

EDUC 691: Core Methods in Educational Data Mining  
Spring 2019  
Professor Ryan Baker

**SYLLABUS**

Instructor Info

Email: rybaker@upenn.edu

Office: GSE 439

Office hours: Wednesday, 1pm-2pm

Course time: Wednesday, 2pm-4pm

Required Texts:

- Baker, R.S. (2018) *Big Data and Education*, 5th edition  
<https://www.edx.org/course/big-data-education-pennx-bde1x>

Information on how to obtain other course readings will be provided in class. Most are available on the course schedule webpage

Course Goals: This course covers core methods in educational data mining. Students will learn how to execute these methods in standard software packages, and the limitations of existing implementations of these methods. Equally importantly, students will learn when and why to use these methods. Discussion of how EDM differs from more traditional statistical and psychometric approaches will be a key part of this course; in particular, we will study how many of the same statistical and mathematical approaches are used in different ways in these research communities.

Course Pre-requisites: EDUC767, or prior experience with statistics or data mining, or instructor permission.

Assignments: No exams or quizzes will be given.

Across the semester, eight basic assignments and four creative assignments will be assigned. The assignments are listed below in the class schedule. Every student must do six of the basic homework assignments (your choice) and three of the creative homework assignments and turn them in by email, **at least 2 hours before the beginning of class (e.g. noon)** on the due date. For the basic homework assignments, you must complete 3 of assignments 1-4, and 3 of assignments 5-8. For the creative homework assignments, you may drop any of them except for the final creative assignment. You must do the final creative assignment.

If you do more assignments than required, I will give you feedback, but I will not grade extra assignments and let you have the ones with a higher grade. If you turn in all 4 of the first 4 basic assignments, I will only grade 1-3. If you turn in all 4 of the second 4 basic assignments, I will only grade 5-7. If you turn in all 4 of the creative assignments, I will only grade 1,2, and 4. If you turn in all 3 of the second 3 basic assignments, I will only grade 4-5. To repeat, you cannot get a higher grade in this class by doing more assignments. You cannot get extra credit by doing more assignments. The point of this policy is to let you choose which material to focus your energy on, and to do a better job on that material.

You must be prepared to discuss your work in class (you do not need to create slides, but be prepared to have your assignment projected, and to discuss aspects of your assignment in class). Note that assignments are due before the topic is discussed in class; this is intentional. Classroom activities are based on discussion of the challenges of the assignments and subject matter, and the goal of assignments is to drive in-class discussion, rather than serving as an opportunity to practice material already discussed in class.

Since there is a choice of assignments, and discussion of assignments will be a key part of classroom pedagogy, extensions will only be given due to 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 assignments will not be accepted (e.g. zero credit will be given).

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. You are expected to watch the video textbook before class; this will take under an hour a week.

#### Grading

- 6 of 8 Basic Assignments 6% each (up to a maximum of 36%)
- 3 of 4 Creative Assignments 13% each (up to a maximum of 39%)
- Class participation 25%

**BONUS:** For every creative assignment, there will be a special bonus of 20% for the best hand-in. “Best” will be defined specifically in each assignment.

All assignments should be sent to the instructor via email to [ryanbaker.handin@gmail.com](mailto:ryanbaker.handin@gmail.com). The assignment title and email title should be 616-YOURLASTNAME-ASSIGNMENTNAME. Assignments can be submitted in Microsoft Word or PDF format.