

# Course Documentation

## School of Biosciences



**Program:** Chemical Engineering Technician  
**Academic Year:** 2011-12                      Fall [x]                      Winter [ ]                      Spring [ ]  
**Program Year:** 3                                      **Program Semester:** 5  
**Course Name:** Data Analysis 2  
**Course Code:** MATH 3000                      **Course Hours:** 70                      **Credit Value:** 5  
**Faculty:** Ronald Ford

Class	Lab	Field	Other	Total
42	28			70

### Prerequisites/Corequisites/Equivalent Courses

PR/CO/EQ	Course Code	Course Name	Conditions
PR	MATH 2002 Or MATH 2002	Data Analysis 1 Data Analysis 1	
CO			
EQ			

### This Course is A Prerequisite For:

Course Code	Course Name
BIOS 3004 BIOS 3007 ENVR 3000	Good Manufacturing Practices Limnology Toxicology

Dean/Chair Approval:

Date: 9/2/2011

**1. Calendar Description**

This is a course in Inferential Statistics. Topics covered are: the central limit theorem, discrete probability distributions, estimation (confidence intervals), chi-square distribution, analysis of variance. Microsoft EXCEL will be used to generate statistical reports and graphs.  
Prerequisite: MATH 2002

2. Course Learning Outcomes: Upon successful completion of the course, the student will be

- 1) Apply probability basics.
- 2) Classify discrete probability distributions.
- 3) Apply the normal distribution.
- 4) Define sampling distributions.
- 5) Produce interval estimates of population parameters.

**3. Essential Employability Skills Outcomes: This course will contribute to the achievement of the following essential employability skills**

- 1. communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
- 2. respond to written, spoken, or visual messages in a manner that ensures effective communication.
- 3. execute mathematical operations accurately.
- 4. apply a systematic approach to solve problems.
- 5. use a variety of thinking skills to anticipate and solve problems.
- 6. locate, select, organize, and document information using appropriate technology and information systems.
- 7. analyze, evaluate, and apply relevant information from a variety of sources.
- 8. show respect for the diverse opinions, values, belief systems, and contribution of others.
- 9. interact with others in groups or team in ways that contribute to effective working relationships and the achievement of goals.
- 10. manage the use of time and other resources to complete projects.
- 11. take responsibility for one's own actions, decisions, and consequences.

**4. General Education:**

Indicate if this course is identified as a General Education course in the program of study.

Yes  No

If yes, indicate which General Education theme this course addresses.

- 1. Arts in Society
- 2. Civic Life
- 3. Social and Cultural Understanding
- 4. Personal Understanding
- 5. Science and Technology

**5. Prior Learning Assessment and Recognition:**

Students may apply to receive credit by demonstrating achievement of the course learning outcomes through previous life and work experiences.

This course is eligible for challenge through the following method(s) indicated

Challenge Exam	Portfolio	Interview	Dual Credit	Other	Not Eligible
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

PLAR

Ron Ford
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**6. Required Texts, Materials, Resources or Technical Materials Required**

Sontrop, J. and K. MacKenzie [Introduction to Technical Statistics and Quality Control] Addison Wesley, Toronto, 1996

Scientific calculator capable of linear regression.

**7. Evaluation: Students will demonstrate learning in the following ways**

Assessment Description	Course Learning Outcome(s)	Assignment Weighting
Test 1 Basic probability	CLO 1	20%
Test 2 Discrete probability distributions and the normal distribution.	CLO 2, 3	20%
Test 3 Sampling distributions and interval estimates of population parameters.	CLO 4, 5	20%
Test 4 Computing skills.	CLO 1, 2, 3, 4, 5	15%
Weekly Excel generated reports and graphs.	CLO 1, 2, 3, 4, 5	25%

**8. Other:**

**Loyalist College has a Violence Prevention policy:**

All College members have a responsibility to foster a climate of respect and safety, free from violent behavior and harassment.

- Violence (e.g. physical violence, threatening actions or harassment) is not, in any way, acceptable behavior.
- Weapons or replicas of weapons are not permitted on Loyalist College property.
- Unacceptable behavior will result in disciplinary action or appropriate sanctions.
- More information can be found in the "Student Manual".

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**9. Curriculum, Delivery, Learning Plan and Learning Outcomes:**

Course Components/Course Learning Outcomes	Related Elements of Performance	Learning Activities/Assessment/Resources
Apply probability basics.	Define rules for probability and compute factorials, combinations, and	Chapter 4 Excel components will be demonstrated

	permutations.	and practised in the computer lab. Test 1
Classify discrete probability distributions.	Calculate probabilities using the hyper geometric, binomial and poisson distributions.	Chapter 5 Excel components will be demonstrated and practised in the computer lab.
Apply the normal distribution.	Predict the binomial distribution with the normal approximation.	Chapter 6 Excel components will be demonstrated and practised in the computer lab. Test 2
Define sampling distribution.	Examine the central limit theorem and compute the sampling distribution of the mean and the difference between two sample means.	Chapter 7 Excel components will be demonstrated and practised in the computer lab.
Produce interval estimates of population parameters.	Calculate confidence intervals for the population mean, variance and standard deviation.	Chapter 8 Excel components will be demonstrated and practised in the computer lab. Test 3