that our curriculum is aligned with the standards of the Human Anatomy and Physiology Society based on our test results.

**Future directions in AP II assessment:**

Data will continue to be collected on the 8 week accelerated courses. A detailed analysis by subject area will continue to be used to inform the improvement of the current pre and post-test used for assessment. In addition, the analysis will help formulate/design teaching strategies and identify areas of emphasis for instructors. A new textbook and lab manual were adopted for the AY2014-2015 that includes online technology including study tools for the students. These tools will be utilized to help students outside the classroom in topic areas that consistently receive lower scores. Changes will continue being made to the assessment to improve the depth of knowledge being tested, the accuracy of the questions as well as the statistical validity.

The common assessment will be modified for the Fall 2014 semester. Questions will be rewritten to more accurately examine depth of knowledge. Data will continue to be collected from the Human Anatomy and Physiology Society (HAPs) standardized national exam and analyzed.

**Microbiology for Allied Health (BI 1314)**

Microbiology for Allied Health was offered for the first time during the Spring 2014 semester. With no nationally-standardized exam available for assessment, instructors for the course developed an exam to be used as a pre-test/post-test comparative tool. To date this exam has been administered to five sections of Microbiology: two were sections that met during the Spring 2014 semester (one afternoon section and one evening section), and one met during the mornings during the Summer 2014 eight-week term in Union. One was an afternoon section during the Spring 2014 semester at the Rolla site, and one was a morning session during the Summer 2014 semester at the Rolla site.

**Comparisons for Microbiology Spring/Summer 2014 – 3 Sections Overall**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Spring 2014 Day (combined)** | **Spring 2014 Night (one section)** | **Summer 2014 (combined)** |
| **Pre-test (%)** | 17.8 / 40 possible = 44.5% | 17.2 / 40.0 possible = 43.0% | 18.6 / 40 possible = 46.5% |
| **Post-test (%)** | 29.4 / 40 possible = 73.5% | 27.6 / 40 possible = 69.0% | 32.5 / 40 possible = 81.3% |
| **Percent Change** | 65.1% increase | 60.5% increase | 69.9% increase |

**Summary:**

As shown above, the Summer 2014 groups had a significantly higher score. The difference does is not completely surprising based on past experiences. Summer term students tend to do well in this course. Most have no other classes in their schedule competing for their time academically, and overall the summer group followed previous trend as they excelled in their overall work.

As stated in the course description, BI 1314 – Microbiology for Allied Health has prerequisites of “Minimum of "C" in BI 1305 or two years of high school biology, with a lab, and a score of four or above on Advanced Placement exams.” This represents a significant change in prerequisites and preparation for the course. As a result instructors teaching the course reviewed the curriculum and revised lecture and lab content to more closely match what would be expected for a class Allied Health majors would need.

For several years prior to the Spring 2014 semester, this course was offered as BI 2404 – Microbiology Lecture/Lab. BI 2404 met requirements for a general microbiology course that could be used by either Biology majors as an elective credit for transfer or Allied Health/Nursing majors to meet the microbiology program requirement. BI 2404 had a prerequisite of BI 1325 – Principles of Biology I (which had a chemistry prerequisite), so students were often in at least their third or fourth semester of coursework. With the concurrent changes in the course content and prerequisites there is still a fair cohort of students who have exceeded the current minimum prerequisites having taken Principles of Biology I and a previous college-level Chemistry course. I estimate we will continue to see students who have taken Principles and Chemistry for at least another 1-2 years, so a fair comparison of sections from previous years cannot be made.

Before the start of the Fall 2014 semester the primary instructors for the course met to revise the exam. Wording on several questions was “cleaned up,” and a few questions that more fit the previous version of the course were omitted. Data from the revised exam will be included in the next assessment cycle

1. **SWOT Analysis for Health Science and Biology Courses for Allied Health**
2. **Strengths:**
3. All full-time faculty hold research-based Master’s Degree (3) or PhD (2) in different fields of Biology, which allows the department to use the right instructor with the right course.
4. The East Central College administration is very supportive of offering courses regularly; on a predictable schedule. This helps students to meet their educational goals at East Central College and realize successful transfer to four year schools in a timely manner.
5. Full-time lab manager in Union.
6. Current adjunct faculty are reliable.
7. **Weaknesses:**
8. Rolla has limited facilities. While laboratory space has increased recently, limitations still exist.
9. No full-time lab manager in Rolla
10. Difficulty finding and keeping qualified adjunct faculty to teach courses.
11. Lack of contribution of adjunct faculty to development of courses and the department
12. Lack of Anatomy and Physiology tutors/student worker
13. **Opportunities:**
14. To monitor assessment results to improve student performance for difficult concepts, and have in-depth discussion of rigor of courses taught, concepts covered, and assessment.
15. Collect data on number of students participating in open lab Fridays
16. Utilizing the newly formed HOSA chapter as a retention tool
17. Development of a common final for Introduction Anatomy & Physiology to use as a benchmark for student learning
18. Increased training opportunities for faculty to develop assessment skills and tools.
19. Development of an online Introduction to Anatomy & Physiology lab.
20. Increase in recruitment efforts and community involvement.
21. Development of online science lab class guidelines.

**Threats:**

1. Finding qualified adjunct faculty.
2. Enrollment is down college-wide and subsequently in Biology and Health Science courses.  Presence of Missouri S&T, St. Louis Community College, Webster University, and University of Missouri –St. Louis in close proximity to East Central College.
3. There has been a proliferation of online offerings of lab based science courses.
4. Higher pay for adjuncts at other local institutions.
5. Ozark Technical College and Drury have no pre-requisites to A&P I

**APPENDIX 1**

**Course Descriptions**

**HS 1003 3.0**

**Nutrition**

A study of the essential nutrients and their value in various food groups, their functions in the body, and how to determine the food needs of the individual.

Prerequisite: Appropriate placement score to enter EN 1223 or EN 1233

**HS 1113 3.0**

**Medical Terminology**

An introduction to medical terminology focusing on the building and understanding of anatomical and pathological terms through identification and interpretation of roots, prefixes and suffixes. Students will pronounce, spell, define and interpret text on basic terms used in reporting on body systems, medical specialities, disease and procedural activities. The course will address basic medical terminology and abbreviations.

Prerequisites: Appropriate placement score to enter EN 1223 or EN 1233

**BI 1314 4.0**

**Microbiology for Allied Health**

An introduction to microorganisms and their importance in disease. Course topics includ microbial morphology, cell anatomy and physiology, energy transformation reactions, genetics, and classification. Diseases of specific body systems and the human innate and adaptive immune response will be discussed. Laboratory topics will support the lecture, with the addition of culturing and staining techniques, disinfection, microbial identification, and diagnostic microbiology tests commonly performed in allied health fields. Three hours of lecture and minimum of three hours laboratory per week.

Prerequisite: Minimum of "C" in BI 1305 or a minimum average grade of "B" in two years of lab-based biology courses. Either of the previous options must have been within the last 5 years. High school biology can be a combination of high school Biology I & II or high school Biology I and Anatomy and Physiology. Both high school courses in a given option must be yearlong courses with labs. If a student does not meet these requirements they must take BI\*1305. Pre/Corequisite: SC 1000

**BI 1804 4.0**

**Introduction to Human Anatomy & Physiology Lecture & Lab**

A survey of the structure and function of the human body. The micro and macroscopic structure and the function of each system will be reviewed. The course is intended for students enrolled in an allied health program. The integument, skeletal, muscular, nervous, endocrine, circulatory, digestive, respiratory, urinary and reproductive system will be studied. The laboratory session will support the lecture activity. Two hours of lecture and minimum of four hours lab per week.

Prerequisite: Appropriate placement score or coursework to enter EN 1223 or EN 1233. Pre/Corequisite: SC 1000

**BI 2104 4.0**

**Human Anatomy & Physiology I Lecture & Lab**

This course is part of a two-semester sequence of courses where gross micro- and macro- scopic anatomy and the function of the respective structures are studied. Major topics covered include biological chemistry, cell biology, histology, integumentary system, skeletal system, muscular system, and nervous system. Laboratory work includes dissection, microscopy, models, and experimental demonstration of concepts covered in class. Dissection of preserved animal specimens is required. This course is primarily for students majoring in allied health fields. Two hours of lecture with a minimum of four hours of laboratory per week.

Prerequisites: (1)Minimum grade "C" in BI 1325 or two years of high school biology, with a lab, and a score of four or above on Advanced Biology exams, (2)CH 1105; Pre/Corequisite: SC 1000

**BI 2115 5.0**

**Hum Anatomy & Physiology II Lecture & Lab**

This is part two of a two-semester sequence of courses where gross micro- and macro- scopic anatomy and the function of the respective structures are studied. Major topics covered include special senses, cardiovascular system, lymphatic system, respiratory system, urinary system, digestive system and reproductive system. Laboratory work includes dissection, microscopy, models, and experimental demonstration of concepts covered in class. Dissection of preserved animal specimens is required. This course is designed primarily for students in allied health fields. Two and one-half hours of lecture and minimum of four hours of laboratory per week.

Prerequisite: BI 2104, minimum grade C Pre/Corequisite: SC 1000 and CH 1105

**APPENDIX 2**

***Unit III*: Consists of Health-Related Courses from Biology (III A) and Health Science (III B) Departments – 2014, 2019 and 2024**

***Report cycle and Review Cycle*:** This unit report will be submitted every 5 years alternating with the other units in the BS and ES departments

**Unit III A: Health-Related Courses in the Biology Department (BI)**

**III. Program objectives:**

*a. Describe and apply basic course specific concepts*

*b. Identify and use the concepts, principles, and theories that constitute the core sub-disciplines of the biological sciences*

*c. Apply new understanding of biology in novel ways that are useful to humans or that solve problems faced by humans*

*d. Students will apply the concept of chemistry to the study of life.*

1. *Gather and analyze appropriate numerical information including creating and interpretation of graphs and diagrams.*

1. *Demonstrate appropriate technical skills related to biology.*
2. *Apply the scientific method of creating and testing hypotheses.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Target Courses** | **Objectives met** | **Assessment Tool** | | **Assessment cycle** |
| **Microbiology for Allied Health**  (BI 1314) | Content assessment | Semester exams, laboratory exams & departmental Pre-test and post-test | | Semester of course offering |
| II.a. | CAAP test | | To be determined by the college. |
| III.a & III.b | Semester exams, laboratory exams & laboratory reports, & departmental Pre-test and post-test | | Each objective will be assessed individually on a cyclic basis |
| III.c – III.f | Appropriate assessment tool for the objective chosen will be used - Under development | |
| **Human Anatomy and Physiology I** (BI 2104) | Content assessment | Semester exams, laboratory exams & departmental Pre-test and post-test | | Semester of course offering |
| II.a. | CAAP test | | To be determined by the college. |
| III.a, III c. & III d. | Semester exams, laboratory exams & departmental Pre-test and post-test | | Each objective will be assessed individually on a cyclic basis |
| **Human Anatomy and Physiology II** (BI 2115) | Content assessment | 1. Semester exams, laboratory exams & departmental Pre-test and post-test | | 1. Semester of course offering |
| 1. Human Anatomy and Physiology Society(HAPS) Standardized Exam | | 1. HAPS test will administered once every two years |
| II.a. | CAAP test | | To be determined by the college. |
| III.a., III c. & III d. | Semester exams, laboratory exams & departmental Pre-test and post-test | | Each objective will be assessed individually on a cyclic basis |
| **Intro. to Anatomy & Physiology**  (BI 1802) | Content assessment | | Semester exams, laboratory exams & laboratory manual, & departmental Pre-test and post-test | Semester of course offering |
| III.a, III.c, III.e and III.g. | | Appropriate assessment tool for the objective chosen will be used - Under development | Each objective will be assessed individually on a cyclic basis |

**East Central College Department-Division : Health Science department – Science Division**

**Program Assessment Planning Document Semester & Academic year: Updated Spring 2013**

**East Central College learning objectives** **(general education objectives and CLOs)** **& program objectives that this assessment will support.**

|  |
| --- |
| 1. **General Education Objectives** (Do not apply) |
| 1. **Common Learning Objectives** (Do not apply) |
| 1. **Program objectives** (Unit specific) |

***Report and Review Cycles:*** Reports and program reviews for each Unit will be performed in 5 year cycles. Review years for each Unit are specified below

***Unit III*: Consists of Health-Related Courses from Biology (III A) and Health Science (III B) Departments – 2014, 2019 and 2024**

**Unit III B: Health-Related Courses in the Health Science Department (HS)**

**III. Program objectives:**

*a. Describe and apply basic course specific concepts*

*b. Apply the scientific method of creating and testing hypotheses.*

*c. Apply new understanding of biology in novel ways that are useful to humans or that solve problems faced by humans*

*d. Gather and analyze numerical information appropriate including creating and interpretation of graphs and diagrams.*

|  |  |  |  |
| --- | --- | --- | --- |
| Target Courses | Objectives met | Assessment Tool | Assessment cycle |
| **Nutrition**  (HS1003) | Content assessment | Semester exams, diet analysis project & departmental Pre-test and post-test | Semester of course offering |
| III.a. - IIId. | Appropriate assessment tool for the objective chosen will be used- Under development | Each objective will be assessed individually on a cyclic basis |
| **Medical terminology** (HS1113) | Content assessment | Semester exams, case studies & departmental Pre-test and post-test | Semester of course offering |
| III.a. | Appropriate assessment tool for the objective chosen will be used- Under development | Each objective will be assessed individually on a cyclic basis |