CAMOSUN COLLEGE
School of Arts & Science
Department of Mathematics & Statistics

STAT-216 002
Applied Statistics
Winter 2019

COURSE OUTLINE

The course description is available on the web @ http://camosun.ca/learn/calendar/current/web/stat.html

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

1. Instructor Information

(a)	**Instructor**	Bree Wilton
(b)	**Office hours**	Mon, Tues, Thurs, Fri 11:30-12:20, Wed 1:30-2:20
(c)	**Location**	E246
(d)	**Phone**	250-370-3471
(e)	**E-mail**	wiltonb@camosun.bc.ca
(f)	**Website**	online.camosun.ca

2. Intended Learning Outcomes

Upon completion of this course a student will be able to:

1. Use descriptive statistical methods to display and describe distributions of data
2. Apply basic properties and concepts of probability to solve practical problems.
3. Use inferential statistical techniques to estimate and test hypotheses about parameters in both one population and two populations scenarios.
4. Conduct elementary regression analysis to solve real life problems.
5. Use Analysis of Variance (ANOVA) to make inferences about multiple populations.
6. Apply basic categorical data analysis techniques to solve practical problems.
7. Use statistical software (such as R) to perform basic statistical data analyses.

3. Required Materials

1. Textbook: *Introductory Statistics A Problem Solving Approach* by Kokoska, 2e.
You may buy the textbook from the bookstore either
- In hard cover format.
- Or in loose-leaf format.
- Or in etext format online.

2. Lab Tutorials: Available on D2L.

3. **Sharp EL-531 Scientific Calculator**. *No other calculators are allowed for tests and the final examination.*

4. Course Content and Schedule

An Introduction to Statistics and Statistical Inference	1.1 – 1.3
Tables and Graphs for Summarizing Data	2.1 – 2.4
Numerical Summary Measures	3.1 – 3.4
Probability	4.1 – 4.5
Random Variables and Discrete Probability Distributions	5.1 – 5.5 (Poisson only)
Continuous Probability Distributions	6.1 – 6.3
Sampling Distributions	7.1 – 7.3
Confidence Intervals Based on a Single Sample	8.1 – 8.4
Hypothesis Tests Based on a Single Sample	9.1 – 9.6
Confidence Intervals and Hypothesis Tests Based on Two Samples	10.1 – 10.4
Categorical Data and Frequency Tables	13.1 – 13.2
The Analysis of Variance	11.1
Correlation and Linear Regression	12.1 – 12.4

R Labs: This course includes 7 lab sessions. You will need the lab tutorial for each lab. The lab tutorials are available on our D2L course page. The labs are designed to familiarize you with the use of a computer as a tool for statistical analysis. The computer software we use is R. Each lab session includes a lab assignment to be submitted for marking. Lab assignments must be handed in by **2:00pm** on the due date. Late labs will be accepted with a penalty of 20% per day until the on time lab assignments have been handed back, after which I will no longer accept them. There will be a lab final exam in the last week of classes.

Homework Assignments: There will be **online** homework assignments to cover basic concepts as well as a few questions from the later chapters to be handed in. The deadline for online homework assignments is **2:00pm.** Hand in questions are also due by **2:00pm** on the due date. Late hand-in assignments will be accepted with a penalty of 20% per day until the on time hand-in assignments have been handed back, after which I will no longer accept them. Late online assignments will not be accepted unless there is a documented medical or compassionate reason. There will also be a set of suggested problems from the textbook. In order to get a full understanding of the course materials **you need to do both sets of homework**.

Attendance: Showing up to class is the easiest and most important thing you can do to help succeed the course. Keeping up is an essential part of any statistics course as much of the material builds on itself**.** If you feel yourself falling behind at any point during the term, then please do not hesitate to come speak to me.

Math Lab: Math lab **E224** is staffed with math tutors available for **free** help. It is a great idea to do your homework there and get help whenever needed.

Missed Test Policy: Students are expected to make every reasonable effort to write the test at the scheduled time. **A missed test usually counts as a 0**, so if for any reason it appears that you may miss a test,
- **before the test**, talk with the instructor about missing the test, unless an unforeseen emergency makes this impossible, in which case leave a comprehensive message.

- assuming that you qualify for a missed test (for instance, medical or compassionate leave), the weight of the test will be moved to the final exam. There will not be any rewrites of tests.

Please inquire if you have any questions or concerns about your particular situation.

Desire2Learn (D2L)
This class has the assistance of D2L, an online course management system. Many course related materials will be available on D2L. It is your responsibility to subscribe to the *notifications on D2L* or check it regularly.

5. Basis of Student Assessment (Weighting)

Assignments (online and hand in)	9%
Labs	5%
Tests (50 min each)	36%
Lab Final	10%
Cumulative Final Exam (3 hrs)	40%

Tentative Test Dates: Feb 4, Mar 4, and Apr 4
Please refer to **D2L** for *lab due dates.*

Final examinations will be scheduled by the college and they will take place during April 15th – 18th and April 23rd - 26th. You must be available to write the final examination at the scheduled time. Holidays or scheduled flights are not considered to be emergencies.

6. Grading System

X Standard Grading System (GPA)

☐ Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

Suggested problems from the text (see end of this document), MyOpenMath assignments, materials found on D2L.

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS http://camosun.ca/about/policies/index.html

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

Suggested Problems in the Textbook	
Section	Numbered Problems
1.2	1-15 odd
1.3	21, 23, 27-31 odd, 35, 37
Chpt 1	41, 45, 47, 51ab, 53
2.1	1-13 odd
2.2	19, 21, 25, 27
2.3	45, 47, 49, 53, 55
2.4	69-81 odd, 87, 89
Chpt 2	97, 105, 109
3.1	2 not d,e, 3-9, 13-15 odd, 25, 27ab
3.2	33-37 odd, 41-49 odd
3.3	69-73 odd, 77, 79, 81, 85, 87
3.4	97-109 odd
Chpt 3	119, 121
4.1	1-11 odd, 15-23 odd, 29
4.2	39-49 odd, 53, 55, 57, 61
4.3	73-81 odd, 85, 89, 95
4.4	109-113 odd, 119-125 odd
4.5	137, 139, 141b-d, 147-151 odd, 157, 159
Chpt 4	173, 179, 181, 183
5.1	3, 7, 9, 13, 15, 17
5.2	21, 25, 29, 33, 35, 37
5.3	45, 47, 53, 55a, 57a-c, 59ab
5.4	71-81, 87, 89, 93, 95
5.5	109, 115, 119ab, 121a-c, 125, 129
Chpt 5	139, 145a-c, 147ab, 149, 151ab
6.1	1-7 odd, 13, 15a-c
6.2	27-37 odd, 43, 45, 51a-c, 55d
6.3	72
Chpt 6	107ab, 111ab, 115, 119
7.1	1, 3, 9, 11
7.2	27-33 odd, 37, 39, 41a-c 43, 47ab, 49ab
7.3	61, 65, 67, 71, 73a-c, 75ab, 79
Chpt 7	91ab, 93, 95, 97, 99a-c, 101
8.1	1-7 odd, 11, 13
8.2	19-23 odd, 27, 29, 31, 37, 39, 43
8.3	55-61 odd, 67ab, 69, 73, 75, 79
8.4	91-99 odd, 103, 107, 109, 111, 115
Chpt 8	157, 159a,c, 161, 163, 167, 169
9.1	1-15 and 19-31 odd
9.3	57, 61-65 odd, 69, 71a-d, 75-79, 83-87 odd
9.4	99, 103-107 odd, 113, 115, 119
9.5	125-129 odd, 135-139 odd, 143-149 odd
9.6	167, 169, 171, 177-191 odd
9.2	33-35 odd, 37a-c, 41, 43, 45
Chpt 9	233, 237ab, 239, 243, 247
10.1	3- 11 odd, 15-23 odd
10.2	37, 43b, 45, 49, 51, 53 assuming unequal variance for all
10.3	67, 73, 76, 79
10.4	97, 99, 103, 109, 111, 113, 115, 117
Chpt 10	153, 163
13.1	1-7 odd, 11-21 odd
13.2	33-39 odd, 43-51 odd
Chpt 13	59, 61, 63, 65, 67,
11.1	1, 3, 11(not b), 13,15, 25
Chpt 11	89, 103
12.1	9, 11, 13ab, 25(no plot), 31a
12.2	39, 47a(no ANOVA)c-e, 61c (no plot)
12.4	89, 91, 95, 97