Stochastic Calculus: A Practical Introduction, R. Durrett
Updated: May 15, 2000

Errors:

(pointed out to me by Marc Yor): (6.2) on page 121 is wrong. One cannot take $H^i \in \Pi_2(B^i)$ but must consider $H^i \in \Pi_2(B^1, \dots B^d)$. Otherwise we would not be able to represent $\int_0^t B_t^1 \, dB_t^2$. The flaw in our argument is in (6.3) which is false. A correct proof can be found in Section V.3 of Revuz and Yor (1991). All that is needed to patch the current argument is to consider $\phi(z_1, \dots, z_d)$ in the proof of (6.4) as a function of d complex variables.

p.253 line -5: This is $\le (C/t)P_x(T_H \le t)$. To fix this introduce $J = \{x : |x| \le R - 1/2\}$ and notice that

$$\sup_{y\in\partial K} P_y(T_H \le t) \le \sup_{y\in\partial K} P_y(T_J \le t) \sup_{z\in\partial J} P_y(T_H \le t) \le Ct^2$$

Typos:

The cover! Second = should be +
p.5, line 5: constant misspelled
p.6, line -12: (1.3) implies
p.7, line 5: (1.3) gives
p.8 line 7: $\dots B_{s_m}$
p.9 line -6: minimizing $E(Z - X)^2$ over $X \in \mathcal{F}$ (no sub s)
p.12, Proof of Theorem (2.3): See (1.5)
p.12, Exercise 2.1. $\mathcal{F}_s^+$
p.12, Exercise 2.2. the function $f(x) = x_i$ is not bounded so we cannot directly apply (2.1). The remedy is simple: apply the result to $f_n(x) = x_i 1(|x_i| < n)$ and let $n \to \infty$.
p.13, Exercise 2.5, line 2: $P_x(T > 1, B_1 \in K) \ge \alpha$ line 3: $P_x(T > n, B_n \in K) \ge \alpha^n$
p.13, Exercises 2.6 and 2.7: $\mathcal{F}_s^+$
p.13, Exercise 2.7, second line of formula: $\exp\big(\int_0^s$
p.21, line -8: $\mathcal{G} = \sigma(\cup_n \mathcal{G}_n)$
p.23, lines 13–16: $\mathcal{A}$ should be the collection of sets of the form $\{(s,\omega) : s \in G_0, \omega(t_j) \in G_j, j = 1, \dots, \ell\}$, $\ell \ge 1$. Also, the definition of f_k should be $f_k(x) = 1 \wedge k \cdot \mathrm{dist}(x, G^c)$, so $f_k \nearrow 1_G$. (Otherwise for $x \in \partial G$ we have $f_k(x) = 1 \not\to 0$.)
p.27, line 10: $\frac{1}{\pi}(t(1-t))^{-1/2}$ (no integral sign)
p.28, line -1: add a subscript n to f
p.29, line 4: (1.3) implies
p.29, (4.7): $C_s = B^1(\tau_s)$
p.35, (*): $1_{(a,b]}(s)$ (not t)
p.37, line 4: Π, not Π'
p.37, line -3: $Y_t^{T_n}$
p.39, line 12: $E(X_T|\mathcal{F}_{S_n}) = X_{T\wedge S_n}$
p.39, line 16: the optional stopping theorem is (2.3)
p.42, Exercise 2.5: we do not need X to be continuous

p.64, (6.2): we should define $\hat{H}^T_s$ to be 0 for $s > T$ and rewrite the conclusion as

$$\hat{H}^T \cdot X = (H \cdot X)^T = H \cdot X^T = \hat{H}^T \cdot X^T$$

p.68, line 2: formula misspelled
p.69, line 5: right bracket missing on $f''(c(\ldots$
p.69, definition of A^n_s: t^n_{i+1} and t^n_i are missing superscripts
p.69, (7.7): $\int_0^t G^n_s \, dA^n_s$, i.e., superscript n not δ
p.78 line 3: For then (6.8) and Exercise 7.1
p.91, (12.3) Given α_t a strictly positive martingale
p.97, line -7: $x_1^2 + \cdots + x_d^2$
p.101, lines 6–7: $B_t \in D^c$ and $B_t \in G^c$
p.104, line 13: $\varphi(x) = -|x|$
p.104, line 14:

$$\varphi'(x) = \begin{cases} -1 & x > 0 \\ +1 & x < 0 \end{cases}$$

p.108, line 3: no 1/2 power on right
p.108, line 14: martingale exponential of X_t
p.108, line -11: Y is the only solution
p.109, second display from bottom: $(2\pi s^3)^{-1/2}$ not 1/2 power
p.112, second line of first display: $\int_0^t$
p.112, last line: Integrate $d\theta$ not dx
p.113, second display: $= P(X'_t \in A \cap B)$
p.113, line -12: the equation $\gamma(\langle X \rangle_t) = t$ fails where γ is discontinuous. To get $X_t = B_{\langle X \rangle_t}$ apply Exercise 3.8 in Chapter 2.
p.115: the heading should be Section 3.4 not 4.3
p.115, line -7: using (4.8) not (4.9)
p.153, Proof of Theorem (5.5): In (ii) instead of $\|v\|_\infty$ one has to bound $\|\bar{v}\|_\infty$, where

$$\bar{v}(y) = E_y \int_0^\tau |g(B_s)| ds.$$

Then the last two expressions in the displayed inequalities are

$$\varepsilon \|g\|_\infty + E_{x_n}(\bar{v}(B_\varepsilon); \tau > \varepsilon) \leq \varepsilon \|g\|_\infty + \|\bar{v}\|_\infty P_{x_n}(\tau > \varepsilon).$$

p.165: linear on $[-1, y]$
p.175, line -5: inside integral should have $\sqrt{t-s}$ in denominator
p.175, line -2: no dt
p.181, line -2: β_n not β
p.183, line -5: (4.1) in Chapter 3
p.185, line -8: $\int_0^{T \wedge \tau}$
p.187, line 4: $X^n_0 = X^{n-1}_0$
p.188, last line $\geq \phi(\tau)$
p.190, (3.1): we must suppose that $\phi(x) \to \infty$ as $|x| \to \infty$

p.201, line -1: $M^{ij}_{T+t} - M^{ij}_T = (M^{ij}_t - M^{ij}_0) \circ \theta_T$
p.202, line 12: (two errors) accommodate Example 5.1
p.204, line 3: in the first integral: $\cdot dX_s$ instead of $\cdot X_s$
p.209, (6.2) Theorem. the displayed assumption concerns $h(x)$ not $a(x)$
p.223, lines -5 and -6: X_t, not B_t
p.230, line 7: To see that
p.258, displayed formula in (3.8): $E_x f(X_t) = \int p_t(x,y) f(y)\, dy$
p.279, (2.5): generated
p.287, L_{n_k}
p.288, (5.2), $|\xi_i| > M$ in (i) and (ii)
p.294, Example 6.2. For the pointwise limit to be identically 0 then the definition should be modified so that $g_n(t) = 1$ when $t \in [(n-1)/2n, 1/2)$
p.295, line 1: define $d_0(f,g)$
p.296, (ii) in (6.4): no $'$ on w_δ
p.305, computation of $b^{1/n}$ and $a^{1/n}$ second fraction should have a $+$ in numerator not $-$.
p.317, line -3: Exercise 3.11
p.321, line 12: (missing bracket) $E(\langle X \rangle_{t \wedge T})$

References, Aizenman and Simon: No "a" in the title
References, Blumenthal and Getoor: No "their" in the title
References, Cielsielski and Taylor: "First passage times and *sojourn* times for Brownian motion in space and *the* exact Hausdorff measure *of the sample path*"
References, Tanaka: "Note on continuous additive functionals of *the* 1-dimensional Brownian *path*"
References, J. Walsh: Astérisque
References, Yamada and Watanabe: "On the uniqueness *of*..."

Typos contributed by: Peter Calabrese, Ilya German, Pete Kiessler, Ruediger Kiesel, Kouros Owzar, Byron Schmuland, Todd Williams