# THE UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF MATHEMATICS & STATISTICS
## Course Information Sheet

| | | | |
|---|---|---|---|
| **Course** | STAT 213: INTRODUCTION TO STATISTICS I | **Session** | Winter 2006 |
| **Lecture** | L12   MWF | **Room** | ENA 103 |
| | 2-2:50 pm | | |
| **Tutorials** | T 4-4:50 pm | **Rooms** | MS 515, MS 521 |
| | W 10-10:50 am | | |
| **Instructor** | Alex R. de Leon | | |
| **Email** | adeleon@math.ucalgary.ca | | |
| **Office** | MS 554 | **Phone** | 220-6782 |
| **Office Hours** | Whenever I'm in my office or by appointment | | |
| **Prerequisites** | Math 30 or Pure Math 30 | | |

**NOTE:** The Faculty of Science policy on pre- and co-requisite checking is outlined on page 193, of the 2005-2006 Calendar. **It is the students' responsibility to ensure that they have the prerequisite for the course, and if they do not, they will be withdrawn from the course without further notice.**

1   **Fee Policy:** After the last day to drop/add courses (**April 13**, Thursday), there will be no refund of tuition fees if a student withdraws from a course, courses or the session.

2   **Grading:** The University policy on grading and related matters is described on pages 43-44 of the 2005-2006 Calendar. In determining the overall grade in the course, the following weights will be used:

| | | |
|---|---|---|
| Mid-term Test | [1] | 15% |
| Quizzes | [4 of 5] | 40 |
| Final Exam | | 45 |

The final examination will be scheduled by the Registrar's Office.

3   **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are outlined on page 194 of the 2005-2006 Calendar. It is the student's responsibility to familiarize himself/herself with these regulations.

A student who missed the midterm test shall have the weight of his/her midterm test transferred to the final test. A student who missed a quiz shall have his/her lowest quiz grade doubled to make up for the missed quiz.

4   **Academic misconduct** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a *zero tolerance policy* regarding dishonesty. Please read the sections of the 2005-2006 University Calendar under the heading "Student Misconduct", pages 52-56.

5   **Required Text:**

*Introduction to the Practice of Statistics* (Fifth Edition)
by Moore, D. S. & McCabe, G. P.
Freeman, 2005.

A website is available at `http://bcs.whfreeman.com/ips5e/default.asp`. The website contains a wealth of useful information and supplementary materials for the course, including sample test questions.

**6**    <u>**Quizzes:**</u> Five 45-minute quizzes will be administered during the Lab Sessions. The course material has been divided into 5 general topics, which will constitute the scope of the five quizzes. Any necessary clarification regarding the topic for a particular quiz will be discussed during the lecture immediately preceding the quiz. The schedule is shown in Table 2.

     Calculators and statistical tables may be used when writing quizzes. However, students are encouraged to use MINITAB provided in the lab computers. The use of any other materials (e.g., books, notes, formula sheets) is not permitted. This includes the use of emails and the Internet.

**7**    <u>**Major Tests:**</u> There will be 1 *mid-term test* to be written during a <u>lecture period</u> and a 2-hour *final examination* to be scheduled by the Registrar. The <u>schedules</u> are displayed in Table 1.

     Calculators may be used for the mid-term test and final examination. A *formula sheet* and necessary statistical tables will be provided for both tests.

**8**    <u>**Tutorials:**</u> Daytime *continuous tutorials* are held Mondays thru Fridays, 11 am-2 pm. The tutorials provide a study space, access to computers with various statistical software packages, and an opportunity for students to receive one-one-one assistance with any aspect of the course from the tutor on duty.

**9**    <u>**Dates to Remember**</u>:

| | |
|---|---|
| January 9, 2006 | *First lecture class* |
| January 17, 2006 | *First lab session* |
| February 13, 2006 | *Mid-Term Test* |
| February 19-26, 2006 | *Reading Week (No Classes)* |
| April 5, 2006 | *Last lab session* |
| April 12, 2006 | *Last lecture class* |
| | *Last day to withdraw from Winter Session classes* |

**10**    <u>**Tentative Course Outline:**</u> The schedule of lectures and the breakdown of course material are shown in Table 1. Table 2 shows the plan for the lab/tutorial sessions.

**11**    **Supplementary Course Materials:** *Worksheets* will be made available. Worksheets are a selection of relevant problems from the textbook concerning the topic. The textbook may be purchased with the MINITAB software and a manual to go with it. A *Sample Mid-Term Test* and a *Sample Final Examination* will be provided as well. Please visit the course blackboard for announcements regarding these.

     Solutions to the worksheets and quizzes/tests will be posted on the course blackboard.

Table 1: *Tentative STAT 213 L12 Course Outline*

| Lecture | Date | Readings | Topics |
|:---:|:---:|:---:|:---:|
| 1 | M Jan 9 | — | Preliminaries |
| 2 | W Jan 11 | § 1.1 | Variables, histograms, boxplots |
| 3 | F Jan 13 | § 1.2 | Data summaries, averages, dispersion measures |
| 4 | M Jan 16 | § 1.2 | More on data summaries |
| 5 | W Jan 18 | § 1.3 | Normal distributions, normal tables |
|  | F Jan 20 | § 1.3 | More on normal table calculations |
| 6 | M Jan 23 | § 2.1,2.2 | Scatterplots, correlations |
| 7 | W Jan 25 | § 2.3,2.4 | Least-squares regression |
|  | F Jan 27 | § 2.1-2.4 | More on regression & correlation |
| 8 | M Jan 30 | § 3.1,3.2 | Data collection, randomized experiments |
| 9 | W Feb 1 | § 3.3 | Random sampling |
| 10 | F Feb 3 | § 4.1,4.2 | Randomness, probability |
| 11 | M Feb 6 | § 4.2 | Examples on probability calculation |
| 12 | W Feb 8 | § 4.3 | Random variables (RVs) |
| 13 | F Feb 10 | § 4.4 | Means & variances of RVs |
|  | M Feb 13 | | **Midterm Test** |
|  | W Feb 15 | § 4.4 | More on expectations of random variables |
| 14 | F Feb 17 | § 4.5 | Conditional probability, Bayes' rule |
| | | **Feb 19-26: READING WEEK** | |
|  | M Feb 27 | § 4.5 | More on Bayes' rule |
| 15 | W Mar 1 | § 3.4 | Sampling distributions, bias & variability |
| 16 | F Mar 3 | § 5.2 | Central limit theorem (CLT), law of large numbers |
|  | M Mar 6 | § 5.2 | Applications of CLT |
| 17 | W Mar 8 | § 5.1 | Sampling distribution of proportions |
|  | F Mar 10 | § 5.1 | More on sample proportions |
| 18 | M Mar 13 | § 6.1 | Estimation, confidence intervals |
|  | W Mar 15 | § 6.1 | More on confidence intervals |
|  | F Mar 17 | § 6.1 | Examples on confidence intervals |
| 19 | M Mar 20 | § 6.2 | Tests of significance |
|  | W Mar 22 | § 6.2 | More on significance tests |
|  | F Mar 24 | § 6.3 | Statistical significance |
| 20 | M Mar 27 | § 6.4 | Power of tests, Types I & II errors |
| 21 | W Mar 29 | § 6.2 | $z$-tests, examples |
| 22 | F Mar 31 | § 7.1 | $t$-distribution, $t$-tables |
|  | M Apr 3 | § 7.1 | $t$-tests & confidence intervals |
|  | W Apr 5 | § 7.1 | Examples on $t$-tests |
| 23 | F Apr 7 | § 7.1 | Robustness of $t$-tests & confidence intervals |
|  | M Apr 10 | § 5.6 | More examples |
| 24 | W Apr 12 | § 5.4 | Course wrap-up |

Table 2: *STATISTICS 213 L12 Tentative Lab Session Plan*

| Lab Session | Dates | Topics |
| --- | --- | --- |
| 1 | T Jan 17 | Intro to MINITAB |
| | W Jan 18 | Intro to MINITAB |
| 2 | T Jan 24 | Worksheet 1 |
| | W Jan 25 | Worksheet 1 |
| 3 | T Jan 31 | **Quiz 1** |
| | W Feb 1 | **Quiz 1** |
| 4 | T Feb 7 | Worksheet 2 |
| | W Feb 8 | Worksheet 2 |
| 5 | T Feb 14 | **Quiz 2** |
| | W Feb 15 | **Quiz 2** |
| 6 | T Feb 28 | Worksheet 3 |
| | W Mar 1 | Worksheet 3 |
| 7 | T Mar 7 | **Quiz 3** |
| | F Mar 8 | **Quiz 3** |
| 8 | T Mar 14 | Worksheet 4 |
| | W Mar 15 | Worksheet 4 |
| 9 | T Mar 21 | **Quiz 4** |
| | W Mar 22 | **Quiz 4** |
| 10 | T Mar 28 | Worksheet 5 |
| | W Mar 29 | Worksheet 5 |
| 11 | T Apr 4 | **Quiz 5** |
| | W Apr 5 | **Quiz 5** |