

**Grayson College**  
**Assessment of Program Learning Outcomes**  
**AS in Biology**  
**Fall 2010**

Degree Program	Course	Number	Section	Outcome Measure	ILO Supported	PLO Supported	Assessment Method	Summary of Results	Use of results to improve in one or more of these areas			
									Instruction	Curriculum	Technology	Assessment
AS in Biology	BIOL	1306/1106	all	SLO #1: Students will explain the transfer of genetic information, the chromosomal theory of inheritance and the relationship of genetics to evolutionary theory.	Critical Thinking	#3	Multiple choice exam	Among all sections, the average for the 14-question exam was 52%. We believe the poor result was largely because our students lack the reading skills to distinguish between the choices for the questions.				We will re-write these 14 questions to better reflect the reading skills of our student population.
				SLO #2: Students will be able to demonstrate an understanding of the structure and function of cellular organelles.	Critical Thinking	#3	Multiple choice exam	Among all sections, the average for the 10-question exam was 71%. The average was adequate, but likely would have been higher if instructors had more time to view the questions and prepare their students.	We will provide all instructors with these questions at the beginning of the semester, so they may better prepare their students.			
	BIOL	1414	001	SLO#2: The student will be able to explain role of microorganisms and how DNA structure has been manipulated in the process of gene cloning and	Critical Thinking	#3	Multiple choice, fill in the blank tests given throughout the semester, 12 questions were asked on 3 separate exams given to students in	Proficiency: 78% of the students correctly answered the questions.	We will find video and outside materials to illustrate the process better to students and to assign a research paper documenting all the gene products which			



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	BIOL	2302/2102	all	SLO #1: Students will be able to demonstrate an understanding of the structure and function of the endocrine system, cardiovascular system, lymphatic system, digestive system, respiratory system, urinary system, and reproductive system.	Critical Thinking	#3	Multiple choice exam	<p>The SLO's were re-written to be more specific.</p> <p>This semester the sample population consisted of four sections with a total of 124 students. While our goal in the spring was to take a request to the Curriculum Committee to place a prerequisite of C or better in A&amp;P I for A&amp;P II, the Curriculum Committee did not meet early enough for this to be accomplished. The Department decided, therefore, to give quizzes over each chapter to try to enhance scores on major exams. Each instructor asked an average of 19 questions on the Urinary system on their major exam #3. The average number of correct answers on the Urinary system</p>	Although the quizzes after each chapter did not enhance the scores on the major exams, some instructors see them as a positive way to reinforce material and those instructors will continue using quizzes over each chapter, while other instructors will not.	Instructors will be encouraged to stress urinary topics to increase student understanding.		While the exam questions used by each instructor were very similar, standardized questions on the Urinary system will be written to be incorporated on test #3. This will give us a better comparison between sections.

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AS in Biology								questions was 68%, which was exactly the same as the previous semester when quizzes were not given.				
				SLO #3: Students will be able to summarize various homeostatic mechanisms associated with the endocrine system, cardiovascular system, lymphatic system, respiratory system, urinary system, and reproductive system.	Critical Thinking	#3	Multiple choice exam	The sample population consisted of four sections, taught by three different instructors, and 124 students. The questions on acid base, water, and electrolyte balance were utilized on exam #3. An average of 11 questions were asked by instructors. An analysis of the test questions illustrated that questions utilized by the three instructors were very similar. Students got an average of 77% of the questions correct.		The Department is very pleased and excited that the students answered 77% of the questions correctly.		The Department will write standardized questions to be used in the future for better comparison between sections.
	BIOL	2321/2121	all	SLO #1: Students will demonstrate critical thinking, problem solving, and decision making while identifying two bacteria in mixed culture.	Critical Thinking	#2	Unknowns lab report/journal	Section average: 001: 86% 002: 81% 003: 72% 004: 86% 005: 81% 081: 85% 701: 78%	We will move the study of gram staining, an important part of unknown identification, temporally closer to the time when unknowns are assigned. Therefore, the gram-staining			

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AS in Biology									procedure will be fresher in the students' minds when they begin their unknown analyses.				
				SLO #2: Students will demonstrate an understanding of factors that lead to microbial antibiotic resistance, be able to perform a technique to determine sensitivity or resistance, and assess the effects of resistance on society.	Interculturally literate and socially responsible	#2	Multiple choice exam	The results of the 5 multiple choice questions embedded in the 2nd exam were: Question: 1: 89% 2: 51% 3: 33% 4: 69% 5: 78%  We were particularly concerned about the poor score on question #3.	We will spend more time in lecture elaborating on societal factors contributing to the emergence of bacterial antimicrobial resistance (which particularly relates to question #3).				
	BIOL	2404	all	SLO #1: Students will associate anatomical terminology with organ or structure location.	Critical Thinking	#3	Multiple Choice Questions	Students answered five questions on anatomical terminology and organ or structure location. The overall average was 73.8% correct answers.	We will re-emphasize the importance of positional terminology to all instructors. Our goal is a 5% improvement to the overall average.				
				SLO #2: Students will demonstrate the relationship between the structure and	Critical Thinking	#3	Multiple Choice Questions	The overall average was 73% correct answers.	We will re-emphasize the importance of the relationship of structure to function to all				

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AS in Biology													
				function in body systems.						instructors. Our goal is a 5% improvement to the overall average.			