





Computer Science (COMP) 683

Introduction to Learning and Knowledge Analytics (Revision 2)

Status: Replaced with new revision, see the [course listing](#)  for the current revision 

Delivery mode: [Grouped study](#) 


Credits: 3

Area of study: Information Systems

Prerequisites: None

Precluded: None

Faculty: [Faculty of Science and Technology](#) 

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

Learning and Knowledge Analytics is a relatively new field that is becoming more and more important due to the growing amounts of data gathered by diverse information systems and the huge potential those data have to support informed decision-making. Corporations face pressure for increased competitiveness and productivity. Making use of, and benefiting from, the data customers "throw off" in the process of accessing a corporation's website and other information systems can lead to significant cost reductions, as well as personalization and customization for customers. Similarly, educational institutions can enormously benefit from analysing data, such as how learners access course materials, interact with educators and peers, and create new content.

In an age where educational institutions are under growing pressure to reduce costs and increase efficiency, analytics promises to be an important lens through which to view and plan for change at both course and institutional levels. In addition, increasing the competitiveness and productivity of a business is a challenge that requires important contributions in organizational capacity building from workplace and informal learning. Learning analytics can play a role in highlighting the development of employees through their learning activities.

In this course, you will be introduced to areas like big data and data science, which are closely related to learning and knowledge analytics. You will also learn about models, procedures, methods, tools and technologies to use for analytics, whether for educational data or any other type of data. In addition, this course will introduce you to areas that either contribute to or benefit from learning and knowledge analytics, such as the Semantic Web, open data, linked data, the Internet of Things, and intelligent/personalized systems. Moreover, practical applications of learning and knowledge analytics will be explored. Furthermore, models of adopting analytics-based cultures within organizations and institutions will be introduced and the role of privacy and security will be discussed.

While you will have to use or learn how to use certain technologies to analyse data, this course is not technical in nature. It is intended to serve as an introduction to learning and knowledge analytics for people who are interested in how to benefit from the huge amounts of data around us. For learners wishing to pursue more technical courses, AU's School of Computing and Information Systems (SCIS) offers courses on data mining, artificial intelligence and computational intelligence. You may choose to register for them after this course to get a strong technical foundation that can then be applied to a learning and knowledge analytics topic (e.g., in an MSc essay, project or thesis).

Outline

Unit 1: Introduction to Learning and Knowledge Analytics

Unit 2: Big Data and Data Science

Unit 3: Models, Methods and Tools of Analytics

Unit 4: Fundamental Concepts Related to Learning and Knowledge Analytics

Unit 5: Practical Applications of Learning and Knowledge Analytics

Unit 6: Introducing Analytics in an Organization/Institution

Unit 7: Privacy and Security in Learning and Knowledge Analytics

Learning outcomes

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

- define learning and knowledge analytics and detail how it differs from (educational) data mining.
- define the terms big data, data science and data-driven decision making. Explain how they change traditional decision making and describe potential implications this may have in education, training, and general organizational functioning.
- evaluate prominent analytics models, methods and tools, and determine appropriate contexts in which they would be most effective.
- use analytics models, methods and tools to analyse and draw conclusions from data.

- discuss areas and concepts that contribute to, and benefit from, learning and knowledge analytics and evaluate their potential impact on learning and knowledge analytics.
- explore practical applications of learning and knowledge analytics.
- detail the principles that organizational leaders need to consider to roll out an integrated learning and/or knowledge analytics model in an organizational setting.
- discuss potential concerns regarding privacy and security in learning and knowledge analytics and ways to ensure data privacy and data security is achieved.

Evaluation

Evaluation in this course is based on your performance on four assignments and your participation throughout the course.

To **receive credit** [↗](#) for this course, you must achieve a cumulative course grade of at least **B- (70 percent)** [📊](#) or better, and must achieve an average grade of at least 50% on the assignments and 50% on participation.

The weights of the assignments are as follows:

Activity	Weight
Assignment 1: Technique and Tool Matrix	15%
Assignment 2: Participation Analysis	25%
Assignment 3: Concept Map	15%
Assignment 4: Analytics Project	35%
Participation: Discussions in Weekly Forums	10%
Total	100%

Materials

The units of the course provide you with information about how and what to learn in COMP 683. Each of the units deals with a topic in learning and knowledge analytics. Each unit has Learning Outcomes, Required Readings, and Learning Activities. In addition, there are weekly discussion forums to answer study questions and discuss topics related to the learning materials in each respective week.

The reading materials for this course are taken entirely from web-based resources, accessible freely on the web or via our AU online library. They include scientific papers, as well as web pages. These materials aim at presenting you, on the one hand, with the basics in learning and knowledge analytics and, on the other hand, with current research in this field.

Course Materials – Other

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. Material also include

- the COMP 683 Study Guide.
- detailed descriptions of the requirements for the assignments.
- 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.

Special Note

Students registered in this course will NOT be allowed to apply for a course

extension, due to the nature of the course activities.

Important links

- › [Future Course Offerings](#) 
- › [Important Dates and Deadlines](#) 
- › [MScIS Contact Information](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 2, March 7, 2022

Updated October 10, 2024

View [previous revision](#) 
