Names:	
	Class Section:

GRADING RUBRIC

GRADING RUDRIC					
TABLES	The tables were not	The tables were	The tables were fully		
	completed	partially completed	completed		
	0pts	5pts	10pts		
STUDENT WORK	Students did not	Some of the students	Every student in the		
8	actively participate in	participated while	group participated and		
	the activity	others did not share in	shared the		
		the responsibilities.	responsibilities of		
			completing the		
p.		8	activities		
	0pts	15pts	25pts		
CHI-SQUARED	No work was shown	Work was shown, but	All work was shown,		
ANALYSIS	for the analysis.	it was incomplete or	and was correct.		
		incorrect.			
	0pts	30pts.	50pts		
CORRECT	The hypothesis was	The hypothesis was	The hypothesis was		
HYPOTHESIS	incorrect because the	incorrect, but the	correct.		
	analysis was not	analysis was run			
	conducted correctly.	correctly.			
	0pts	10pts	15pts		
TOTAL SCORE					

CALL FOR COURSE PROPOSALS FOR INCLUSION INTO CORE CURRICULUM

To propose a course for inclusion into the AC General Education Course List (Core Curriculum) please complete the following areas of inquiry. Please review the description of the Core Objectives (General Education competencies) from the Texas Higher Education Coordinating Board.

Course under Consideration:

BIOL 1409/1309 Life Science II (for non-science majors)

Catalogue Description of the Course:

A continuation of biological concepts and how they relate to the individual, the community and the world. Emphasis is placed on ecology, behavior, human biology and evolution.

Foundational Component Area:

Life and Physical Sciences

Course Student Learning Outcomes:

Lecture 1. Describe modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation. 2. Describe phylogenetic relationships and classification schemes. 3. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance. 4. Describe basic animal physiology and homeostasis as maintained by organ systems. 5. Compare different sexual and asexual life cycles noting their adaptive advantages. 6. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends. Laboratory 1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data. 2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory. 3. Communicate effectively the results of scientific investigations. 4. Define modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation. 5. Describe phylogenetic relationships and classification schemes. 6. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance. 7. Describe basic animal physiology and homeostasis as maintained by organ systems. 8. Compare different sexual and asexual life cycles noting their adaptive advantages. 9. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends.

Communication Skills			
Brief Description of Assignment and/or Activity to fulfill Course Objectives:	Student groups will perform a spirometry experiment. Students will use laboratory instruments to collect data on respiratory volumes and capacities. Students will individually, compile class data, calculate statistical values, and then present data from the experiment. The students will graph the data results and write a report that will be submitted to instructor.		
Direct Assessment Method As applied to above Assignment/Activity	Rubric,		
Brief Outline of Assessment Method(s)	Rubric will assess communication skills to include: following scientific guidelines for writing laboratory reports, clarity, graphs, and conclusion.		
Benchmark/Target:	65% of the students will effectively communicate the experimental design and the results obtained.		
Critical Thinking Skills	r of Postable de la Reinaberta a versione de la la Reinaberta de la Reinab		
Brief Description of Assignment and/or Activity to fulfill Course Objectives:	Student groups will perform a spirometry experiment. Students will use laboratory instruments to collect data on respiratory volumes and capacities. Students will individually, compile class data, calculate statistical values, and then present data from the experiment. The students will graph the data results and write a report that will be submitted to instructor.		
Direct Assessment Method As applied to above Assignment/Activity	Rubric,		
Brief Outline of Assessment Method(s)	Rubric will assess the student's critical thinking ability by drawing correct conclusions from their experimental data.		
Benchmark/Target:	65% of the students will draw appropriate conclusions from their data.		
Empirical and Quantitative Skills	er para premium de la compresión de la figura de la figur		

Brief Description of Assignment and/or Activity to fulfill Course Objectives:	Student groups will perform a spirometry experiment. Students will use laboratory instruments to collect data on respiratory volumes and capacities. Students will individually, compile class data, calculate statistical values, and then present data from the experiment. The students will graph the data results and write a report that will be submitted to instructor.		
Direct Assessment Method As applied to above Assignment/Activity	Rubric,		
Brief Outline of Assessment Method(s)	Rubric will assess the student's ability to correctly manipulate the data, run statistics, and transfer the numerical data to a graphical display.		
Benchmark/Target:	65% of the students will correctly manipulate the data, run statistics and construct an appropriate graph form the data collected in the experiment.		
Teamwork	San Company Co		
Brief Description of Assignment and/or Activity to fulfill Course Objectives:	Student groups will work together to perform spirometry experiments. Students will use laboratory instruments to collect data on respiratory volumes and capacities. Students will individually, compile class data, calculate statistical values, and then present data from the experiment. The students will graph the data results and write a report that will be submitted to instructor.		
Direct Assessment Method As applied to above Assignment/Activity	Juried Assessment, Rubric,		
Brief Outline of Assessment Method(s)	Rubric will assess the student's ability to work as a team including individual contribution, research, and delegation of duties.		
Benchmark/Target:	65% of the students will demonstrate the ability to work as a team to design and carry out the scientific experiment.		

COURSE OUTCOMES ASSESSMENTS FOR LIFE SCIENCE 2

Spirometry

- Students will run an experiment and determine their average vital capacity by using a spirometer
- Each student will take the average of 3 attempts as their vital capacity value
- The students will then compare their individual results to normal values as indicated by a vital capacity chart
- Each student will then determine the difference between their result and the norm
- The class will compile the results and come up with a class average (mean) of difference
- A standard deviation will be determined based on the results of the class
- To determine standard deviation, variance must first be determined
- Variance is the average of the squared differences from the mean
- Each student will subtract their number from the mean and square the result

Variance =
$$\sum (x - \overline{x})^2 + (x - \overline{x})^2 \dots$$

 $\Sigma = \text{sum (add)}$

x = student value

 \bar{x} = mean for class

n = total # of students

For example: If the class average for vital capacity is 4,000mL and a student has a vital capacity of 4,500mL, their squared difference from the mean would be $500\text{mL}^2 = 500\text{mL} \times 500\text{mL} = 250,000\text{mL}$. This number would be added to the results of all other students in the class and then averaged for the variance.

- The standard deviation is a measure of the average deviation from the average
- The formula is the square root of the variance or √variance

For example: Let's say the variance was 500,000mL, this would make the standard deviation $\sqrt{500,000}$ mL = 707mL. Any student either 707mL above or below the mean vital capacity is outside of the standard deviation and thus, outside of the normal range.

Show all work below.

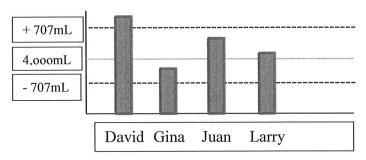
- Enter your data in table 1.

Table 1

Tuore I						
Student	Class	Student	Difference	Sum of	Avg of	Standard
vital	mean	difference	squared	differences	differences	Deviation
capacity				of entire	(Variance)	
		and the same of the same of		class		
(x)	(\bar{x})	$(x-\overline{x})$	$(x - \overline{x})^2$	$\Sigma(x-\overline{x})^2$	$\Sigma(x-\overline{x})^2/n$	√Variance

- Next the students will each make a bar graph, on a separate sheet of paper, plotting the vital capacity of each student, where the x-axis will plot the name of each student and the y-axis will be the vital capacity values.
- The midpoint of the y-axis should be the average vital capacity of the class.
- The standard deviation should be displayed both below and above the average to explicitly show which student values lie outside and inside of the standard deviation from the mean.

Example:



Names:	
	Class Section:

GRADING RUBRIC

GRADING RUDRIC					
TABLES	The tables were not	The tables were	The tables were fully		
	completed	partially completed or	completed with		
		the data was incorrect	correct data		
	Opts	5pts	10pts		
STUDENT WORK	Students did not	Some of the students	Every student in the		
	actively participate in	participated while	group participated and		
	the activity	others did not share in	shared the		
	·	the responsibilities.	responsibilities of		
			completing the		
			activities		
	0pts	15pts	25pts		
GRAPH	No graph was	A graph was	A graph was		
	submitted.	submitted, but showed	submitted, showing		
		incorrect results or	correct results and		
		was of low quality.	high quality.		
	0pts	20pts.	30pts		
DATA ANALYSIS	No work for data	The data analysis was	The data analysis was		
	analysis was shown.	incomplete or	complete and correct		
		incorrect			
	0pts	25pts	35pts		
TOTAL SCORE					

Chi-Squared Lab 1408-006 Spring 2015			
Last Name	First Name	Grade	
		85	
		85	
		100	
		100	
		85	
		85	
		85	
		100	
		85	
		85	
		90	
		90	
		85	
		90	
		100	
		85	
		0	
		90	
		90	
		90	
		100	

Spirometry Lab 1409-005 Spring 2015			
Last Name	First Name	Grade	
		90	
		95	
		90	
		85	
		100	
		100	
		85	
		85	
		70	
		100	
		90	
		100	
		100	
		100	
		95	
		95	
		70	
		95	
		100	
		70	

For each course approved for core curriculum inclusion, provide the following information:

a) Provide a link to or copy of your data results and/or a summation of your results for each required competency for each core curriculum course in your program.

students developed a dichotomous key, but H 15 no longer available

b) Did you meet your benchmark/target in each course? If not, do you need to adjust your benchmark or adjust the instruction to meet the benchmark?

all students worked together 100%

c) Provide information on your data collection strategy (e.g. each faculty member collected data, sampling of student work collected across sections used, etc.):

students presented ky to other students honors' Gyngosium

d) Please explain how your results were evaluated (e.g. a team evaluated the data, data was collected from every student in the course via Blackboard, etc.):

used the key to ascertain plant identity

e) How do you ensure your results are not biased and are reliable (i.e. inter-rater reliability)?

is a fact, facts are by definition unbiased and reliable

f) Please list the facts you feel contributed to your results (Analysis):

The hey worked

g) How have you or will you improve student learning in each course based on the most recent assessment results?

I will have other students up the key to prove that it works for the vninitiated