
ISyE 2028 – Basic Statistical Methods - Fall 2015

Bonus Project: “Big” Data Analytics

Proposal.

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STEM vs. non STEM majors academic performance at Georgia Tech

The goal of this project is to analyze the differences between the academic performance of STEM and non-STEM majors at Georgia Tech using the grades(GPA) obtained by students during the Spring and Summer semesters in 2015 as a comparison between the two groups. The individual major grades will then be grouped as a whole between to major groups; Stem and Non-Stem. The Stem group included in the project will include the following majors : Architecture, Building Construction , Computer Science , Aerospace Engineering , Biomedical Engineering , Chemical & Biomolecular Engineering , Civil & Environmental Engineering, Electrical & Computer engineering , Industrial & Systems Engineering , Materials Science & Engineering, Mechanical Engineering , Polymer & Fiber Engineering , applied physiology , Biology, Chemical & Biomolecular engineering , Computer Science , Earth & Atmospheric Science , Mathematics, Physics , and Psychology . The non-stem majors used will include the following : Business , Public Policy, modern Languages,, Literature, Media & Communication , International Affairs; History , technology , and society ; Economics, Public policy, Industrial design , City Planning, and Music.

The data that will be used will be obtained from the Georgia Tech Self Service Reports website : http://www.irp.gatech.edu/reports/grade_distributionsmry.php?cmd=search&sv_TERM_CODE%5B%5D=201502+-+2015+Spring&Submit=Search . The data found on this website will be used to analyze both spring and summer semesters 2015. In order to find out which majors from the GT Self Service Reports fell into the STEM vs. Non-Stem category, I used the Georgia Tech Office of International Education website. The data that was found on OIE included the majors recognized as STEM at Georgia tech; Therefore, each majors in the STEM category given in the previous paragraph can also be found on STEM major list given on the OIE website : <http://oie.gatech.edu/content/what-are-stem-eligible-majors-here-georgia-tech> . Other majors not found on the list were assumed to be non-STEM. The format of the data is given by grades from each major based on a A,B,C,D,F format.

In order to obtain the data wanted (GPAs), I plan on using the school’s grading system which assigns a quality points 4,3,2,1,0 to grades A,B,C,D,F in order to come up with a final average. I plan on using the 5 number summaries as well and graphs to observe the differences between the two categories. The result that I expect to see is that the non-STEM major’s mean GPA will be higher, and the 1st quartile, 2nd , and 3rd quartiles will tend to be higher than that of the STEM majors. To obtain those and compare the Data, I plan on writing two separate data sheets as a txt file and using R to come up with the data summary , and the various graphs I will be using.

