

COURSE NAME: DAT330 Statistical Predictive Modeling for Analytics

Credit Value: 4
Total Course Hours: 56
Prerequisite Course(s): None
Corequisite Course(s): None

COURSE DESCRIPTION

The power of data analytics stems from the ability to analyze past information in order to predict future events. Through this course, students are introduced to predictive, prescriptive and descriptive statistical models that directly influence business decisions. In applying these model structures, students will select and adapt models and algorithms to improve the quality and usability of the data. Students will apply these models to evidence-based decision making.

PLAR INFORMATION

This course is eligible for Prior Learning Assessment and Recognition. Students are advised to discuss options with their program coordinator.

COURSE LEARNING OUTCOMES

Upon completion of this course, the student will have reliably demonstrated the ability to:

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| <p>1.0 Review statistical terms, processes and functions.</p> <ul style="list-style-type: none">1.1 Define business analytics.1.2 Distinguish between data sets and databases.1.3 Discuss the use of analytical models to reflect real world situations.1.4 Define descriptive, prescriptive and predictive analytical models.1.5 Define risk and uncertainty as they relate to analytical models.1.6 Discuss the role of data visualization in statistical analytical models. <p>2.0 Apply descriptive analytic models in support of business decisions.</p> <ul style="list-style-type: none">2.1 Analyze data using descriptive statistical measures such as measures of location, measures of shape, measures of dispersion and measures of association.2.2 Use probability rules and formulas to perform probability analysis in support of business decisions.2.3 Analyze business scenarios using joint and conditional probability.2.4 Discuss the use of random variable in probability analysis. | <ul style="list-style-type: none">2.5 Apply continuous distribution models such as the normal, exponential and triangular distribution to describe sample data.2.6 Conduct statistical sampling to support specified market research.2.7 Estimate population parameters using sample parameters.2.8 Identify possible errors in estimation.2.9 Demonstrate how confidence intervals can be used to assess the accuracy of estimation. <p>3.0 Apply predictive analytic models in support of business decisions.</p> <ul style="list-style-type: none">3.1 Demonstrate the use of mathematical functions in predictive analytics.3.2 Demonstrate the use of regression models for prediction.3.3 Interpret residual analysis and regression assumptions.3.4 Demonstrate the purpose of a multiple linear regression.3.5 Demonstrate how to identify a best' regression model.3.6 Build a regression model for categorical data.3.7 List the types of forecasting models.3.8 Forecast using exponential smoothing and |
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moving average.

3.9 Forecast time series with seasonality.

3.10 Identify appropriate forecasting models based on the characteristics of the time series.

3.11 Define data mining and common approaches to data mining.

3.12 Explain common approaches to data mining such as cluster analysis, classification, association and cause-and-effect modeling.

4.0 Apply prescriptive analytic models in support of business decisions.

4.1 Identify the types of optimization models.

4.2 Develop a mathematical model for optimization.

4.3 Implement linear optimization models on a spreadsheet.

4.4 Formulate and solve a linear optimization model for a business application.

4.5 Conduct what-if analysis for an optimization model.

4.6 Evaluate scenarios for a linear optimization model.

GENERAL EDUCATION

This is not a General Education course.

PROGRAM OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved program learning outcomes (PLO):

Enterprise Analysis and Research

1. Identify, collect, organize, manipulate and analyze data to support problem solving, organizational decision-making and opportunity identification.

2. Utilize current technologies to manipulate data sets, correlate information and communicate results in order to support strategic decisions.

6. Apply enterprise intelligence, analytics and big data tools appropriate to organizational problems, data movement, and system workloads to support evidence-based decision-making.

ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved essential employability skills (EES) outcomes:

2. Respond to written, spoken, or visual messages in a manner that ensures effective communication

6. Locate, select, organize, and document information using appropriate technology and information systems.

7. Analyse, evaluate, and apply relevant information from a variety of sources.

EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

COURSE EVALUATION

20% In-Class Exercises

40% Tests

40% Assignments

PROGRAM SPECIFIC GRADING

Per College Grading System

GRADING SYSTEM

A+:	90-100%	B+:	77-79%	C+:	65-69%	D:	50-54%	S - Satisfactory
A:	85-89%	B:	73-76%	C:	60-64%	F:	0-49%	I - Incomplete
A-:	80-84%	B-:	70-72%	D+:	55-59%			F- Repeat Course, included in GPA
								FS- Failure Supplemental
								FR- Repeat course, excluded from GPA

*For a complete chart of grades and descriptions, please see the Grading Policy.

LEARNING RESOURCES

Required Resources:

Title 1:	Business Analysis	
ISBN 1:	ISBN13: 978-0-13-523167-8	ISBN10: 0-13-523167-1
Edition 1:	3rd edition	

Other Resources:

Textbook.

Resources listed on the course outline support the achievement of learning outcomes, and may be used throughout the course to varying degrees depending on the instructor's teaching methodology and the nature of the resource.

LEARNING ACTIVITIES

Lecture, Demonstrations, Readings, Lab Exercises, Scenario/Case Analysis

DELIVERY MODE

This course may be delivered, in whole or in part, in a number of modalities, including in class, online, hybrid, in a synchronous or asynchronous manner or a combination thereof, as per accreditation and/or regulatory standards where appropriate.

ACADEMIC POLICIES

Canadore College is committed to the highest standards of academic integrity, and expects students to adhere

to these standards as part of the learning process in all environments. The College's Academic Integrity policy seeks to ensure that all students understand their rights and responsibilities in upholding academic integrity and that students receive an accurate and fair assessment of their work. Please review the Academic Integrity policy (A-18) and other academic policies found on our website:
<https://www.canadorecollege.ca/about/policies>.

COLLEGE POLICIES

- Protecting human rights in support of a respectful college community

For college policies please see: <http://www.canadorecollege.ca/about-us/college-policies>.

STUDENT SUCCESS SERVICES - Your Success Matters!

Student Success Services provides student-focused services to facilitate students' success in their studies. Staff provide support by reducing and/or removing educational-related barriers through individualized accommodations and supports to students with disabilities.

Please visit our webpage to learn more: <https://www.canadorecollege.ca/support/student-success-services> or look for our events on social media.

To connect with Student Success Services email studentsuccessnow@canadorecollege.ca or call 705.474.7600 ext 5205.

FIRST PEOPLES' CENTRE:

A culturally safe environment offering CONFIDENTIAL student focused services, drop in or make an appointment to access:

- One on one counselling
- Elder in residence program
- Peer tutoring
- Peer mentorship
- Lunch & learn workshops on study skills, self-care, life skills
- Learning Resource Centre

Drop by our offices at C254 College Drive, E101 Commerce Court or call 705 474 7600 Ext. 5961 College Drive / 5647 Commerce Court.

<https://www.canadorecollege.ca/experience/indigenous-student-experience>

WAIVER OF RESPONSIBILITY

Every attempt is made to ensure the accuracy of this information as of the date of publication. The college reserves the right to modify, change, add, or delete content.

HISTORICAL COURSE OUTLINES

Students use course outlines to support their learning. Students are responsible for retaining course outlines for future use in applications for transfer of credit to other educational institutions.