B8120 Sports Analytics

Prof Riccio

Wed 8:30-11:30 AM

363 Grace Dodge Hall

Course Description

Sports in America is big business. It has become a substantial contributor to the national economy. Big profits are earned and big salaries are paid.

As a result, performance in the field and in the front office has become a significant managerial concern. The difference between winning and losing is no longer just a matter of athletic ability and personal pride, but it can mean huge differences in revenue and profit. As such, in recent decades, more and more sports organizations have reached out to the application of advanced management methods, in particular statistical, data analysis and operations research/management science techniques. The use of data, and now Big Data, has become entrenched in the business of sport. The analysis of that data has taken on new dimensions and has become as sophisticated as that of any other endeavor.

This course is an examination of the most advanced applications of those techniques. The structure of the course is to examine the use of them to four main areas of interest: player performance measurement, in-game decision-making, player selection/team building, and general administration such as marketing, pricing, contracts, stadium management etc. Emphasis will be placed on not only how the application of Analytics has improved each of these situations, but how those decisions relate to business decisions in any other field of commerce. For example all businesses have to evaluate employees, make tactical and strategic decisions about how they operate, must maintain a good portfolio of assets in particular recruit and retain quality employees, and have to be good at administering the overall business.

Each class will examine one or more of these topics in one or more sport. Students will be responsible in each class for readings which will be the basis of class discussions. There will be
homework assignments using the Analytic techniques discussed. Lastly there will be a group project due at the end of the semester.

Several classes will have guest speakers with practical experience in the field of Sports Analytics.

Course Tools:

Students should be familiar with the use of Excel, Solver, basic statistical data analysis/mining techniques, and at least one simulation software program such as Crystal Ball, Risk Solver Platform, Matlab, or equivalent.

Required Book:


Readings such as articles and newspaper stories will be provided on the Courseworks web site. Recommended books include Scorecasting (Moskowitz and Wertheim) and The Book: Playing the Percentages in Baseball (Tango, Lichtman, and Dolphin).

Class Preparation:

Students should be prepared (by virtue of the provided readings and their own initiative) to discuss the topic of the day in class. The professor reserves the right to cold-call students for their knowledge on the topic of the day.

Group Project:

Students will be required to initiate and complete a sports analytics project of their own choice. Groups shall consist of 2 to 4 students. The project should demonstrate a competency in Analytics as applied to an important Sports issue. In addition to a final report, the group will be responsible for an in-class presentation.
Grading

Grading will be based on homeworks, class participation and the final project report and presentation.

Homework 20%
Class Participation 20%
Group report 30%
Group Presentation 30%

Outline (Subject to Change)

Session 1
Introduction to Sports Analytics: Overview of Techniques

Session 2
Player Performance Measurement: Baseball

Session 3
Player Performance Measurement: Golf

Session 4
Player Performance Measurement: Other Sports

Session 5
Team Performance Measurement
Session 6
In-Game Decision Making and Strategy

Session 7
In-Game Decision Making Con’t

Session 8
Player Selection/Team Building

Session 9
General Team Administration

Session 10
Revenue Management/Ticket Pricing

Session 11
Stadium Management

Session 12
Group Presentations