

CBE 31358 Junior Lab

Statistics Quiz # 2

Due in class on 3/11/11

Note: This is open book and open notes, however  
**don't** discuss this quiz with your classmates!

Answer the following questions with a **MATLAB PROGRAM** . Turn in both your source code and your output. (Yes, I know you can do it using excel or a calculator, but I want you to get used to using matlab. Besides, it's easier...)

The heights and weights of ND's current football team are given below (units of inches and pounds). Using this information, answer the following questions:

- 1) The BMI is defined as  $703 \times \text{Weight} / \text{Height}^2$  in units of pounds and inches. Calculate the BMI of each football player, and compute the average BMI and the sample standard deviation.
- 2) Calculate the mean height and weight of the football players.
- 3) Calculate the variances and covariance of the heights and weights.
- 4) Using just the means of heights and weights, and the variances and covariance (e.g., the results of 2 and 3), estimate the average and standard deviation of the BMI (use the error propagation formula here!). Compare these results to what you get from problem 1.
- 5) Repeat problem 4, now making the really bad approximation that the weights and heights are independent (e.g., assuming that the covariance is zero) and compare your answer for the standard deviation of the BMI. This is why covariance matters in error calculations!

PS: Cut and paste works a lot better than typing these in!

HT	WT
70	205
71	235
73	192
74	220
75	295
74	248
73	240
74	210
75	301
77	290
73	195
72	195

74	215
76	235
76	280
77	297
78	242
75	235
68	160
75	260
74	247
75	227
75	230
70	188
74	211
71	190
74	195
76	235
75	283
75	207
71	190
70	230
73	185
70	186
77	250
74	218
72	198
74	275
71	245
72	172
76	285
71	187
76	225
75	200
76	283
69	180
77	290
79	289
74	225
76	290
76	215
74	205
74	238
76	215
73	239
74	210
74	191
74	245
72	300
80	303
75	350

77	297
76	290
74	227
73	246
71	185
72	235
72	232
76	245
69	175
74	210
71	198
72	218
77	295
69	165
77	292
78	265
73	176
70	180
76	245
70	177
74	243
74	232
72	195
75	234
76	208
74	214
73	215
74	225
77	351
72	290
78	236
72	190
74	245
69	175
71	196
75	251
75	210
75	198
72	190
75	310
76	240
76	298
73	285
74	305
72	210
70	178