

# BUSI 3063 N3: Business Analytics Modeling

## Syllabus

### Course Description

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The fundamental purpose of this course is to develop the student's ability to analyze quantitative information using mathematical modeling techniques applied to business problems to support decision making. The course uses Excel as the analytical tool/platform to formulate and solve problems based on a variety of mathematical modeling techniques. Throughout the world, Excel is by far the most pervasive software application used by organizations to analyze quantitative data. The course will further develop the student's ability to use this tool to analyze complex business problems.

### Instructor

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Cindy Trudel graduated from the University of Waterloo in 1984 with an Honours Bachelor's of Mathematics majoring in Computer Science with a Combinatorics and Optimization minor. In 1989, she graduated from the University of Waterloo with a Master's in Applied Science specializing in Management Science. She began her career as a Computer Scientist in 1984, and has worked for a number of major firms both as an employee and later as a consultant through her consulting firm C.S. Trudel & Associates Limited. Mrs. Trudel has taught in the Department of Mathematics, School of Computer Science and the School of Business at Acadia University since 1989. She currently owns 2 businesses in the Wolfville area.

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## Course Overview

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The course is divided into three main sections: (I) deterministic modeling techniques including linear programming, and sensitivity analysis, (ii) deterministic modeling using integer linear programming and predictive modeling using regression analysis, and (iii) time series forecasting techniques. The emphasis throughout the course is to apply these techniques to business problems in areas such as production scheduling, resource allocation, investment analysis, transportation/ logistics planning, inventory management, market analysis, and risk assessment.

## Course Materials

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Ragsdale, Cliff T., (2015) Spreadsheet Modeling and Decision Analysis, 7th Edition, South Western, ISBN-13: 978-1-285-41868-1.

See the [student handbook](#) for ordering information.

To ensure that you will be able to complete the assignments it is recommended that you install the following: MS Windows: Office 2007 or Office 2010 (preferred); Other versions of the above software, nor any Excel-compatible software will be supported. You will need to enable risk-solver in Excel. The English-language versions of the above software are highly recommended. If you choose an unsupported configuration you may have difficulty in completing your assignments.

## Evaluation

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Assignments	30%
Mid-Term	30%
Final Exam	40%

## Assignments

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The assignments are to be submitted via ACORN. Please remember to put your name, student number, course number, and assignment number on the assignment and keep a copy in the event the original is lost. The files must be readable by Microsoft Excel or Word 2010. Assignments are timed. Be prepared to spend 1.5 hours before you open an assignment. Assignments have one attempt. Once you open an assignment, you must complete it. Attempt resets WILL NOT BE GRANTED. Timed assignments are used to demonstrate the type of question that you will find on the midterm and exam. Prior to completing the timed assignment, you should attempt the Practice Assignments and compare them to the solutions. If you do not understand the solution, you should contact the instructor for clarification.

## Course Schedule

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**Click to download the suggested schedule for this course: [BUSI 3063 N3 - Suggested Schedule](#)**

Fill in your start date and use the recommended timeline to plan out when you will do readings and assignments. This is a tool to help you time manage this course. If you get off-track, make sure to revisit your schedule and re-evaluate the dates you've set for yourself. This course can be completed quicker or slower than the 14 weeks outlined in the schedule depending on your time commitment.

You have 6 months to complete this course. You may set your own schedule, but if you intend to complete the course in less than 3 months, you should let me know so that we can arrange a schedule.

Please do not leave all of your course work until a few weeks before your completion date. Although I will make every effort to accommodate your schedule within reason, I need time to grade assignments and mark exams.

### **Recommended Schedule**

	Module	Recommended time to complete	Assignment
<b>Unit 1</b> <b>Linear Programming</b>	<b>Module 1</b> <b>Introduction to Linear Equations</b>	1 - 2 weeks	Read Chapters 1 & 2  Assignment 1
	<b>Module 2</b> <b>Linear Equations – Excel approach</b>	1 - 2 weeks	Read Chapter 3 Sections 3.0 - 3.8
	<b>Module 3</b> <b>Linear Equations</b>	1 - 2 weeks	Read Chapter 3 Sections 3.9 - 3.14.6  Assignment 2
	<b>Module 4</b> <b>Sensitivity Analysis and the Simplex Method</b>	1 - 2 weeks	Read Chapter 4 Sections 4.0 - 4.6  Assignment 3
			Midterm covering modules 1 - 3

<b>Unit 2</b>  <b>Integer</b> <b>Linear</b> <b>Programming</b> <b>&amp; Predictive</b> <b>Modeling</b>	<b>Module 5</b> <b>Integer Linear Programming</b>	1 – 2 weeks	Read Chapter 6 Sections 6.0 - 6.9
	<b>Module 6</b> <b>Integer Linear Programming</b> <b>with Binary Variables</b>	1 – 2 weeks	Read Chapter 6 Section 6.10 and Sections 6.12 - 6.16  Assignment 4
	<b>Module 7</b> <b>Introduction to Regression</b> <b>Analysis</b>	1 – 2 weeks	Read Chapter 9 Sections 9.0 - 9.10
	<b>Module 8 Multiple Regression</b> <b>&amp; Binary Independent</b> <b>Variable Analysis</b>	1 – 2 weeks	Read Chapter 9 Sections 9.11- 9.16  Assignment 5

<b>Unit 3</b> <b>Time Series</b> <b>Forecasting</b>	<b>Module 9 Stationary Models</b>	1 – 2 weeks	Read Chapter 11 Sections 11.0 - 11.9
	<b>Module 10 Trend Models</b>	1 – 2 weeks	Read Chapter 11 Sections 11.10 - 11.14  Assignment 6
			Exam covering modules 1 - 10

## Exam

How to apply: Complete the [Application for Examination](#)

### Proctored at Acadia

- The final exam in a distance education course must be passed to successfully complete the course. There are no rewrites or supplemental examinations at Acadia University.
- Examination requests must be received one month prior to the date you wish to write your examination.
- Course requirements must be completed to the satisfaction of your instructor.
- **Graduating Students Note:** If you are graduating in Spring Convocation you must write by April 15th. If you are graduating in Fall Graduation you must write by September 15th.

### Proctored at Another Location

If it isn't practical to take your exam at Acadia, off-campus exams can be written at another university or college. Arrangements for an examination may be made through the Registrar's Office or the Continuing Education office of most universities and colleges. If it is not possible to write your exam at an approved institution, please contact us for assistance.

- **All fees associated with examinations written at other locations are your responsibility.**
- Some courses may require specific software or internet accessibility at the off-campus examination location.

## Student Handbook

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You are responsible for becoming familiar with the contents of the Student Handbook. It contains important information about scheduling examinations (if applicable), applying for extensions, withdrawing from your course, ordering books, and computer and library services available to you. If you have questions about the policies outlined in [the handbook](#), contact:

Open Acadia

21 University Avenue (Rhodes Hall)

Wolfville, NS B4P 2R6

Phone: 1-800-565-6568

Fax: 902-585-1068

Email: [openacadia@acadiau.ca](mailto:openacadia@acadiau.ca)

## Academic Integrity

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Academic integrity demands responsible use of the work of other scholars. It is compromised by academic dishonesty such as cheating and plagiarism. A student who is uncertain whether or not a course of action might constitute cheating or plagiarism should seek in advance the advice of the instructor involved.

- Cheating is copying or the use of unauthorized aids or the intentional falsification or invention of information in any academic exercise
- Plagiarism is the act of presenting the ideas or words of another as one's own. Students are required to acknowledge and document the sources of ideas that they use in their written work.
- Self plagiarism is also a form of plagiarism. It is the presentation of the same work in more than one course without the permission of the instructors involved.
- A student who knowingly helps another to commit an act of academic dishonesty is equally guilty.
- Penalties are levied in relation to the degree of the relevant infraction. They range from requiring the student to re-do the piece of work, through failure on that piece of work, to failure in the course, and to dismissal from the university.