EDG6931: Learning Analytics Concepts and Techniques

Educational Technology Program

School of Teaching and Learning · College of Education · University of Florida

Credit Hours

3-credits hours

Course Information

Prerequisite: An elementary statistics course would be helpful but is not required.

Instructor Information

Name: Albert Ritzhaupt, Ph.D., PMP, CCP, CDMP

Email: aritzhaupt@coe.ufl.edu

Office: 2-270 Normal Hall

 Website: http://www.aritzhaupt.com (Links to an external site.)

Course Description

This course is designed to equip students with the ability to leverage educational data collected from technology-enhanced learning environments. In addition to the basic concept and process of learning analytics, students will explorer cutting-edge data mining techniques. Students will also have opportunities to process and analyze various types of real-world educational data to discover useful insights and knowledge. The ultimate goal of this course is to prepare students to be a successful educational researcher and practitioner who is able to use learning analytics in their specific subject area.

Objectives

A successful student will be able to:

- Demonstrate an understanding of the distinction between learning analytics and traditional data analysis approaches.
- Describe the characteristics of different data-mining techniques.
- Choose a suitable data-mining technique for different types of educational data
- Interpret a variety of educational data to discover insights into how to enhance teaching and learning.
- Formulate research questions that can be addressed by applying learning analytics.
- Write a research proposal that addresses research questions pertaining to learning analytics.

Course Format

This is an asynchronous and synchronous online course, and all content and materials are offered via Canvas (https://elearning.ufl.edu/ (Links to an external site.)). This eight-week online course will consist of eight modules, each of which is designed to facilitate your learning in different areas in multimodal analytics. You will be required to participate in a variety of online activities including online discussions, and online presentations. You will also have to complete assignments to demonstrate your knowledge and skills to manage and analyze multimodal educational data.

Online Synchronous Sessions

There will be a one-hour synchronous session scheduled in Modules 2 to Module 7. These synchronous sessions are scheduled for Tuesdays from 5:00pm - 6:00pm. The sessions will be recorded for students who are unable to attend at this time. However, if you are available, you are strongly encouraged to attend these sessions as we will be discussing the various learning analytics techniques and review the use of RapidMiner to conduct these analyses. The schedule of sessions is shown in the table below:

Module	Date and Time
Module 2	Tuesday, March 10, 2020 from 5:00pm - 6:00pm
Module 3	Tuesday, March 17, 2020 from 5:00pm - 6:00pm
Module 4	Tuesday, March 24, 2020 from 5:00pm - 6:00pm
Module 5	Tuesday, March 31, 2020 from 5:00pm - 6:00pm
Module 6	Tuesday, April 7, 2020 from 5:00pm - 6:00pm
Module 7	Tuesday, April 14, 2020 from 5:00pm - 6:00pm

Required Software/Hardware

You will need access to a modern personal computer and a reliable Internet connection. Additionally, we will be using a variety of software packages this semester, including RapidMiner Studio (Educational license) (https://rapidminer.com/educational-

[program/ (Links to an external site.)](), MS office suite 2007 (or later), Adobe Reader, and a browser (Firefox, Internet Explorer, Opera, Chrome, etc.).

Textbook and Reading Materials

Each module within the course has specified reading assignments. All reading assignments are provided within the course shell. No textbook is required for this course.

Course Policies

Instructor Student Contact

This course will use Canvas as a means of communication. All questions related to the course material should be submitted to the instructor using the Canvas messaging service. Emails will also be accepted for personal matters. When emailing the instructor, you must include your full name, the course you are enrolled in, and a clear description of the matter. You may contact me via cell phone when necessary. I will also make myself available via Google Hangout and Skype.

Written Communication

The assignments and discussions require the students to utilize an effective and concise technical writing style with appropriate grammar and spelling. Students will have the opportunity to participate in a number of discussions relating to the cases. Students are expected to be able to effectively communicate technical ideas in both a written format.

Late Work

In order to receive full credit for work, students must turn in required deliverables in the on the specified due date. No late work will be accepted in this course. However, extremely unusual circumstances can be discussed with the instructor PRIOR to due dates. It is your requirement to manage your time and keep the instructor updated about any complications in your ability to deliver the work on time.

Special Needs

If you have a disability, as defined by the Americans with Disabilities Act (ADA), which requires a classroom accommodation or auxiliary aid(s), please inform the instructor of your needs during the first module so that the appropriate action is taken. University of Florida requires that students who need accommodations first register with the Dean of Students Office ([http://www.dso.ufl.edu/drc (Links to an external site.)]()).

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/ (Links to an external site.). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/ (Links to an external site.). Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/

Academic Integrity

Examinations, assignments, and projects are designed by the instructor to provide a complete learning experience for each student. Each student is therefore expected to complete his/her own work. The instructor recognizes that students learn from each other and particularly recognize the value of students comparing notes with each other. However, the amount of such collaboration permitted varies widely from course to course, and is influenced not only by instructor prerogative, but by the level and nature of the material under discussion. In no case should one submit work not one's own and in no case should one represent another's work as one's own. Plagiarism is just one of several areas of academic misconduct. It is not just the plagiarizer who is at risk. It is equally unacceptable for one to knowingly supply another student with access to one's current work or work from a previous term. This is called complicity in academic dishonesty, which is another area of academic misconduct. Any attempt to misrepresent one's performance on any exercise submitted for evaluation is academic misconduct.

Assessment and Grading

All assignments have to be submitted by 11:59pm on Sunday nights. Please see the following descriptions of each assignment.

- Data analysis (8 pts X 5 = 40 pts)

Each data analysis assignment has an associated dataset and worksheet for you to complete to demonstrate your mastery of the topics.

- Discussions (5 pts X 4 = 20 pts)

Students will be required to read reading materials and provide a reflection answering questions provided by the instructor. They also have to reply to two classmates'

posts. **Initial threads must be posted by Thursday at 11:59pm to ensure we have enough time for a fruitful conversation.** The following rubric will be used for grading:

Element	Above Average	Acceptable	Below average
Address the question	**2 pts** Address all discussion questions	**1 pt** Addresses most of the discussion questions	**0 pt** Fails to address all discussion questions
Critical thinking	**2 pts** · Full of insight · Rich in content	**2 pts** · Provides a general idea without their own reflection · Lacks depth	**1 pt** Rudimentary and superficial

- Online symposium + comments to three classmates' presentations (15 pts)

Students will present their work that uses any data obtained from their own context. Using a survey or demographic data is fine. They will be required to apply one of the analytics techniques addressed in this class. The presentation should be organized with multiple sections such as an introduction, result, and more. They have to video-record (with or without your face) their presentation using a recording tool like Screencast-O-Matic (https://screencast-o-matic.com/ (Links to an external site.)).

	3 pts	2 pts	1 pt	0 pt
Innovativeness	The presentation addresses a new or innovative topic that has been under-researched	The topic of the presentation is not new but the present provides some new ideas and information regarding the topic	The topic of the presentation is not new and the presenter does not provide any	N/A

			new information	
Coverage of the Topic	Details on the poster capture the important information about the topic and increase the audience's understanding	Details on the poster include important information but the audience may need more information to understand fully	Details on the poster relate to the topic but are too general or incomplete. The audience needs more information to understand	Details on the poster have little or nothing to do with the main topic
Organization	Information is very organized with clear titles and subheadings	Information is organized with titles and subheadings	Information is organized, but titles and subheadings are missing or do not help the reader understand	The information appears to be disorganized without a clear structure
Presentation	The presentation was the appropriate length. It did not seem hurried or too slow. The presenter spoke clearly and distinctly and established eye contact with the audience	The presentation was the appropriate length but seemed slightly hurried or too slow. The presenter spoke clearly most of the time and established eye contact with the audience	The presentation was the appropriate length but seemed very hurried or too slow. The presenter spoke clearly and distinctly only some of the time and/or established little eye contact with the audience	The presentation was too long or too short. The presenter did not speak clearly most of the time and established little eye contact with the audience

Quality of Analytics	The presenter applied suitable data analysis techniques for their data	Some of data analysis techniques/approaches are not suitable for their data	The presenter used data analysis techniques unsuitable for their data	N/A

- Final proposal (25 pts)

Students will be required to submit a research proposal describing their plan to analyze educational data, based on their online symposium presentation. Students have to specify analytics techniques to be used in a method section. The format of the research proposal will be posted by the instructor. The following rubric will be used for grading

	Expert (5pts)	Proficient (4pts)	Apprentice (3pts)	Novice (0~2pts)
Clarity Does your work product clearly meet the requirements of the assignment? Is it easy to follow? Can I identify all elements and how they fit together? Is the writing style clear, straightforward, and readable?	Exceptionally clear	Acceptable clarity	Difficult to understand	Unclear and unacceptable
Completeness Does the product fulfill all the requirements of the assignment? Are all the necessary elements in place?	Contains all necessary elements	Minor omissions	Major omissions	Unacceptable
Accuracy Is your work accurate in its analyses, statements, justifications, etc.? Are there any identifiable mistakes of omission or commission?	Completely accurate	One minor error	Multiple minor errors	Major errors

Format & Organization Is your assignment formatted attractively and clearly? Can sections be easily distinguished from one another?	Exceptional formatting, visual design and organization	Well-formatted, visually easy to follow, organization clear	Several problems with formatting and/organization	Very poorly formatted, visually difficult, organization not clear
Technical Writing & Style Is your assignment written with proper grammar, spelling and APA style?	No spelling, grammar, and/or APA errors	Minor spelling, grammar, and /or APA errors	Several spelling, grammar and/or APA errors	Many spelling, grammar, and/or APA errors

Final grades will be assigned based on the scale below.

Overall course percent	Grade
93.0% - 100%	A
90.00% - 92.99%	A-
87.00% - 89.99%	B+
83.00% - 86.99%	B
80.00% - 82.99%	B-
77.00% - 79.99%	C+
73.00% - 76.99%	C
70.00% - 72.99%	C-
67.00% - 69.99%	D+
63.00% - 66.99%	D
60.00% - 62.99%	D-
59.99% or less	E