

STAT 270 - Feedback from Midterm Test

The overall average was about 40% ranging from 15% to 70%. The results clearly show that some major ideas have not been absorbed, and so we need to spend a bit more time reviewing the material. You have seen the solutions to the test questions and you will know that the answers were fairly easily obtained once the concepts were understood. Here are the main ideas that the test tried to assess:

1. Conditioning.
2. Sampling Distribution of a Mean
3. Relationships between probability models in the Poisson Process.
4. The bootstrap
5. The uniform distribution
6. The relationship between density and probability for a continuous RV.

Here is what I said were the main ideas in the course, during the review session:

Ch 1 - "Distribution" - tables and graphs

Ch 2 - Probability Calculus - counting rules, conditioning

Ch 3&4 - Models and Connections

Ch 5 - CLT and sampling distribution of a statistic

Ch 6 - Estimators, Estimates, and the Bootstrap

So the test was on topics that should have been anticipated. The final exam will also hit the major topics – it will include these again as well as the ones that come out of Ch 7-9.

Here are some more comments about understanding needed to answer those midterm questions:

1. This question was almost identical to the one I discussed in class from the book on p 83, Ex 45.
2. This material was emphasized on Feb 21 and reviewed on Feb 28. It was said to be the most important concept in the course.
3. The relationships between the various distributions were discussed in several lectures but summarized on Feb 12 and emphasized in the review lecture Feb 28.
4. The bootstrap was discussed Feb 26 and Feb 28.
5. The formulae for the two uniform distributions, including SD, were discussed on Feb 28.
6. The connection between pdf and cdf was introduced Feb 2, and emphasized on the quiz.

In other words, any student who read over the notes and/or attended lectures would have a chance to understand the concepts required for the test, and also have many chances to obtain clarification of these concepts.

Here is a bit more detail about the idea needed for each midterm question:

1. Probabilities are just long run relative frequencies, and when you select at random from a population, the LRRF will be the same as the relative frequency in the population. When a condition is given, one ignores all the info about the population eliminated by the condition, and treats the conditioned part as if it were the whole population.
2. A sample mean based on a random sample will have a precision (as an estimate of the population mean) that is described approximately by a normal distribution with mean and SD closely related to the population mean and SD. In fact the mean of the sample mean is the population mean and the SD of the sample mean is the SD of the sample divided by the square root of n (the sample size.)
3. Gamma models the waiting time until the k th event in the Poisson Process.
4. Bootstrap samples allowed estimation of the variability of a statistic by looking at the variability of the statistics in the bootstrap samples.
5. The uniform distribution has two forms: discrete and continuous. Both are simple to work with and have simple formulas for the mean and SD.
6. The pdf at x (density) is the rate of increase of the cdf at x .

Assignment #6 (Due Friday, March 9.)

For each question on the midterm test, if you did not get full marks on the question, provide an explanation about why you did not get full marks. That is, what were you thinking on the midterm? what concept did you miss? what detail in the notes did you not have time to review or understand? what will you do differently in preparing this material for the final exam? Be specific to the question, and add any general comments later if you wish.