

## DEPARTMENT OF BUSINESS AND OFFICE ADMINISTRATION

### COURSE OUTLINE – Winter 2025

#### **MG3120 (A3): Applied Statistics for Business and Economics II – 3 (3-0-1) 60 Hours for 15 Weeks**

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

**INSTRUCTOR:** Chuntai Jin, Ph.D.      **PHONE:** (780) 593-2857  
**OFFICE:** C309      **E-MAIL:** [cjin@nwpolytech.ca](mailto:cjin@nwpolytech.ca)  
**OFFICE HOURS:** Tuesdays & Thursdays, 11:30 AM – 1:00 PM

#### **CALENDAR DESCRIPTION:**

Statistical inference for variance; statistical inference for the means; proportions and variances from two populations; analysis of variance; non-parametric statistics; joint probability distributions; marginal and conditional distributions; covariance; correlation and independence; contingency tables; simple linear regression; multiple linear regression; nonlinear regression; and time series analysis are topics covered in the course.

#### **PREREQUISITE:**

ST1510 or BA2060

#### **REQUIRED TEXT/RESOURCE MATERIALS:**

- *Applied Statistics in Business and Economics, 2024 Release*, Doane, D., & Seward, L. (2024), McGraw-Hill Ryerson.  
[Applied Statistics in Business and Economics: 2024 Release ISE \(mheducation.ca\)](#)  
This textbook includes *Connect with SmartBook Online Access*. McGraw-Hill *Connect* is a web-based assignment and assessment platform that gives students the means to better connect with their coursework, and with the important concepts that they will need to know for success now and in the future. All students must have access to *Connect* for online practices, assignments and quizzes. You need an access code for *Connect* registration to gain access to the online resources. *Connect* registration instructions are available on *D2L*.
- Microsoft Excel: Excel is required for this course. It will be used extensively throughout the entire course.

**DELIVERY MODE(S):**

**On-campus (face-to-face)** – This type of course will be delivered on campus in a specific location which will be indicated on the student timetable. Students are expected to fully attend in person.

**LEARNING OUTCOMES:**

Upon completion of this course students should be able to understand and explain:

- how to use a linear model to analyze the relationship between two variables
- probability distribution and statistical inference
- how to model discrete random variables and continuous random variables
- the sampling distribution of a proportion and a mean
- how to calculate a confidence interval and perform a hypothesis testing for a proportion
- the relationship between hypothesis tests and confidence intervals
- how to calculate a confidence interval for the difference between two proportions
- how to perform a hypothesis test comparing two proportions
- how to construct a confidence interval and perform a hypothesis testing for a mean
- how to calculate a confidence interval for the difference between two means
- how to construct confidence intervals and perform hypothesis tests on the difference between means of paired data based on the t-distribution
- how to analyze the results of a statistical experiment using ANOVA: Analysis of Variance
- how to perform a homogeneity test and a goodness-of-fit test
- which nonparametric tests can be used in given business situations, together with their advantages and disadvantages
- how to perform nonparametric tests on one, two, or more groups
- how to perform nonparametric tests to identify the degree of relationship between two variables
- how to perform a hypothesis test and calculate the confidence interval for the slope of a linear regression
- how to perform a hypothesis test on a correlation coefficient
- how to calculate the confidence interval and prediction interval for predicted values

**TRANSFERABILITY:**

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page

<http://www.transferalberta.alberta.ca>.

\*\* Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.**

**EVALUATIONS:**

Excel Projects .....	10%
Assignments .....	15%
Quizzes .....	15%
Midterm Exam.....	25%
Final Exam .....	35%

**GRADING CRITERIA:**

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100	C+	2.3	67-69
A	4.0	85-94	C	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
B	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

## COURSE SCHEDULE/TENTATIVE TIMELINE:

Weeks	<u>Topics</u>	<u>Required Readings</u>
Jan 6	Overview of Statistics	Chapter 1
Jan 13	Discrete Probability Distribution	Chapter 6
Jan 20	Continuous Probability Distribution	Chapter 7
Jan 27	One-Sample Hypothesis Tests	Chapter 9
Feb 3	Two-Sample Hypothesis Tests	Chapter 10
Feb 10	Analysis of Variance	Chapter 11
<b>Feb 17</b>	<b><i>Winter Break – Feb 17-21</i></b>	<b><i>No Classes</i></b>
<b>Feb 24</b>	<b><i>Midterm Exam – Feb 27</i></b>	<b>Chapters 1, 6, 7, 9-11</b>
Mar 3	Simple Regression	Chapter 12
Mar 10	Multiple Regression	Chapter 13
Mar 17	Time Series Analysis	Chapter 14
Mar 24	Nonparametric Tests	Chapter 16
Mar 31	Quality Management	Chapter 17
Apr 7	Simulation	Chapter 18
<b>Apr 14 -24</b>	<b><i>Final Exam – TBA</i></b>	<b>Chapters 12-14, 16-18</b>

## STUDENT RESPONSIBILITIES:

- **Attendance:** Students are expected to attend all scheduled lectures, arrive on time, and remain for the duration of the activities. Arriving late and leaving early is disruptive to the entire class. Frequent tardiness may be treated as an absence. **Students with absences in excess of 6 classes may be refused permission to write the final exam.** For more information, please refer to the Academic Regulations on Debarred from Exams at <https://www.nwpolytech.ca/programs/grading-systems.html>
- **Time Management:** Adopting and adhering to effective learning habits in this course will likely take up a great deal of time so plan your schedule accordingly. It is difficult to catch up once a student falls behind in required readings and exercises.

- **Cell Phones:** The use of cell phones during class time is unprofessional and distracting to the instructor and fellow students. Texting and talking on a cell phone during class is therefore strictly prohibited. Cell phones must be either turned off or set to silent mode and placed out of sight.
- **Email:** Email is the preferred option to communicate with your instructor. **Email correspondence to your instructor must be sent from your NWP student email account.** Emails should be professionally formatted and include a subject, correct spelling and grammar, and a reference to course material and/or textbook pages, etc. Emails that do not adhere to this format may not be responded to.
- **Recording: Photographing and/or recording course content is strictly prohibited** unless advance permission is obtained from the instructor and any guest presenter(s). In the event permission is granted, such recordings may only be used for individual study, and may not be reproduced, transferred, distributed or displayed in any public manner.

#### **STATEMENT ON ACADEMIC MISCONDUCT:**

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at <https://www.nwpolytech.ca/about/administration/policies/index.html>

\*\*Note: all Academic and Administrative policies are available on the same page.

#### **EXCEL PROJECTS, ASSIGNMENTS, QUIZZES AND EXAMS:**

Students are expected to finish all projects, assignments and quizzes. Due dates of all projects, assignments and quizzes are available on Connect. **Late/missed projects, assignments and quizzes are NOT accepted** and **will result in a grade of zero**. All exams will be written as scheduled. **No rewrite/rescheduled exams will be given**, and **all missed exams will result in a grade of zero** unless there is an excusable absence and prior arrangements have been made with the instructor. If there is a legitimate reason of absence, the weighting of the missed midterm exam will be added to the final exam weighting.

- Course materials (course outline, lecture notes, connect instructions, etc.) are available on your *D2L* course space (<https://myclass.gprc.ab.ca/d2l/home>).
- Excel project, assignments and quizzes are available on *Connect*.

#### **Excel Projects**

- There will be 5 Excel projects with each worth 2% of the student's final grade, regardless of the length of the project.
- The student will be given one attempt at each project.

#### **Assignments**

- There will be 10 assignments with each worth 1.5% of the student's final grade, regardless of the length of the assignment.
- The student will be given a maximum of two attempts at each assignment.
- The assignments will be marked immediately. Corrections for the attempted assignment will be made available to the students immediately.
- All assignments must be completed before the expiration of the pre-set due date or the student will receive a mark of zero for any missed assignments.

### Quizzes

- There will be 10 quizzes with each worth 1.5% of the student's final grade.
- Each quiz consists of 20 multiple choice questions that are randomly selected from the question bank.
- The student will be given a maximum of two attempts at each chapter quiz.
- The quizzes will be marked immediately. Corrections for the attempted quiz will be made available to the students after the due date.
- All quizzes must be completed before the expiration of the pre-set due date or the student will receive a mark of zero for any missed quizzes.
- Once you start the quiz, you must complete the entire quiz within the one-hour time limit. Logging off or losing the internet connection during the quiz will result in a grade based only on the proportion of the quiz that has been completed. It is imperative that the student has a reliable internet connection when attempting the quiz.

### Exams

- There will be two exams in this course.
- The midterm exam is tentatively scheduled for *Thursday, Feb 27*.
- The final exam will be scheduled by the registrar's office during April exam period.
- All exams will be written as scheduled. No rewrite/rescheduled exams will be given.