Improving Course and Classroom Scheduling Policies through Correlation Analysis and Forecasting

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UNIVERSITY OF ARKANSAS
College of Engineering
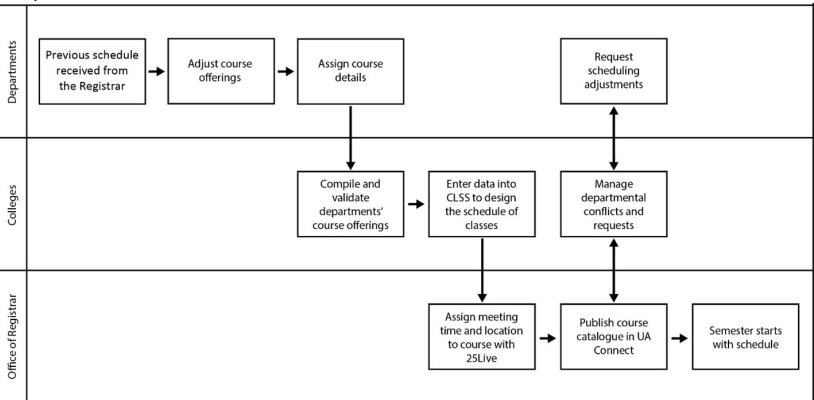Industrial Engineering

UNIVERSITY OF ARKANSAS

The Office of the Provost

The Provost is the chief academic officer within the University of Arkansas and works with the Chancellor to set academic priorities for the University. Individual Colleges, Departments, and the Office of the Registrar contribute most to the course and classroom scheduling process that is managed by the Office of the Provost.

Our Approach

The course and classroom scheduling process begins approximately 9 months before the semester by rolling over the previous year's schedule into the current semester at the department level.
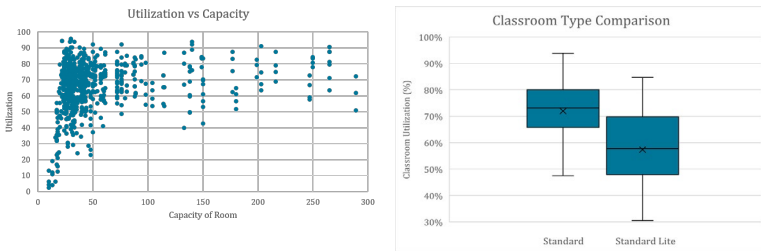

The Dean's Office of each college compiles the department proposed schedules into a master college schedule and checks that is follows the policies placed by the Office of the Provost. The course information is then entered into the scheduling software CLSS. The colleges and registrar's office validate the schedule.

The course data in CLSS is then used by the Registrar's Office to schedule classrooms using a software called 25Live. After all classrooms are assigned, the Registrar's Office publishes the course catalog into the University's web portal, UAConnect. All course and classroom conflicts are negotiated between the Registrar's Office and the colleges to finalize the schedule.

Classroom Utilization

University overall stands at 44.27% classroom utilization for all room types. To determine what affects a classroom's utilization we tested many factors; Room Capacity, Time of Day, Day of Week, and Technology Features appeared to have some correlation.

Class minutes within hours each day of the week

	MON	TUE	WED	THU	FRI
7:00 AM	450	0	450	0	450
8:00 AM	3770	6420	3745	6295	3570
9:00 AM	6735	6135	6615	6010	6300
10:00 AM	7140	6695	7160	6525	6750
11:00 AM	6750	9290	6795	9175	6295
12:00 PM	6095	6610	6105	6455	5515
1:00 PM	5650	6240	5740	6125	5370
2:00 PM	6030	8670	6000	8600	5070
3:00 PM	6945	4965	6560	4855	2140
4:00 PM	3420	5430	3155	5185	375
5:00 PM	2650	2155	2555	1805	65
6:00 PM	2015	2350	1660	1345	5
7:00 PM	1485	1730	1295	990	0
8:00 PM	650	705	390	255	0
9:00 PM	10	0	10	0	0
10:00 PM	0	0	0	0	0

Prime-Time

Times of Day

7:00 AM	1350
8:00 AM	23800
9:00 AM	31795
10:00 AM	34270
11:00 AM	38305
12:00 PM	30780
1:00 PM	29125
2:00 PM	34370
3:00 PM	25465
4:00 PM	17565
5:00 PM	9230
6:00 PM	7375
7:00 PM	5500
8:00 PM	2000
9:00 PM	20
10:00 PM	0

Total Minutes each day of the week

MON	TUE	WED	THU	FRI
59795	67395	58235	63620	41905

Visualization Tool

Forecasting Enrollment

Universities nationwide measure the accuracy of their predicted course demand with Enrollment Ratios. A balanced course schedule is in the ideal enrollment range from 70% to 95% with a recommended average university enrollment being 85%. Currently 62% of the University of Arkansas's course's enrollment ratios are over 95%, which is considered overloaded.
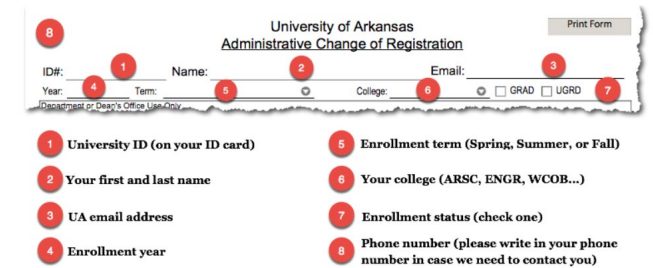

We created a VBA tool to lower the enrollment ratio and increase the accuracy of enrollment capacities for State Minimum Core Courses. Our tool retrieves historical enrollment data for the course, forecast the course enrollment using r-studio's auto.arima function, and outputs the recommended course capacity for the next semester.
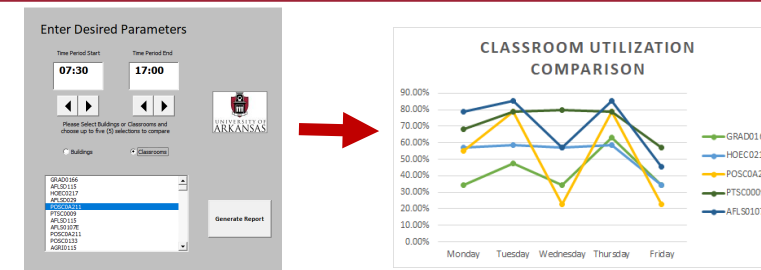
INEG Override Process

The largest contributor to waste in the override process system is students filling out the PDF form incorrectly. Currently 50% of the overrides submitted are filled out incorrectly and must be returned to students. We recommend that the INEG department updates its webpage to include step-by-step instructions on how to fill out the form and provide descriptions of what it is asking for, as is done for the Biological Sciences form. This would greatly reduce the number of errors that are seen by the INEG office and would result in less wasted time from students and faculty alike.

Via https://fulbright.uark.edu/departments/biology/current-students/overrides.php