





Computer Science (COMP) 494

Research Methods (Revision 2)

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

Delivery mode: [Individualized study online](#) 

Credits: 3

Area of study: Science

Prerequisites: None

Precluded: None

Challenge: COMP 494 is not available for challenge.

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

Overview

COMP 494 introduces students to the systematic investigation that attempts to establish facts on a scientific basis. The investigation involves discovery, interpretation, development, and execution of methods that are generic in nature, yet highly applicable to research in computing and information systems.

Topics covered include review of a published article, literature review, identifying a research problem, sampling, measurement, reliability, validity, data collection, statistics, mining, simulation, optimization, graphical modeling, research ethics, survey research, correlational research, experimental research, research methods specific to information sciences, action research, research management, and qualitative research.

Outline

- Week 1 & 2: Unit 1: What is research, research problem, and literature review
- Week 3 & 4: Unit 2: Sampling, Measurement, Reliability, and Validity
- Week 5: Unit 3: Data Collection and Statistics
- Week 6: Unit 4: Mining, Simulation, Optimization, and Modelling
- Week 7: Unit 5: Research Ethics
- Week 8: Unit 6: Survey Research
- Week 9: Unit 7: Correlational Research
- Week 10: Unit 8: Experimental Research
- Weeks 11 & 12: Unit 9: Research Methods in Information Sciences
- Week 13: Unit 10: Action Research
- Weeks 14 & 15: Unit 11: Managing Research
- Week 16: Unit 12: Qualitative Research
- Final exam (open book and open notes)

Objectives

- Describe and associate terminologies used in Research Methods
- Relate aspects of knowledge presented in an article and formulate opinions about its quality



- Analyze data using sampling and measurement techniques to infer reliability and validity
- Apply data collection techniques using various statistical methods
- Apply datamining, simulation, optimization, and graphical modeling techniques
- Assess and recommend research ethics practices
- Formulate and assess survey research, correlational research, experimental research, action research, and qualitative research
- Generalize research analysis techniques (e.g., content analysis, computational complexity, discourse analysis, conversational analysis, and longitudinal data analysis) in information sciences
- Compose and assess research management issues and techniques

Learning outcomes


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

- formulate research hypotheses.
- review, compare and contrast research outcomes.
- discriminate between different degrees of quality traits of a research article.
- examine statistical methods to conduct data analysis and inference.
- select computational techniques from information sciences for data analysis and inference.
- associate different types of research to computational problems in various domains.
- recommend research management techniques.


Evaluation

To **receive credit**  for COMP 494, you must achieve a course composite grade of at least **D (50 percent)** . There are three assessments: two assignments and one final exam. You must also score 50% in each assessment to pass the course. That is, you must score 50% in each of the two assignments and 50% in the final exam. The weighting of the grade is as follows:

Activity	Weight
Unit 1: (covering units 1 through 6)	25%
Unit 2: (covering units 7 through 12)	25%
Final exam (with open notes)	50%
Total	100%

To learn more about assignments and examinations, please refer to Athabasca University's [online Calendar](#) .

Materials

This course either does not have a course package or the textbooks are open-source material and available to students at no cost. This course has a **Course Administration and Technology Fee** , but students are not charged the Course Materials Fee.

There is no textbook for this course.

Other Materials

Course materials for COMP 494 are stored in a self-extracting file on the servers at Athabasca University.

At this time the self-extracting file contains the following materials

- Units 1 to 12 of the study guide.

Registered students may download the self-extracting file through the World Wide Web. Additional supporting materials of interest to students may occasionally be made available electronically.





Special Course Features

Computing and Information Systems courses at Athabasca University require that students use computer mediated communications. We expect students to have access to computer equipment with certain requirements.

Special Instructional Features

Delivery of COMP 494 (contacting the tutor, submitting assignments) is dependent on computer mediated communications. Students are required to have access to the World Wide Web.

Important links

- › [Academic advising](#) 
- › [Program planning](#) 
- › [Request assistance](#) 
- › [Support services](#) 

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.

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View [previous revision](#) 
