

Assignment 1

Weight: 25% of your final grade

Due: after Unit 6

Answer any **five** questions. Maximum 100 marks.

1. (20 marks)

Create a research question that captures the essence of your own research. Then, explain the importance of this research.

or

Select an article from a journal, read it, and offer your responses to the questions below:

- a. To what discipline or area does the research pertain? What research hypothesis or hypotheses are presented in the article?
- b. What variables are reported in the article? Identify their types.
- c. Do you think the literature review was adequate? Do you have any comments on the literature review?
- d. Is the experiment properly designed? What are its limitations? What are its highlights?
- e. What conclusions does the article present? Are they significant?

2. (20 marks)

Describe briefly how you would select a representative sample from a population of computer science students from Alberta.

or

Briefly discuss the types of *reliability measures* that you would consider using in your own research.

or

Briefly discuss the types of *validity measures* you would consider using in your own research.

3. (20 marks)

Briefly describe a statistical technique, and then describe a problem that can be solved using this technique.

4. (20 marks)

Identify a data-mining technique that is potentially useful for your research, and describe it in the context of your research. This report should not exceed two pages (500–600 words) in length.

or

Is simulation applicable in all research contexts? Can you still use simulation techniques if you do not know about the statistical distribution of the population under study?

Write a brief description of how you can potentially use simulation in your research.

Your response should not exceed two pages (500–600 words) in length.

or

Identify any one application of operations research, and discuss how a particular operations research, optimization, or numerical methods technique can be employed in that application. Your response should not exceed two pages (500–600 words) in length.

or

Identify a problem, preferably from your research area, that can be represented as a Bayesian belief network. Represent it in Netica, fill up the conditional probability tables, and explain one particular inference that the Bayesian network can make. Your written response should not exceed two pages (500–600 words) in length.

5. (20 marks)

Review the ethics guidelines for applicants cited below, and write a brief commentary on the ethical issues covered there, as well as any issues not covered that you feel *should* be covered. (Note that you may wish to refer to the TCPS 2 at

<http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/Default/.>

Athabasca University Research Centre. (2017). Athabasca University research ethics board guidelines for applicants. Retrieved March 11, 2020,
http://research.athabascau.ca/documents/guidelines_for_applicants_nov2017.pdf

or

Select any **one** case from the following website, and respond to the questions at the end of that case:

Exell, R.H.B. (2001). Ethical Case Studies. Retrieved March 11, 2020,
<https://web.archive.org/web/20151126231420/http://www.jgsee.kmutt.ac.th/exell/JEE613/EthCases.html>.

6. (20 marks)

Use one of the software packages below to create a sample survey that corresponds to your research. Publish an introduction to the survey and a link to that survey in the Unit 6 Discussion Forum. What potential conclusions can you arrive at from the survey?

Note that the first software tool below is open source; the second is a free version of a proprietary package.

LimeSurvey download page: <http://www.limesurvey.org/en/download>

SurveyMonkey: <https://www.surveymonkey.com/>

Go to Plans and Pricing/Basic in the navigation bar near the top of the screen to find the free version.