

ACS Exam Grading

How will the standardized ACS exam be figured into my course grade?

Your percent score will be based on national percentile ranking. A score at the 50th percentile is, by definition, average. Therefore the percentile score must be scaled to reflect grading on a 100-point scale and be consistent with the grade cutoffs listed in the course syllabus.

The class average in chemistry is usually 75/100. Therefore, a student scoring at the 50th percentile on the ACS exam should receive a grade of approximately 75%. This scaling will be accomplished by the using the following formula:

$$\text{Scaled Score} = \text{ACS percentile} + [(100 - \text{ACS percentile}) (\text{ACS percentile}/100)]$$

Using the example given above, for a student score at the 50th percentile on the ACS exam, we get:

$$50 + [(100 - 50) (50/100)] = 75\%$$

The ACS test will be worth 50 points. Your percentage calculated above (in decimal form) will be multiplied by 50 to determine your overall score on the test.

To see how this works, the following ACS percentile conversions were calculated using the formula given above:

90 percentile → 99 %
80 percentile → 96 %
70 percentile → 91 %
60 percentile → 84 %
50 percentile → 75 %
40 percentile → 64 %
30 percentile → 51 %
20 percentile → 36 %
10 percentile → 19 %

Explanation of how the scores on the ACS test were calculated

"ACS raw score organic" = number of questions you got right out of 40 on the organic chem section of the test.

"ACS raw score biochem" = number of questions you got right out of 40 on the biochem section of the test.

The national norms (percentiles) were assuming 60 total questions - both parts A and B. I adjusted your raw score to what it would have been out of 60 points, so that I could look up your percentile compared to hundreds of students nationwide who took that test.

"Score organic out of 60" = $(\text{Your score out of 40}) \times 1.5$.

"Percentile organic" = You did better than this percentage of the hundreds of students nationwide who took this test.

"Scaled % organic" = I applied the equation explained on page 1 of this handout to your percentile to get your percentage on the organic section of the test.

"Score organic section" = Your score on the organic section out of 25 possible points.

The same thing was done with the biochemistry raw scores and percentages.

"Total score out of 50" = the number of points you got out of 50 on the ACS test. The score for the organic section and biochem section were added together.