

Summary of ECE 493/MATH 487 grades for Fall 2020

Jont B. Allen

University of Illinois at Urbana-Champaign

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Introduction

Histograms and scores leading to the final grade selections as analyzed for 493/487 are presented and briefly discussed. The final grades are the average of the three exam scores as determined by sorting the final grades and identifying clusters in the scores. The clustering is done by an eyeballing of the sorted grades. It is not a scientific method. When many of the grades are the same (after rounding the scores to the nearest 1%, they must fall into the same grade category. Ideally, the clusters are separated by more than one percentage point.

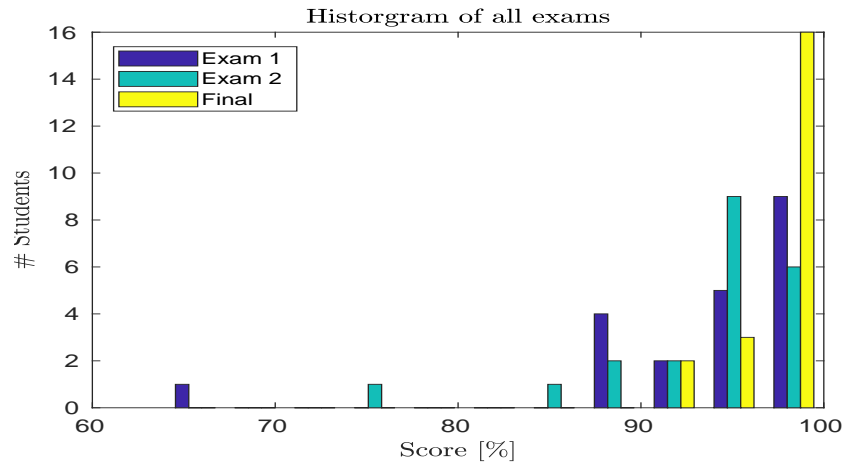


Figure 1: The histograms of the three exam grades are shown in the same chart, separated by different colors. The class was 21 students. Note how the spread in scores decreases from Exam 1 (black) to Exam 2 (green) to the the Final exam (yellow), indicating that the class variance is decreasing as the overall scores increase. Compare the final distribution to the second exam distribution, where the concentration went from 95 points to closer to 100 points. This shows that 80% of the students were competent with the material taught in the class. All the low scores were above 90% for the final exam.

Histograms for the three exams

In Fig. 2 we show the scores, sorted from best to least. The horizontal lines indicate the letter scores, from A+, A, A-, B+ and B. For example, the score thresholds are >96, 95, 92, 90 and >86. Because the scores are

heavily clustered above 95, it is hard to decide where to separate A+ and A. Fortunately the computed GPA is the same for A+, A and A- categories.¹ While the categories are required when entering the final semester grades, then are not used to compute the GPA. For the grades below 95, there is a 10 point spread for 4 of the 21 students, slightly less than 1/5 of the class.

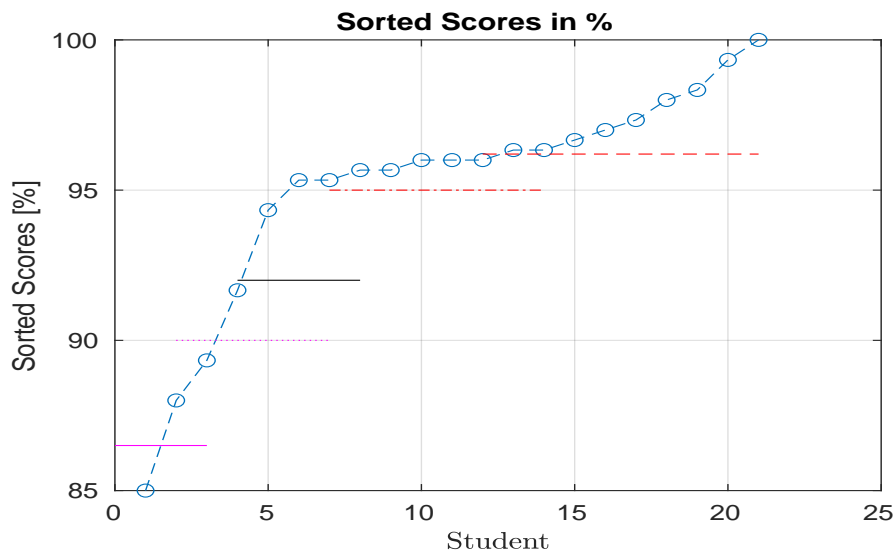


Figure 2: This figure shows the sorted distribution of the average of the three Exam scores. Specifically, the assigned grade was A+ for scores above 96 points, A between 95 and 96, A- between 93 and 95, A- between 93-95, B+ between 87 and 93, and B below 87. Except for the break between A+ and A, the threshold were easily determined due to the large spread. The break between A+ and A seemed to be constantly moving.

The student were from Electrical & Computer Eng. (8), Mechanical Eng. (3), Material Science, Agricultural and Biological Eng., Aerospace Eng. (2), Engineering Physics, Mathematics and Nuclear, Plasma and Radiological Eng.. According to our records, around the time of the first exam, three students dropped the class. The ethnic, minority and gender diversity was approximately the same as the composition within the engineering departments. Three class members (14%) were female.

¹<https://registrar.illinois.edu/courses-grades/calculate-your-gpa/>