

COURSE OUTLINE

SUMMER 2013

1. Course ID and number, Course Title: Statistics 211 – Concepts of Statistics

<u>Lec</u>	<u>Day</u>	<u>Time</u>	<u>Instructor</u>	<u>Office</u>	<u>Phone</u>	<u>Email</u>
L60	MWF	12:00	S. Robison	MS 334	220-5046	sarobiso@ucalgary.ca
T60	MW	14:00	W. Zhong	MS 370	220-6326	zhongw@ucalgary.ca
T61	MW	14:00	N. Afzal	MS 378	220-6767	nafzal@ucalgary.ca

Blackboard course name: S2013STAT211L60

2. Prerequisites: Pure Mathematics 30 or equivalent

(see Section 3.5C of Faculty of Science www.ucalgary.ca/pubs/calendar/current/sc-3-5.html and Course Descriptions: www.ucalgary.ca/pubs/calendar/current/course-desc-main.html)

3. Grading: The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course, the following weights will be used:

<i>Quizzes</i>	[Best 3 of 4]	30 %
<i>Midterm Test</i>	[1]	20 % (Friday July 26, 2013.)
<i>Final Exam</i>		50 % (To be scheduled by the Registrar)

Each piece of work submitted by the student will be assigned a percentage score. The average percentage score for each item of a term component will be combined with its course component weighting listed above to form a weighted average which is to be the final score in the course. This final score, a percentage out of 100, will then be converted to a letter grade using the following conversion table:

A ±	B ±	C ±	D ±	F
≥ 90%	≥ 75%	≥ 60%	≥ 50%	< 50%

As noted in the Calendar, this conversion table could be adjusted, but only if the grades of the students will not be lowered.

A passing grade in the Final Examination is essential for an overall grade of C- or better.

4. Missed Components of Term Work. The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in section 3.6: www.ucalgary.ca/pubs/calendar/current/sc-3-6.html. It is the student's responsibility to be familiar with these regulations. See also www.ucalgary.ca/pubs/calendar/current/e-3.html.

5. There will be no out-of-class activity. REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME ACTIVITY. If you have a conflict with any out of class time activity, please inform your instructor at least one week in advance of the activity so that other arrangements may be made for you.

6. Textbook: Statistics, Fourth Edition, by Freedman, Pisani and Purves, W.W. Norton & Co. Publication.

7. Examination Policy: The Midterm exam and quizzes are closed book. Calculators are permitted only for arithmetic calculations. Tables will be provided. No other materials are permitted. The final exam will endeavor to simulate a "real world" experience and will be open resource (details to follow). Students should also read the Calendar, Section G, on Examinations: www.ucalgary.ca/pubs/calendar/current/g.html

8. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **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 University Calendar under K. Student Misconduct (<http://www.ucalgary.ca/pubs/calendar/current/k.html>) to inform yourself of definitions, processes and penalties.
- (b) **ASSEMBLY POINTS** in case of emergency during class time. Be sure to **FAMILIARIZE YOURSELF** with the information at <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- (c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links: Calendar entry on students with disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html>
Disability Resource Centre: <http://www.ucalgary.ca/drc/>
- (d) **SAFEWALK:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call **220-5333** for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **FREEDOM OF INFORMATION AND PRIVACY:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, **students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page.** For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **STUDENT UNION INFORMATION:** VP Academic **Phone:** 220-3911 **Email:** suvpaca@ucalgary.ca.
SU Faculty Rep. **Phone:** 220-3913 **Email:** sciencerep@su.ucalgary.ca **Website** <http://www.su.ucalgary.ca/>
Student Ombudsman: <http://www.ucalgary.ca/provost/students/ombuds>
- (g) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

9. Academic Schedule

July 2	Tuesday	Lectures begin
July 4	Thursday	Last day to register, add courses or change registration status in Summer term courses. No fee refunds for withdrawals after this date.
July 26	Friday	Midterm examination
August 5	Monday	Alberta Heritage Day – No lectures.
August 14	Thursday	Last day of lectures. Last day to withdraw from Summer session courses.
August 15-17	Thursday-Saturday	Final Examination Period

10. Quiz Schedule

July 15	Monday	Quiz 1
July 22	Monday	Quiz 2
July 31	Wednesday	Quiz 3
August 12	Monday	Quiz 4

11. Calculators

Basic calculators will be allowed for quizzes and for the midterm examination for arithmetic calculations (i.e. to +, -, \div , \times , $\sqrt{\quad}$). Programmable and graphing calculators are not allowed during these examinations.

12. Examinations

Quizzes:

Quizzes **must** be written in the tutorial room to which you are assigned. They are closed book. Statistical tables will be provided. No formula sheet will be allowed.

Midterm Examination:

The midterm examination will be written in class, in the regular classroom. It will be closed book. Statistical tables will be provided. No formula sheet is allowed.

Final Examination:

The final examination will be scheduled by the Registrar's Office at some time during the Final Examination Period. It will be two hours long. It is open resource (details to follow).

13. Attendance

It is very important to attend all lectures and tutorials, as this course, like other mathematics and statistics courses, makes use of earlier material in the later chapters. Do not fall behind in this class.

14. Course Content

Part I.	Design of Experiments Chapter 1. Controlled Experiments Chapter 2. Observational Studies
Part II.	Descriptive Statistics Chapters 3-6. Histogram, Averages, Standard Deviation, Normal, Measurement Error.
Part IV.	Probability Chapters 13-15. Chance, Binomial
Part V.	Chance Variability Chapters 16-18. The Law of Averages, Expected Value, Normal Approximation to Probability Histograms.
Part VI.	Sampling Chapters 19-21, 23. Sample Surveys, Chance Error in Sampling, The Accuracy of Percentages and Averages.
Part VII.	Chance Models

Chapter 24.	Model for Measurement Error	
Part VIII.	Test of Significance Chapters 26, 27 (sections 1 & 2), 28, 29.	Tests of Significance, including the t-Test, Chi-square Test
Part III.	Correlation and Regression Chapters 8, 9, 10 (sections 1-4).	

15. Support Materials

- Worksheets:** On non-quiz tutorials, Worksheets will be provided, with problems to work on and go over during the tutorial class. It is very important to attend these tutorials. Solving the questions on the Worksheets is an important part of preparing for the quizzes and examinations.
- Solution Manual:** The text has solutions to exercises included in the Chapters, except for the Review Exercises and the Special Review Exercises. Complete and detailed solutions to most of the Review and Special Review Exercises are available for purchase from Bound and Copied in the MacEwan Student Centre.
- Blackboard:** Course Announcements, including information indicating the topics to be covered on quizzes, will be placed on Blackboard. The Course Content section gives additional notes, special helps, sketches and diagrams. Additional Exercises which will be covered in class are also shown.

16. Other Help

I will be available during office hours TBA (we will discuss in class what times work) you must make an appointment 12hrs in advance (See me after class or send an email to book).

17. Nature of the Course

There are some mathematical aspects to this course, but the emphasis will not be on proofs and memorization of formulas. Rather, the emphasis will be on understanding concepts and real life applications, the models that underlie statistical inference and thinking about statistical issues. Examples show how statistics has been used to help solve problems in many fields.

Some quotes for you to consider:

- ``Statistics is like a bikini....what it reveals is suggestive but what it conceals is vital." - Peter von Zahn
 ``Smoking is one of the leading causes of Statistics." - Fletcher Knebel

18. Exercises for "Statistics", Fourth Edition, by Freedman, Pisani and Purves

Read Chapters 1 & 2	Exercise Set A, page 20	#1 - 7, 9, 10, 13, 14
	Review Exercise , page 24	#1, 3 - 5, 9, 10
Read Chapter 3	Exercise Set A, page 33	#1 - 4, 7, 8
	Exercise Set B, page 38	#1, 2
	Exercise Set C, page 41	#1, 2, 4
	Exercise Set D, page 44	#1
	Exercise Set E, page 46	#1
	Review Exercise , page 50	#2, 4, 5, 7, 9

Read Chapter 4	Exercise Set A, page 60	#2, 4 - 6, 8
	Exercise Set B, page 65	#1 - 5
	Exercise Set C, page 67	#2, 3, 5
	Exercise Set D, page 70	#3 - 6, 8
	Exercise Set E, page 72	#1, 3 - 5, 8, 11, 12
	Review Exercise , page 74	#4, 6 9
Read Chapter 5	Exercise Set A, page 82	#2
	Exercise Set B, page 84	#1, 4
	Exercise Set C, page 88	#2
	Exercise Set D, page 89	#5
	Exercise Set E, page 92	#1, 2
	Review Exercise , page 93	#1, 2, 4, 5, 8, 9, 11
Read Chapter 6	Review Exercise , page 104	#3, 4
	Special Review Exercises , page 105	#2, 3, 6, 9, 10
Read Chapter 13	Exercise Set A, page 225	#1 - 3, 5
	Exercise Set B, page 227	#1 - 4
	Exercise Set C, page 229	#1 - 4, 7
	Exercise Set D, page 232	#1, 3, 5
	Review Exercise , page 234	#2, 3, 5 - 7, 12
Read Chapter 14	Exercise Set A, page 240	#3, 4
	Exercise Set B, page 242	#2 - 6
	Exercise Set C, page 246	#1 - 5
	Exercise Set D, page 250	#3 - 5
	Review Exercise , page 252	#3 - 8, 12
Read Chapter 15	Exercise Set A, page 258	#3 - 5
	Review Exercise , page 261	#2, 4, 9, 10
Read Chapter 16	Exercise Set A, page 277	#1 - 7
	Exercise Set B, page 280	#2, 4, 6
	Exercise Set C, page 284	#1, 2
	Review Exercise , page 285	#1 - 7
Read Chapter 17	Exercise Set A, page 290	#1, 3, 4
	Exercise Set B, page 293	#1, 3, 4, 6
	Exercise Set C, page 296	#3 - 6
	Exercise Set D, page 299	#3
	Exercise Set E, page 303	#2, 5, 7
	Review Exercise , page 304	#2, 4, 5, 11, 13
Read Chapter 18	Exercise Set A, page 312	#2, 3, 5
	Exercise Set B, page 318	#2, 3, 6
	Exercise Set C, page 324	#2, 5, 6
	Review Exercise , page 327	#2, 4, 9, 11
Read Chapter 19	Exercise Set A, page 349	#4, 5, 8, 12
	Review Exercise , page 351	#2, 5, 9
Read Chapter 20	Exercise Set A, page 361	#2, 4
	Exercise Set B, page 366	#1, 2, 4
	Exercise Set C, page 370	#1, 2, 3
	Review Exercise , page 371	#3, 6, 7, 12

Read Chapter 21	Exercise Set A, page 379	#4, 7, 8	
	Exercise Set B, page 383	#2, 3	
	Exercise Set C, page 386	#4 – 7	
	Exercise Set D, page 388	#2	
	Exercise Set E, page 390	#2	
	Review Exercise , page 391	#2, 5, 7, 10	
Read Chapter 23	Exercise Set A, page 413	#4, 5, 9	
	Exercise Set B, page 420	#2, 4, 5, 7	
	Exercise Set C, page 423	#2, 3, 6	
	Exercise Set D, page 424	#1, 2, 6	
	Review Exercise , page 425	#1 - 5	
	Special Review Exercises , page 428	#1, 5, 6, 13, 18, 20, 26, 30	
Read Chapter 24	Exercise Set A, page 444	#3, 4	
	Exercise Set B, page 449	#2, 5	
	Exercise Set C, page 452	#1, 4, 7	
	Review Exercise , page 455	#1, 2, 9	
Read Chapter 26	Exercise Set A, page 476	#2 - 5	
	Exercise Set B, page 478	#5	
	Exercise Set C, page 481	#1, 2, 4	
	Exercise Set D, page 482	#1, 2, 3	
	Exercise Set E, page 486	#7 – 9	
	Exercise Set F, page 494	#4 – 7	
	Review Exercise , page 495	#2, 5, 6, 8, 9	
Read Chapter 27 - Sections 1 & 2	Exercise Set A, page 503	#6	
	Exercise Set B, page 506	#2	
Read Chapter 28	Exercise Set A, page 531	#3 - 6	
	Exercise Set C, page 539	#2, 3	
	Review Exercise , page 540	#2, 3, 7	
Read Chapter 8	Exercise Set A, page 122	#5, 6	
	Exercise Set B, page 128	#1, 7, 8	
	Exercise Set C, page 131	#3	
	Exercise Set D, page 134	#1 (a)	
	Review Exercise , page 134	#1, 4, 5, 7	
Read Chapter 9	Exercise Set A, page 143	#2 - 5, 7	
	Exercise Set B, page 145	#3	
	Exercise Set C, page 148	#1	
	Exercise Set D, page 149	#2	
	Exercise Set E, page 152	#3	
	Review Exercise , page 153	#2, 4, 7, 8	
Read Chapter 10 Sections 1 – 4	Exercise Set A, page 161	#2, 3, 4	
	Exercise Set B, page 163	#1	
	Exercise Set C, page 167	#1, 2	
	Exercise Set D, page 174	#1, 2, 3	
	Review Exercise , page 176	#2, 4(a), 5, 7	

