BUEC 333: Study Questions for the Final Exam

1. All study questions for the midterm
2. All assignments
3. Studenmund Ch1, Questions: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
4. Studenmund Ch2, Questions: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13
5. Studenmund Ch3, Questions: 1, 2, 3, 5, 8, 9, 10
6. Studenmund Ch4, Questions: 1, 2, 3, 4, 5, 7, 9, 10, 11
7. Studenmund Ch5, Questions: 1, 2, 3, 6, 8, 9, 10, 11, 13, 14
8. Studenmund Ch6, Questions: 1, 2, 3, 4, 6, 11, 12, 13, 15, 16
9. Studenmund Ch7, Questions: 1, 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16a-f
10. Studenmund Ch8, Questions: 1ab, 2, 3, 5, 6, 7, 8, 9, 10, 11, 13, 15
11. Studenmund Ch9, Questions: 1, 2, 5abce, 7, 8, 9, 11, 13, 14a-d, 15
12. Studenmund Ch10, Questions: 1, 2, 4, 9, 10, 11, 12, 14, 15

13. Suppose that on any given trading day, a stock's price can increase, decrease, or remain unchanged. Likewise, on any given day, the weather can be sunny or cloudy. You have the following information about the joint distribution of weather and stock price changes:

	Price Decreases	Price Unchanged	Price Increases
Sunny Weather	3/20	3/10	
Cloudy Weather	1/10	1/5	1/10

    a. What is the joint probability of sunny weather and a price increase?
    b. If the average price increase is $1 and the average price decrease is $1, what is the expected price change on any given day?
    c. It is sunny today. What is the probability of a price increase?
    d. Explain the difference between your answer to part a and your answer to part c.
    e. What can you say about the relationship between weather and stock price changes? Explain.

14. Suppose $Y_i = \alpha + \beta X_i + \varepsilon_i$ and that $\varepsilon_i = u_i + v_i + kX_i$
    a. Assume *k=0*, and that *u* and *v* are each distributed as *standard normals*. What is the distribution of ε_i ? Would an OLS regression of *Y* on *X* yield unbiased estimates of the marginal effect of *X* on *Y*? Would the estimated coefficient be efficient?
    b. Assume *k=0*, and that *u* is distributed as a normal with mean *0* and variance *2X*, and that *v* is distributed as a *standard normals*. Would an OLS regression of *Y* on *X* yield unbiased estimates of the marginal effect of *X* on *Y*? Would the estimated coefficient be efficient?
    c. Assume *k=1*, and that *u* and *v* are each distributed as *standard normals*. Would an OLS regression of *Y* on *X* yield unbiased estimates of the marginal effect of *X* on *Y*? Would the estimated coefficient be efficient?

d. Assume *k=0*, and that *u* is distributed as a *standard normal*, and that *v* is distributed as a normal with mean *X* and variance *1*. Would an OLS regression of *Y* on *X* yield unbiased estimates of the marginal effect of *X* on *Y*? Would the estimated coefficient be efficient?

e. Assume that *k, u* and *v* are all distributed as a coin-flip with 50% probability of being *-1* and 50% probability of being *1*. Would an OLS regression of *Y* on *X* yield unbiased estimates of the marginal effect of *X* on *Y*? Would the estimated coefficient be efficient?

15. Suppose $Y_i = \alpha + \beta X_i + \varepsilon_i$ and that $\varepsilon_i = u_i + 0.25*(\varepsilon_{i-2} + \varepsilon_{i-1} + \varepsilon_{i+1} + \varepsilon_{i+2})$ and that *u* is distributed as a standard normal. Would an OLS regression of Y on X yield unbiased estimates of the marginal effect of X on Y? Would the estimated coefficient be efficient? Would the OLS variance of the estimated coefficient be correct? If not, how could you obtain the correct variance? Could you improve on this estimator to get a lower variance estimate of the coefficient?
16. Suppose $Y_i = \beta_0 + \beta_1 X_i + \beta_2 W_i + \varepsilon_i$ and $X_i = \alpha_1 Z_i + k u_i$ *and* $W_i = \alpha_2 Z_i + k v_i$ and that *Z,u,v* and ε_i are distributed as standard normals. What is the covariance of *X* and *W*? What values of the parameters result in a perfect multicollinearity problem. What values of the parameters would result in "some" multicollinearity that might frustrate a regression of *Y* on *X* and *W*? Suppose that the covariance of *u* and ε_i were nonzero (in this case, they would not be standard normals, they would be correlated normals). Would this cause a problem?
17. Consider the following cross-tab of age and Employment Equity Group for Canadian-born people aged 25-64 with nonmissing wages>100 in Vancouver (AGEGRP is coded as in the data codebook; EEGROUP is 1=white 2=vismin 3=aboriginal) :

		AGEGRP								
Count		9	10	11	12	13	14	15	16	Total
	1	1526	1557	1600	1670	1774	1554	1213	622	11516
EEGROUP	2	463	274	201	139	116	49	33	20	1295
	3	67	70	51	68	55	43	31	20	405
	Total	2056	1901	1852	1877	1945	1646	1277	662	13216

Does knowing EEGROUP tell you anything about age? Are age and EEGROUP correlated? What does this mean? Define a dummy variable called Aboriginal equal to 1 if EEGROUP=3. Do age and Aboriginal have nonzero covariance? Suppose we ran a regression of wages on dummies for EEGROUP and a single variable called age which gives the age of the person. Would this regression suffer from a multicollinearity problem?

18. Consider the following table of means of wages by sex and Employment Equity Group for Canadian-born people aged 25-64 with nonmissing wages>100 in Vancouver

Descriptive Statistics for WAGES
Categorized by values of SEX and EEGROUP
Date: 11/16/10 Time: 10:19
Sample: 1 56529 IF AGEGRP>8 AND AGEGRP<17 AND WAGES>100 AND CITIZEN=1 AND WAGES<8000000
Included observations: 13216

Mean	

Std. Dev.		EEGROUP			
Obs.		1	2	3	All
	1	38514.30	39734.27	31705.19	38399.38
		30035.05	31343.37	30444.25	30200.86
		5660	626	222	6508
SEX	2	64043.52	53484.13	40185.79	62339.55
		78405.27	65537.10	29223.81	76427.61
		5856	669	183	6708
	All	51496.16	46837.48	35537.17	50550.61
		61089.95	52335.55	30159.74	59640.09
		11516	1295	405	13216

Are wages independent of EEGROUP? What is the conditional mean of wages given EEGROUP? Are wages homoskedastic over EEGROUP and SEX? Are wages homoskedastic over EEGROUP given SEX? Suppose we regress wages on a constant, 2 dummies for EEGROUP and a dummy for male: would this regression be misspecified in terms of its functional form? If so, how so? Is this regression misspecified in terms of the variables included? Suppose we ran a regression of wages on a constant, 2 dummies for EEGROUP, a dummy for male and 2 interaction terms between EEGROUP and male. What would the coefficients be in this estimated regression?