Computer Science (COMP) 683

Introduction to Learning and Knowledge Analytics (Revision 1)

Delivery mode:	Grouped study ⧉
Credits:	3
Area of study:	Information Systems
Prerequisites:	None
Precluded:	None
Faculty:	Faculty of Science and Technology ⧉
Status:	Replaced with new revision, see the course listing ⧉ for the current revision ⊗
Notes:	This is a graduate level course and students need to apply and be approved to one of the graduate programs or as a non-program School of Computing and Information Systems ⧉ graduate student in order to take this course. Minimum admission requirements must be met. Undergraduate students who do not meet admission requirements will not normally be permitted to take this course.

| Instructor: | Dr. Sabine Graf ⧉ |

Overview

The growth of data overwhelms those who try to make sense of it. This concern is particularly evident in complex knowledge-intensive organizations. Learning institutions and corporations often don't pay attention to the data trails that learners create in the process of accessing learning materials, interacting with educators and peers, and creating new content. In an age where institutions are under growing pressure to adjust and adapt rapidly, learning and knowledge analytics hold opportunities for improved decision-making and planning at institutions levels.

Advances in knowledge modeling and representation, the semantic web, data mining, analytics, and open data form a foundation for new approaches of knowledge development and analysis. The technical complexity of this field is paralleled by a transition within schools and organizations to consider the full spectrum of learning (education, work place learning, informal learning) while transitioning to social and networked learning models. These technical, pedagogical, and social domains are amplified when they are considered in relation to one another – a foundational philosophy of this course.

Introduction to Learning and Knowledge Analytics 2011 is an overview course detailing the role of analytics in learning and knowledge development. Most of the topics do not require advanced statistical methods or technical skills.

Outline

This course will introduce learners to how information quantity alters its qualitative attributes. In the early 1970's, PW Anderson stated that "more is different". Throughout this course, discussion will centre on how abundance of information requires new technologies and analysis methods in order to

decide and act meaningfully. Concepts of wayfinding and sensemaking in complex settings will be addressed through emerging technologies, social networks, and analysis methods. Additionally, learners will be asked to consider organizational and cultural barriers that hamper analytics-based decision-making in companies.

Learning outcomes

Upon successful completion of this course, you should be able to

- define learning and knowledge analytics and detail how these differ from educational data mining.

- map the developments of technologies and practices that influence learning and knowledge analytics as well as developments and trends peripheral to the field.

- evaluate prominent analytics methods and tools and determine appropriate contexts where the methods would be most effective.

- describe how "big data" and data-driven decision making differ from traditional decision making and the potential implications of this transition in education, training, and general organizational functioning.

- evaluate "intelligent curriculum" as a basis for future content development and its connection to analytics.

- design and implement a model deploying learning analytics relating to a course or specific area of study.

- evaluate the potential impact of the semantic web and linked data on the development of learning resources and curriculum.

- detail various principles that organizational leaders need to consider in order to roll out an integrated knowledge and learning analytics model in an organizational setting.

- describe and evaluate developing trends in learning and knowledge analytics and determine their potential impact on teaching, learning, and organizational knowledge.

Evaluation

To **receive credit** ⧉ for COMP 683, you must achieve a cumulative course grade of **B- (70 percent** 🅰) or better, and must achieve an average grade of at least 60% on the assignments and 60% on the final project. Your cumulative course grade will be based on the following assessment.

Activity	Weight
Participation Analysis	20%
Project 1 - Analytics Model	40%
Concept Map	20%
Project 2 - Technique and Tool Matrix	20%
Total	**100%**

Materials

All course resources will be open and online, utilizing the conference proceedings from the Learning and Knowledge Analytics and Educational Data Mining conferences.

Optional readings are provided, some of which may require access through AU Library databases.

Video recordings of presentations from LAK11

Additional analytics resources will be posted here: **https://www.diigo.com/profile/gsiemens/analytics** ⧉ as well as the course tag within the Landing.

Course Materials - Other

The remainder of the learning materials for COMP 683 are delivered through Athabasca University's learning management system (LMS), Moodle. Online course materials include discussion forums, learning materials, and assignments. Assignments will be submitted online.

1. *Computer Science 683Study Guide*

2. Detailed descriptions of the requirements for the individual tutor-marked assignments

3. A course evaluation form

Course Workload

This course schedule is based on working approximately 15 hours per week, so this would best translate into (per week):

Readings (12 hrs) / Synthesis and/or exercises (3 hrs)

Special Course Features

Computer Science 683 is offered by computer mediated communications (CMC) mode, and can be completed at the student's workplace or home.

Important links

> **Future Course Offerings** ⬈

> **Important Dates and Deadlines** ⬈

> **MScIS Contact Information** ⬈

Opened in Revision 1, July 14, 2011

Updated March 4, 2022, by Student & Academic Services