Rescheduling Exams at USMA with GAMS

The announcement that the US Military Academy’s football team, the Army West Point Black Knights, had received a bid to the Armed Forces Bowl on 23 Dec was good news for the team and its fans and supporters everywhere, but it posed a problem for those tasked with scheduling the Term End Exams at the Academy. It meant the rescheduling of 566 exams of 141 affected cadets.

The published exam schedule conflicted substantially with the team’s travel to Texas for the bowl game. Fortunately, the Academy is using a system that integrates the registrar’s databases, a scheduling engine based on several GAMS models, and other tools to create a complete exam schedule for both the courses and the students. This schedule assigns each exam to an exam period and each student to all of her exams. The system balances the competing goals and constraints involved in preparing a schedule that is fair and balanced for the students and faculty, limits the number of make-up exams required, and fits within the constraints of the available rooms and the 11-period allocated for the exams.

Faced with the unexpected requirement that some students would need to complete exams early to allow for travel to the bowl game, the exam scheduling group was able to quickly reschedule affected students. The automated nature of the system allowed them to quickly experiment with different scenarios and see what an exam schedule would look like for each alternative: Do just the players leave early? What about the band and the Rabble Rousers? How many additional exam periods need to be introduced? Ultimately, 3 early exam periods were added and at most one additional make-up exam per course was introduced to reschedule all 566 individual exams of 141 affected cadets to allow the football team to complete their exams prior to leaving for the bowl game in Forth Worth, TX.

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