Errors in Fundamentals of Nanoelectronics by George Hanson, Prentice-Hall, 2008.

These have been corrected in the second printing, but are listed below for copies from the first printing.

I'd like to thank Professors Shimin Hou, Xuelei Liang, and Min Gao, Peking University, and Professor Magnus Lilledahl, Norwegian University of Science and Technology, for pointing out most of the items listed below. Please let me know about any other problems with the text – George Hanson.

1. Page 41, Problem 7: 90 m/h should be 90 mi/hour (mi stands for miles). Same for Problem 8.
2. Page 49: The expression between (3.26) and (3.27) $\psi_1 \neq \psi_2$ should be $\lambda_1 \neq \lambda_2$.
3. Page 50-51: Add minus sign in front of d^2/dx^2 in two places; in the first sentence of the example, and just before (3.42).
4. Page 79, line after (3.213): Change "y coordinate" to "x coordinate"
5. Page 82: Add minus sign in front of d^2/dx^2 just before (3.218) and remove "relation" after (3.219).
6. Page 93, eq. (4.42): The subscript should be m in all three places (instead of n).
7. Page 107, eq. (4.86): The minus sign between the two terms in the middle of the expression should be a plus sign.
8. Page 107: Eq. (4.91) should be $V_0 = \frac{1}{2m_e}\left(\frac{m\pi\hbar}{L}\right)^2$.
9. Page 112: u_m in the line above (4.108) should be μ_m.
10. Page 175, eq. (150): the factor of 2 in the denominator should be removed, and the factor of 0.383 should be replaced by 0.77.
11. Page 195: Top of page, the sentence (continued from the previous page) should end in I_2 and not I_3.
12. Page 199: In the figure caption, $d = 2.65$ μm (not nm).
13. Page 216: Eq. (7.10) should read $V < \frac{q_e}{2C}$ or $V > \frac{-q_e}{2C}$.
14. Page 225: Two lines above (7.32) the sentence should say "In this regime there will be no SET oscillations."
15. Page 229: Eq. (7.56) should read $V_s < \frac{q_e}{2C}$ or $V_s > \frac{-q_e}{2C}$.
16. Page 240, line 2: Replace "$n = 1$" with "$n = 0$"
17. Page 242, two lines below (7.85): The field strength should be $|\mathbf{E}| = 1.4 \times 10^3$ V/m, or 1.4×10^{-6} V/nm.
18. Page 280: In (9.1) the $\hbar$ should be squared.
19. Page 284: In (9.9), $V(z)$ should be $V(x)$.
20. Page 289: In (9.38), the expression $\left(\frac{1}{m_h^*} + \frac{1}{m_h^*}\right)$ should be $\left(\frac{1}{m_h^*} + \frac{1}{m_e^*}\right)$
21. Page 332: The presented result (10.38) is valid for one-dimension. For the two-dimensional case considered, replace the material after (10.37) with the following:

    such that the subbands (also called the number of electron channels, or modes) below the Fermi energy lie within a circle of radius

$$r = \sqrt{n_y^2 + n_z^2} = \sqrt{\frac{E_F\left(2m_e^* w^2\right)}{\hbar^2\pi^2}} = \frac{w}{\hbar\pi}\sqrt{E_F\left(2m_e^*\right)} = \frac{wk_F}{\pi} = \frac{w}{\lambda_F/2}, \tag{1}$$

where we assumed the usual $E(k)$ relationship for electrons,

$$E = \frac{\hbar^2 k^2}{2m_e^*}. \tag{2}$$

The number of allowed subbands is therefore

$$N \simeq \frac{1}{4}\pi r^2 = \frac{1}{4}\pi \left(\frac{wk_F}{\pi}\right)^2 = \frac{1}{4}\pi \left(\frac{w}{\lambda_F/2}\right)^2,$$

where K_F is a transverse wavebumber. Therefore, as the width of the wire increases the number of electron channels increases

22. Page 334: the lower integration limit in the second line of (10.47) should be 0.

23. Page 371: The answer to Problem 14 should be $I = 31\ \mu$A.