INVESTIGATING STUDENTS SUCCESS ON PREREQUISITE CHAIN COURSES

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Abstract

In undergraduate programs of universities, a prerequisite chain determines the order of taking related courses. Any prerequisite course must be taken before the next course in the chain. The main expectation of defining such a prerequisite chain is that students who take the prerequisite course would be well prepared for the next courses in the sequence and, thus, they are expected to be successful in the following courses. To investigate the validity of this hypothesis in a case study, we selected two courses (Calculus I and Calculus II) in the prerequisite chain of the Computer Engineering Department at Atilim University. We define student success in a course as the number of times a student takes the course until he or she passes it. We gathered data consist of 319 students who passed both Calculus I and Calculus II courses. For each student, we recorded the number of taking both courses. Afterwards, we applied the correlation and chi-square tests on the dataset. The chi-square test produces low p-value (less than 0.05) which can be interpreted that the hypothesis is accepted. In other words, the number of re-taking Calculus I has statistically significant effect on the number of re-taking Calculus II. However, the correlation coefficient is calculated as 0.23 which means that there is a low correlation between these data. In fact, we observe that 72% of students pass both courses taking the courses maximum twice. On the other hand, the percentage of the students who re-take the prerequisite course in high numbers (more than 5 times) is about 6% and, 50% of these students are able to pass Calculus II by taking this course only twice. In summary, selected statistical analysis methods and the observations indicate the existence of relation between these two courses.

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