

Prediction Model for Course Demand at MU

Model Developed by:

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Background

- Record-breaking enrollments
 - FS 2007 - 4,982 FTC
 - FS 2008 - 5,782 FTC
- Chairs must make decisions on how many sections to offer
- Increased enrollments will affect course offerings at different levels for several years to come
- Anticipated decline in HS graduates and corresponding drop in enrollments starting in 2012



Prediction Model for Course Demand

- Based upon past student enrollment in courses by major and student level
- Future student level by major determined by a similar model to account for annual movement of students between majors

STEP 1: Count # of Students in Course X in Major, Level Y

	Course X ₁	Course X ₂	Course X ₃	English 1000	...	Course X _n
Major, Level Y ₁						
Major, Level Y ₂						
Major, Level Y ₃						
Math, Sophomore				10		
...						
Major, Level Y _m						



STEP 2: Count # of Students in Major, Level Y for each period in analyses (prior 4 or 5 years)

Major, Level Y_1	
Major, Level Y_2	
Major, Level Y_3	
Math, Sophomore	100
...	
Major, Level Y_m	

STEP 3: Ratio Matrix

in Course X / Total # in Major, Level

	Course X ₁	Course X ₂	Course X ₃	English 1000	...	Course X _n
Major, Level Y ₁						
Major, Level Y ₂						
Major, Level Y ₃						
Math, Sophomore				0.10		
...						
Major, Level Y _m						



STEP 4: Predict Number of Students in Major, Level Y at Time₂ (AY 2009)


Major, Level Y ₁	
Major, Level Y ₂	
Major, Level Y ₃	
Math, Sophomore	200
...	
Major, Level Y _m	

STEP 5: Multiply Course Ratio Matrix by Predicted Number of Students

	Course X ₁	Course X ₂	Course X ₃	English 1000	...	Course X _n
Major, Level Y ₁						
Major, Level Y ₂						
Major, Level Y ₃						
Math, Sophomore				20		
...						
Major, Level Y _m						
SUM - TOTAL IN COURSE X				20+		

Prediction Model for Student Population – Transition Matrix

AY 2008



AY 2007	Major X ₁ , Freshmen T ₂	Math, Sophomore T ₂	Major X ₁ , Junior T ₂	Major X ₁ , Senior T ₂	...
Chemistry, Freshmen T ₁	0.10				
Major X ₁ , Sophomore T ₁					
Major X ₁ , Junior T ₁					
Major X ₁ , Senior T ₁					
...					



Prediction Model for Student Population – Utilize AY 2009 Student Enrollments to Predict AY 2010 Enrollments

AY 2008	Major X ₁ , Freshmen T ₃	Math, Sophomore T ₃	Major X ₁ , Junior T ₃	Major X ₁ , Senior T ₃	...
Chemistry, Freshmen T ₂					
Major X ₁ , Sophomore T ₂					
Major X ₁ , Junior T ₂					
Major X ₁ , Senior T ₂					
...					
SUM - TOTAL IN Major, Level T ₃	200				



Weighted Ratios and Correlations

- Weighted Ratios
 - For enrollment predictions, provided a greater weight to most recent years.
- Correlations
 - Predicted AY2009 enrollment by major and level had a 0.99 correlation with the actual AY 2009

Finished Product

- [Course Enrollment File AY 2011](#)
- [Estimated Overall Enrollment AY 2011](#)

Questions

- Suggestion from Undergraduate Deans
 - Create a filter to take out “summer only” students

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Estimated MU Course Demand AY 2010-11

Developed by Enrollment Management and Institutional Research

October 13, 2009

Overview

We base course demand predictions on historical enrollments of students by major and level. We examined the mix of students in EVERY course offered at MU between AY2005 and AY2009 to develop a set of ratios that we use to predict future enrollments. We estimate the number of students in each major, at each level (freshmen through graduate students) for 2010-11 and use the ratios to calculate how many students we think will request a seat in each course.

The pivot report on the second tab of this file presents the estimated demand for courses for 2010-11, the number of students enrolled in the same courses in 2008-09, the number of years the course had enrollments between 2005 and 2009, and the average enrollment in the course between 2005 and 2009.

Instructions

You may limit the data included in the report by using the filters located above the table. To limit which courses get displayed, select a division and/or one or more departments. For example, to see all courses offered in the College of Business, select College of Business from the Divisions list and the All option in the department filter. To limit the courses to those offered by the Accountancy Department, select the Accountancy department from the list of departments.

To see all courses offered by a single department, select a single department from the list of departments. You do NOT need to select the relevant division first.

You may limit the students counted in the demand estimates by using the Majors and Levels filters. For overall demand estimates, we recommend including ALL majors and ALL student levels. Select one or more majors and/or one or more student levels to examine estimated demand for courses by subgroups of students.

To see course demand data for students in specific majors, select the relevant division or department offering the target course(s), then select the specific major from the list of majors. Estimated demand will include ONLY students in the selected majors.

Feedback

If you have suggestions for improving this tool, or note data that just don't look right, please contact:

Kathy Schmidtke-Felts -- Institutional Research
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or

Mark Ehlert -- Enrollment Management
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Estimated Course Demand
 AY 2010-11
 University of Missouri-Columbia

Course Provider	Academic Unit (blank)
	Department (All)
Students Taking Course	Major (All)
	Student Level (All)

Dept	Course Number	Course Description	Enroll AY2009	Years Offered	Average Enrolled	Predicted Enrollment AY2011
(blank)	(blank)	(blank)		(blank)	(blank)	
Grand Total						

Estimated MU Overall Enrollment AY 2010-11

Developed by Enrollment Management and Institutional Research

October 13, 2009

Overview

In order to estimate the number of students enrolled in courses for Academic Year (AY) 2010-11, we first estimated the overall number of students enrolled in AY 2010-11 by academic plan and student level. To do so, we created a model that would estimate the number of students enrolled by academic plan and student level based upon how students distributed themselves over the disciplines and student levels in previous years. Students' previous academic disciplines and levels were factored into the model when analyzing the distribution over future academic plans and levels. For example, if 50% of sophomore communication majors go on to become junior journalism majors, then 50% of sophomore communication majors are distributed into junior journalism majors in future years' estimates.

The resulting table provides the actual number of students enrolled in the academic plan at the student level for AY 2006-07, AY 2007-08, and AY 2008-09. Additionally, the table provides the estimated number of students expected to enroll in AY 2009-10 and AY 2010-11, along with the difference between the two.

Instructions

You may limit the data included in the report by using the filters located above the table. To limit the data to a certain student group, set the student group filter to UNDERGRADUATES or GRADUATE/FIRST PROFESSIONAL. To limit the academic plans to only those in a certain Academic Unit and Department, set the Academic Unit filter and Department filter to the unit and department of your choosing. NOTE: The Academic Plan does not go down to the academic sub-plan at this time. We intend to include this in future versions of this tool.

Feedback

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Estimated Enrollments by Academic Plan and Student Level
 AY 2010-11

University of Missouri-Columbia

Academic Unit	(All)
Department	(All)
Student Group	(blank)

Academic Plan	Student Level	Actual AY2007	Actual AY2008	Actual AY2009	Estimated AY2010	Estimated AY2011	Difference of AY2011 and AY2010
Grand Total							