

**Biology Department Assessment Plan AY '04/05**  
**Part I – Assessment Summary**

**A. Biology Discipline Mission Statement:**

**Mission:**

The mission of the biology department is to provide quality education to the students we serve as well as furthering the overall mission of the college

**Purpose:**

The purpose of the Biology Department is to provide educational services in the areas of biology for the residents of Arapahoe and Douglas Counties and surrounding areas. The department takes a learner-centered approach and offers courses for both full and part-time students with a focus on improving student learning. The courses support vocational programs as well as transfer requirements for science and non-science students. Community interest courses and developmental and tutorial courses are also offered. The department is committed to quality education in the areas of biological science, incorporating application of the most current theory, biology-oriented technology, and educational methods.

**B. Intended Outcomes (competencies)**

After taking Human Anatomy & Physiology I and II, the student will:

1. demonstrate mastery of specific course content by taking a departmental assessment.
2. analyze data and suggest answers or solutions to problems through laboratory practical exams and quizzes.
3. demonstrate the appropriate use of technology and laboratory equipment (microscopes, blood pressure cuffs, ECG, centrifuge, etc.) through laboratory practical exams and quizzes.
4. demonstrate the approach, logic and application of the scientific method and be able to apply these principles to real-life problems.

**C. Benchmarks**

All students that take anatomy & physiology I and II will take the assessment exam (competencies 1, 2 and 4). Overall Student population average will be 50% or higher on the standardized exam.

All students that take anatomy & physiology I and II will take the imbedded laboratory practicals. Overall student population average will be 70% or higher on the laboratory practical (competencies 1, 2, 3 & 4).

## Assessment Results

### 1. Historical Context

The biology department has been assessing the Anatomy & Physiology discipline for the past three years. The form of the assessment has included the use of the standardized questions from the Human Anatomy Professional Society as well as a few locally generated questionnaires and formats. These questions are used by members of HAPS to assess their anatomy & physiology programs. 50% is the average score for national participants on this exam. With the added requirement of using two methods of assessment the Anatomy & Physiology I & II lab practicals were added this year (04/05). In order to better standardize the lab practicals the departments lead Anatomy & Physiology faculty member established the format and questions to meet the course competencies as outlined in Harrison & Johnson, The Human Organism – Function & Form supplemental manual.

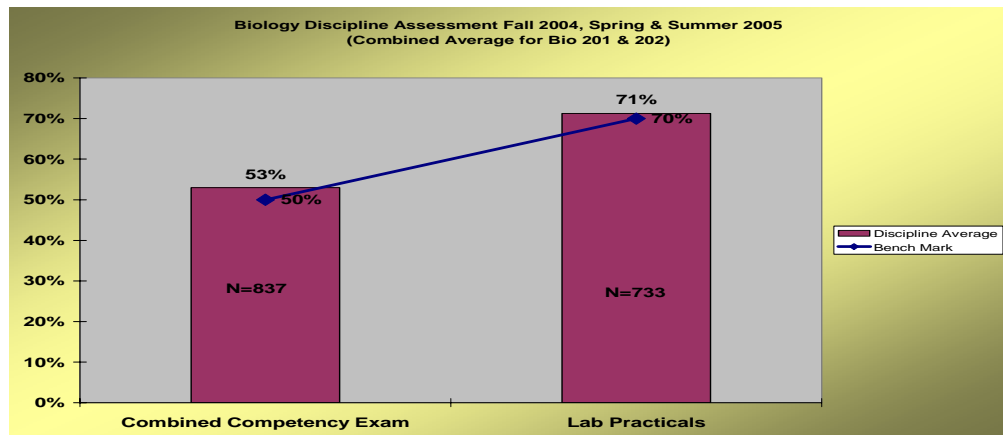
### 2. Current Year Data Results

During the Fall '04, Spring '05 and Summer '05 semesters a total of 837 students were administered the combined competency exam for all sections of Human Anatomy & Physiology I & II (Bio 201 & Bio 202). Of the 837 students 733 students took the standardized lab practicals. 104 students did not take the standardized lab practicals because they were enrolled in dihybrid sections of Bio 201 or 202. Dihybrid sections lab practicals are different due to the once a month labs versus the weekly traditional labs.

### 3. Analysis

Based upon the aggregate score of 53% for the combined competency exam the department exceeded the set benchmark of 50%. The aggregate score of 71% for the standardized lab practicals also exceed the benchmark of 70% (see Figure 1 – Aggregate Scores for Combined Competency Exam and Standardized Lab Practical).

Figure 1. 1 – Aggregate Scores for Combined Competency Exam and Standardized Lab Practical



#### **D. Use of Results**

While the benchmarks were met for the biology departments Anatomy & Physiology discipline these results do not provided enough detail to ascertain the specific system effectiveness of the department. These results are being discussed by full time and adjunct faculty to determine a more effective method of assessing the effective teaching and learning by students of the individual body systems.

The department will continue to evaluate and refine their assessment methods.

## **Part II – Assessment PLAN AY'05/06**

### **A. Intended Learning Outcomes (competencies)**

After taking Human Anatomy & Physiology I and II, the student will:

1. demonstrate mastery of specific course content by taking a departmental assessment.
2. analyze data and suggest answers or solutions to problems through laboratory practical exams and quizzes.
3. demonstrate the appropriate use of technology and laboratory equipment (microscopes, blood pressure cuffs, ECG, centrifuge, etc.) through laboratory practical exams and quizzes.
4. demonstrate the approach, logic and application of the scientific method and be able to apply these principles to real-life problems.
5. exhibit the ability to read and write about science-related materials.

### **B. Assessment Procedures/Methods**

Administer a standardized, discipline-based exam to all students completing the first and second semesters of Anatomy & Physiology. The exams assess student knowledge and skills in 15 areas (body plan, cardiovascular, digestion/metabolism, histology, homeostasis, integument, muscular, nervous system/senses, respiratory skeletal, urinary/fluid electrolyte balance, chemistry, cell biology, endocrine, lymphatic/immunity and reproduction). These assessment indicators map to the core content areas and the scientific skills in the desired outcomes (1, 2 and 4).

Administered standardized discipline-based laboratory exams created by the department to all students that attend an anatomy & physiology course at ACC. Similar exams in other content areas (microbiology, general biology which cover the following knowledge and skills (not inclusive): biochemistry & cell energetics; cellular structure/organization/function; molecular biology/molecular genetics; diversity of organisms; animal structure & function; plant structure & function; population genetics & evolution; ecology; and analytical skills) will be reviewed for inclusion by fall 05. These assessment indicators map to the core content areas and the scientific skills in the desired outcomes (1, 2, 3 & 4) and provide a second method to determine accuracy of measurement.

### **C. Benchmarks**

All students that take anatomy & physiology will take the assessment exam.

All students that take anatomy & physiology I and II will take the assessment exam (competencies 1, 2 and 4). Overall Student population average will be 50% or higher on the standardized exam.

All students that take anatomy & physiology I and II will take the imbedded laboratory practicals. Overall student population average will be 70% or higher on the laboratory practical (competencies 1, 2, 3 & 4).

