

BSC 2010L
BIOLOGICAL SCIENCES LABORATORIES
GRADING POLICIES

Grades can be awarded in many ways. Generally, a student receives a numerical value on each particular test or assignment. Alternatively, some instructors may record a letter grade for each assignment rather than a numerical score. When you were little, you may have received a gold star or a smiley face sticker for an assignment you did particularly well. The point is that the form of a grade (a number, letter or smiley face) is not important. What is important is what that grade signifies.

Grades are used as a measure of a student's performance on an exam, assignment or in a course. Objective grades may be a real reflection of the proportion of the material that you correctly understood. Grading systems are always scaled in a way to indicate a student's *relative* performance to others in the class. The absolute value of a score is often subjective and may offer little assessment of a student's performance in the absence of comparisons with other students' scores. No matter what the form of the grade, to make comparisons, raw scores are ultimately always *transformed*. Transformations may include averaging a number of grades, curving the distribution of grades, or transforming grades into another form. For instance, in most courses at the University of Florida, you receive a numerical value for each graded instrument. These grades are then transformed into a letter grade (A, B+, B, etc.) for a final grade. These letter grades are then transformed yet again into grade points for the calculation of your average GPA.

Grading your performance in the Biological Sciences laboratory is further complicated by the fact that numerous instructors teach this course. This poses added difficulties in standardizing grades to compare students from various instructors. Few of the assignments you are given are truly objective; most have some degree of subjectivity to their grading. Differences are inevitable between the grading of one instructor and the next. Additionally, quizzes in this course are written by your instructor and may differ in difficulty from those of another section. Although all differences between instructors cannot be overcome, in the interest of fairness, grades in this course will be standardized before a common grading curve is applied and final grades issued.

To this end, your Biological Sciences laboratory grades will be transformed from the *raw points* that you receive on each assignment to *derived scores* with a standard average and standard distribution. So that you understand how these derived scores are calculated, the following discussion will explain the statistics used in the transformation. (As a measure of reassurance, you should know that these same transformations are used by many national testing services, such as the GRE and the SAT.)

These transformations are all based on a calculation of the *mean*, or average, of the raw scores and their *standard deviation*. The standard deviation is a measure of the "spread" of scores around the mean. This can be accomplished by calculating a *z-score*, as follows:

$$z = (\text{raw score} - \text{mean})/\text{standard deviation}$$

The z-score is a linear transformation of your raw score. It is a value for the number of standard deviations your score is from the mean. For example, if you have a z-score of 2.0, your score is 2 standard deviations above the mean. If scores are normally distributed, then 68% of the students' z-scores will be between -1 and 1, and 95% of the scores will be between -2 and 2. Transforming raw scores to z-scores does not change the shape of the distribution of scores. If

raw scores are not normally distributed, the calculated z-scores will not be either. The z-scores simply change the scale of raw scores to another scale, measured in units of standard deviation, with a mean of 0 and a standard deviation of 1.

Since the average z-score is a 0, half of the scores are negative. To make these transformations easier to interpret, z-scores are often further transformed into a *T-score*. The T-score is calculated as:

$$\mathbf{T = (z\text{-score}) * (standard deviation) + mean}$$

A *standard T-score* is calculated with a standard deviation of 10 and a mean of 50. Or,

$$\mathbf{T = (z\text{-score}) * 10 + 50}$$

Your grades in the Biological Sciences lab will be transformed into standard T-scores. So that you can track your performance on graded assignments throughout the semester, you will have access to these transformed scores via your profile page on the BSC server. The score will obviously fluctuate during the semester as new scores are added.

Ultimately, your final letter grade will be calculated as a weighted average of your T-scores (TS) for quizzes (q), practicals (p), data sheets and prelabs (ds), and lab reports (lr). The final T-score is weighted by the following algorithm:

$$\text{Final T-score} = ((5 * \bar{x} TS_q) + (\sum(2 * TS_{p1-3})) + (2 * \bar{x} TS_{ds}) + (5 * TS_{lr1}) + (5 * TS_{lr2})) / 23$$

The grade that you ultimately receive in this lab course will depend upon both your performance on individual graded assignments and your ranking relative to other students in the class. Although a more generous curve may be applied at the end of the semester, you are guaranteed a letter grade if you achieve a standard T-score as follows:

A	≥ 56.0
B	≥ 51.0
C	≥ 41.0
D	≥ 32.5