SYLLABUS

Instructor Info
Phone: 212-678-8329
Email: baker2@exchange.tc.columbia.edu
Office: Grace Dodge Hall 290
Office hours: Wednesdays, 1pm-4pm (but I strongly prefer you email me to schedule a meeting)
Course time: Mondays and Wednesdays, 11am-1240pm

Number of points: 3

Required Texts:


Information on how to obtain course readings (aside from these texts) will be provided in class.

Course Goals: This course provides a framework for understanding the emerging field of learning analytics. Students will learn about the primary perspectives on what the field should be, including Educational Data Mining, Learning Analytics, and Big Data perspectives, and the relationship to related and existing fields. Perspectives on what learning analytics should be will be connected to philosophy and theory on the nature of design and inquiry. We will consider what it means for a learning analytics analysis or model to be valid, and the key challenges to the effective and appropriate use of learning analytics.

Course Pre-requisites: None, but some prior experience with statistics or data mining recommended.

Assignments:

A theoretical paper will be due on April 21. This theoretical paper will require the student to select a topic (in consultation with the instructor), and argue for a specific position for how the field of learning analytics must change to meet the needs of 21st century education or learning sciences. Students will be required to turn in a 1-page paper prospectus for the theoretical paper on February 24, which will be graded as well. (Note that this is a later deadline than the original deadline, as one class was cancelled due to weather). Extensions for the paper and prospectus deadlines will only be available in case of instructor error or extreme circumstances (assignments in other classes, research studies, and so on do not count as extreme circumstances; serious injury, illness, or death in the family do count as extreme circumstances). Outside of these circumstances, late hand-ins will not be accepted (e.g. zero credit will be given).

Midterm and final exams will be given. Both exams are open-book; open-resource; open-web. However, collaborating on the exam with other students or anyone else at all is NOT ALLOWED. The exams will be made available on the course webpage 48 hours before the due date.

Class participation involves both attendance and active (and constructive) participation in classroom discussions. While it is not expected that you will memorize every paper assigned for the class, it is
expected that you will have studied the readings to the degree that you can participate actively in discussions.

Grading
- Theoretical Paper Prospectus 10%
- Theoretical Paper 20%
- Midterm Exam 25%
- Final Exam 25%
- Class Participation 20%
Course Schedule
Learning Analytics: Process and Theory
Professor Ryan S.J.d. Baker

Wed, Jan. 22
Introduction

Readings

- None

Mon, Jan 27
Methodological Pluralism

Readings


Wed, Jan 29
Attend EdLab Seminar at noon by Professor Baker

Mon Feb 3
Sciences of the Artificial, Part One

Readings

- Simon, H.A. (1996) Sciences of the Artificial, Ch. 1-2, 5-6

Wed Feb 5
Class cancelled by TC due to weather

Mon Feb 10
No class

Wed Feb 12
No class

Mon Feb 17
No class
Wed Feb 19  
Sciences of the Artificial, Part Two

Readings

- Simon, H.A. (1996) *Sciences of the Artificial, Ch. 7-8*

Mon Feb 24  
Educational Data Mining

Readings


Assignment Due: Theoretical Paper Prospectus

Wed Feb 26  
Learning Analytics

Readings


Mon Mar 3  
Big Data Perspective

Readings


Wed Mar 5  
Optional session TBA
Mon Mar 10
Evidence-Centered Design

Readings

Wed Mar 12
Midterm Exam Due

Mon Mar 17
Spring Break

Wed Mar 19
Spring Break

Mon Mar 24
Validity

Readings

Wed Mar 26
No class: LAK2014

Mon Mar 31
Statistical Perspectives on Validity in Data Mining

Readings

Wed Apr 2
Generalizability
Readings


Mon Apr 7
No class; AERA2014

Wed Apr 9
**Automated Intervention**

Readings


Mon Apr 14
**Reporting-Based Intervention**

Readings


Wed Apr 16
No class

Mon Apr 21
Optional session TBA

**Assignment Due:** Theoretical Paper

Wed Apr 23
**Knowledge Engineering**
Readings


Mon Apr 28
Optional session TBA

Wed Apr 30
Discovery with Models

Readings


Mon May 5
Methodological Pluralism (Reprise)

Readings


Wed May 7
Optional session TBA

Mon May 12
Final Exam Due