BOOK ERRATA –

Foundational and Applied Statistics for Biologists using R

2nd printing, 1st edition

updated 1/12/2026

Chapter 1

1. Page 19, Q 10. *reductio~~n~~ ad absurdum*

Chapter 2

1. Page 31. The upper bound to the probability of an intersection ~~occurs under independence~~ will equal the probability of the event with the smallest marginal probability: min(P(A), P(B), …, P(k)).

2. Page 47, Q 31d. Given results in (b~~e~~) and (c~~d~~) ….

Chapter 3

1. Page 70, Example 3.7. Recently, ~~88~~ 120 goats were randomly sampled from the GYE…

2. Pg. 93. The mean of a geometric distribution is $(1 - \pi)/\pi$, not $1/\pi$ (Thanks to Dr. Brian Parker, New York University)

3. Pg. 98, Q. 13.
   … for negative binomial dispersion parameter ~~*m*~~ *k* and mean ~~*k*~~ *m*.

4. Pg. 98, Q. 13 part e.
   `Lambda.hat <-` ~~`mean(Leaf.obs)`~~ `mean(rep(Mites.per.leaf, Leaf.obs))`

Chapter 4

1. Pg. 144. Q. 8. In the table, *X* should be replaced with *x*.

2. Pg. 146 Q. 29. "Let $X \sim N(2,4)$, ~~and let~~ $Y \sim N(3,2)$, and assume that *X* and *Y* are independent."

3. Pg. 146. Q. 30. To the end of the paragraph describing the problem, the following statement should be added: "Assume *J* and *B* are independent."

Chapter 5

1. Pg. 193. Q. 1. To the end of the paragraph describing the problem, the following statement should be added: "Assume *J* and *B* are independent."

2. Pg. 194. Q. 7. To the end of the sentence describing the problem, the following statement should be added: "Assume random variables are independent, and that H_0 is true for (d) and (e)."

Chapter 6

1. Page 216. An error occurs in the worked example for *MSE* and *t**.
   The example *currently* reads:

$$t^* = \frac{(0.114 - 0.099) - 0}{0.0171\sqrt{2/34}} = 2.4607$$

   It should be changed to read:

$$t^* = \frac{(0.114 - 0.099) - 0}{0.0171\sqrt{3/34}} = 2.4607$$

2. Page 223. She wants to use $\alpha = 0.05$ and 1 - $\beta = 0.8$.
3. Page 223.
   Replace:

$$n = \frac{(1.645 - 0.842)^2 100}{(-5 - 0)^2} = 24.7$$

   With:

$$n = \frac{(1.645 + 0.842)^2 100}{(-5 - 0)^2} = 24.7$$

4. Page 223. Given $\alpha = 0.05$. 1 - $\beta = 0.8$,…

5. Page 234.
   In a lower tailed test, the test statistic *W** will also be ~~*W*2~~ W_1.

6. Page 241, Question 4. Last sentence in the Question 4 introduction should have the following corrections.
   "With this in mind, I take a random sample of 20 female freshmen honors students and find that the mean height is 61 inches."

7. Page 243, Question 9. By typing `book.~~mneu~~menu()`

Chapter 7

1. Page 261. …area is ~~{~~(61.59, 94.34)~~}~~
2. Page 281. …~~block~~randomize what you can ~~randomize~~ block what you cannot
3. Page 291. Question 12. A sample represents a 5 km^2 area.
4. Page 291. Question 12b and 12c. Change the order of these questions.
5. Page 291. Question 12d. Replace the symbol $S_{\bar{Y}_{str}}$ with $\hat{\sigma}_{\bar{Y}_{str}}$
6. Page 291. Question 12e. Replace the symbol $S_{\hat{T}}$ with $\hat{\sigma}_{\hat{T}}$

Chapter 8

1. Page 306. Missing right parenthesis in code:

```
with(crab.weight, cor.test(gill.wt, body.wt, method = "pearson"))
```

Chapter 9

1. Page 346. Eq. 9.39. For notational consistency, replace *TSS* with *SSTO* in denominators of ratios. That is, replace:

$$R^2 = 1 - \frac{SSE}{TSS} = \frac{SSR}{TSS}$$

with

$$R^2 = 1 - \frac{SSE}{SSTO} = \frac{SSR}{SSTO}$$

2. Page 347. Eq. 9.40 is incorrect.
Replace:

$$R^2_{adj} = 1 - \frac{SSE}{SSTO} \times \frac{n-1}{n-p}$$

with

$$R^2_{adj} = 1 - \left(\left(1 - \frac{SSR}{SSTO} \right) \left(\frac{n-1}{n-p} \right) \right)$$

$$= 1 - \left(\left(1 - R^2 \right) \left(\frac{n-1}{n-p} \right) \right)$$

3. Page 358. Text above Eq. 9.54. The reciprocal of the denominator of 9.53 is the *k*th VIF. This is
4. Page 358. Text below Eq. 9.53. Note that as R^2_k increases, ~~1/(~~1 - R^2_k~~)~~ approaches 0, …
5. Page 368. Text above Example 9.21. ...then the two-tailed *P*-value is calculated as $2P(T \geq |t^*|)$…
6. Page 389. Eq. 9.86. Use of λ is for log-likelihood is confusing. Replace occurrences of λ with ℓ.
7. Page 392. Last sentence of section 9.20.5.2

The *sensitivity* (i.e. *true positive rate*) is the number of true positives divided by the number of ~~observed~~ true positives and false negatives: 14/15 = 0.93. The *specificity* (i.e., *true negative rate*) is the number of true negatives divided by the number of ~~observed~~ true negatives and false positives: 6/9 = 0.67 (also see Example 2.11).

8. Page 403. 1st sentence of section 9.22. We calculate estimates of parameters for a …
9. Page 417. Question 10.

~~b~~c. Adjust the slider widgets, or simply click *Refresh* repeatedly (> 30 times). Are *MSE* and *MSR* consistently ~~greatly~~ greater than or less than *E*(*MSE*) and *E*(*MSR*). Why?

Chapter 10

1. Page 497. Question 1 "Described in ~~Exercise~~ Example 10.2".
2. Page 500. Question 13. To allow adequate replication use the following data:

```
scores <- data.frame(APscores = c(4.6, 4.8, 4, 3.4, 3.4, 2.1, 4.1, 3.9,
4, 4.1, 3.8, 1.2, 4.5, 4.9, 4.3, 3.5, 3.6, 3.2, 3.9, 4.3, 3.8, 4.2, 4.4,
2.4), school = factor(rep(c(1,2), each = 6)), town = c("Burley",
"Pocatello", "Boise"), instructor = factor(rep(c(rep(1, 3), rep(2, 3)),
2)), class = factor(rep(c(1,2), each=12)))
```

3. Page 500. Question 16a. Analyze the data correctly ~~(with block in hybrid as a random effect)~~ using aov.
4. Page 500. Question 16c. Reanalyze the data, and repeat the hypothesis tests using lmer. Define block and hybrid as random effects.

Appendices

1. Page 549, A.4 Set Theory and Probability ~~$P(A) = 1 =$~~ $1 - P(A) = P(A')$