

## COMPUTER SCIENCE TECHNOLOGY

## MATHEMATICS II

<b>Discipline:</b>	<b>Mathematics</b>	<b>Semester:</b>	<b>Winter 2018</b>
<b>Course Number:</b>	<b>201-813-AB</b>		
<b>Ponderation:</b>	<b>2-1-2</b>	<b>Number of credits:</b>	<b>1.66</b>
<b>Competencies:</b>	<b>Solve enumeration, probability, and statistical problems (016P. 5 , 016P. 6)</b>		
<b>Prerequisites:</b>	<b>None.</b>	<b>This course is not a prerequisite.</b>	

Your teacher will give you all relevant missing information, including class mark breakdown, in a separate handout.

## INTRODUCTION

This course is designed for students of Computer Science Technology, covering probability and statistics. Students will learn how to use statistics software. Topics include permutations and combinations, binomial, normal and Poisson distributions, appropriate statistical measures, interval estimation, and presentation of data (tables and graphs).

**COURSE OBJECTIVES:** Competency 016P. Solve computer-related mathematical and statistical problems.

## Elements of the competency

## Performance Criteria

016P. 5 Solve enumeration problems	<p>5.1 Accurate calculation of the number of permutations in a given context.</p> <p>5.2 Accurate calculation of the number of arrangements in a given context.</p> <p>5.3 Accurate calculation of the number of combinations in a given context.</p>
016P. 6 Solve probability and statistical problems	<p>6.1 Calculation of event probabilities associated with binomial, normal, and Poisson distributions.</p> <p>6.2 Definition of the proper variables for a given situation.</p> <p>6.3 Choice of appropriate units of measure for a given situation.</p> <p>6.4 Choice of appropriate statistical measurements for a given situation.</p> <p>6.5 Choice of an appropriate data presentation mode.</p> <p>6.6 Application of standards for tables and graphs.</p> <p>6.7 Effective use of the features of a statistic software program.</p> <p>6.8 Choice of appropriate sampling methods for a given situation.</p> <p>6.9 Interval estimation to find the mean and the relative frequency for large samples.</p>

## TEACHING METHODS

Classes are a mixture of lecture, discussion and problem-solving. All classes are integral parts of the course. Three hours of homework per week is normal. Generally each class introduces a new topic, followed by worked examples.

Please ask for help as soon as you encounter difficulties in this course. Review your notes regularly. Do your assignments as soon as possible, as the material is fresh in your mind. This also gives you a chance to get help before real (major) problems develop.

## REQUIRED TEXT

Johnson & Kubly: *Just the Essentials of Elementary Statistics*, Cengage Learning, 11<sup>th</sup> custom edition

**COURSE COSTS:** Approximately \$136 for textbook. You also need a calculator with statistical functions (approximately \$20). You are not allowed to use a graphing calculator for tests and the final exam.

## **ATTENDANCE POLICY:**

You should not miss more than 6 classes. If you miss more than 6 classes without valid reasons, you can fail this course, especially if you miss one or more quizzes or tests. The enforcement of this policy is up to your instructor.

## **ASSESSMENT PLAN**

- a) Class Mark: homework, quizzes and tests. Specific weighting to be defined by individual teachers.
- b) Final Exam

**THE FINAL GRADE** will be the better of **a) 50 % class mark and 50 % final exam**  
**OR b) 25 % class mark and 75 % final exam**

Students must be available until the end of the final examination period to write exams.

## **OTHER RESOURCES:**

**Math Department Website:** <http://departments.johnabbott.qc.ca/departments/mathematics/>

**Math Study Area:** Located in H-200A and H-200B; the common area is usually open from 8:30 to 17:30 on weekdays as a quiet study space. Computers and printers are available for math-related assignments. It is also possible to borrow course materials when the attendant is present.

**Academic Success Centre:** The Academic Success Centre, located in H-117, offers study skills workshops and individual tutoring.

## **COURSE CONTENT**

### **1.1-1.4 Statistics**

What Is Statistics?

Basic Terms

Measurability and Variability

Data Collection

Statistics and Technology

### **2.1-2.6 Descriptive Analysis and Presentation of Single-Variable Data**

Pie Graph, Bar Graph, Stem and Leaf

Frequency Distributions and Histograms

Measures of Central Tendency, Measures of Dispersion

Mean and Standard Deviation of Frequency Distribution

Measures of Position

### **4.1-4.6 Probability**

Probability of events, Rules of Probability

Mutually Exclusive Events, Independence

Permutations and Combinations (Teacher's Notes)

### **5.1-5.3, 6.1-6.5, 7.1-7.3 Probability Distributions**

Binomial Distribution, Mean and Standard Deviation of the Binomial

Poisson Distribution (Instructor's notes to supplement text)

Normal and Standard Normal Distributions, Applications

Normal Approximation of the Binomial, Sampling Distributions and Sample Means, Application of Sampling Distribution of Sample Means

### **8.1-8.2 ( Confidence Interval only ), 9.1-9.2 ( Confidence Interval and Sample Size)**

Confidence Interval for Mean

Confidence Interval for Proportion

Determining the Sample Size

Hypothesis Testing (optional if time permits)

## **COLLEGE POLICIES:**

*Policy No. 7 – IPESA, Institutional Policy on the Evaluation of Student Achievement:* <http://johnabbott.qc.ca/ipesa>

### **Changes to Evaluation Plan in Course Outline** (Article 5.3)

Changes require documented unanimous consent from regularly attending students and approval by the department and the program dean.

### **Religious Holidays** (Article 3.2.13 and 4.1.6)

Students who wish to miss classes in order to observe religious holidays must inform their teacher of their intent in writing within the first two weeks of the semester.

### **Student Rights and Responsibilities:** (Article 3.2.18)

It is the responsibility of students to keep all assessed material returned to them and/or all digital work submitted to the teacher in the event of a grade review. (The deadline for a Grade Review is 4 weeks after the start of the next regular semester.)

### **Student Rights and Responsibilities:** (Article 3.3.6)

Students have the right to receive graded evaluations, for regular day division courses, within two weeks after the due date or exam/test date, except in extenuating circumstances. A maximum of three (3) weeks may apply in certain circumstances (ex. major essays) if approved by the department and stated on the course outline. For evaluations at the end of the semester/course, the results must be given to the student by the grade submission deadline (see current Academic Calendar). For intensive courses (i.e.: intersession, abridged courses) and AEC courses, timely feedback must be adjusted accordingly.

### **Academic Procedure: Academic Integrity, Cheating and Plagiarism** (Article 9.1 and 9.2)

Cheating and plagiarism are unacceptable at John Abbott College. They represent infractions against academic integrity. Students are expected to conduct themselves accordingly and must be responsible for all of their actions.

#### **College definition of Cheating:**

Cheating means any dishonest or deceptive practice relative to examinations, tests, quizzes, lab assignments, research papers or other forms of evaluation tasks. Cheating includes, but is not restricted to, making use of or being in possession of unauthorized material or devices and/or obtaining or providing unauthorized assistance in writing examinations, papers or any other evaluation task and submitting the same work in more than one course without the teacher's permission. It is incumbent upon the department through the teacher to ensure students are forewarned about unauthorized material, devices or practices that are not permitted.

#### **College definition of Plagiarism:**

Plagiarism is a form of cheating. It includes copying or paraphrasing (expressing the ideas of someone else in one's own words), of another person's work or the use of another person's work or ideas without acknowledgement of its source. Plagiarism can be from any source including books, magazines, electronic or photographic media or another student's paper or work.