**Errata**

Catching all the errors of both statement and omission in a book is a collaborative effort between the author of the book and its readers. As an author I am grateful to the readers who have taken the time to make me aware of misstatements in *An Undergraduate Introduction to Financial Mathematics*, 3rd edition (World Scientific Publishing Company, Hackensack, NJ, USA, ISBN: 978–9814407441 (2012)). With the help of the readers I hope to keep improving this book. On this page of errata I have listed all the corrections made to the third edition of the text as of August 22, 2018.

**Chapter 1**

Page 9, Line 8: The phrase "will be be denoted" should read "will be denoted".

**Chapter 2**

Page 23, Line −1: The phrase "events $A$ an $B$ are not ..." should read "events $A$ and $B$ are not ..." (found by Julius O, student Millersville University).

Page 37, Line 2: The phrase "The condition expected value ..." should read "The conditional expected value ..." (found by Julius O, student Millersville University).

**Chapter 3**

Page 53, Example 3.4: the joint probability distribution given is invalid since its violates the nonnegativity requirement of a probability distribution over its domain. A valid distribution which can be used in its place is $f(x, y) = x^2y^2/162$. This changes the result of the calculation of the conditional probability distribution to

$$f(x|y) = \frac{3x^2}{27 - y^3}.$$

The conditional expectation (found at the top of page 54) is then

$$\mathbb{E}\left[X|Y = y\right] = \frac{3(y + 3)(y^2 + 9)}{4(y^2 + 3y + 9)}.$$

This change to the joint probability distribution will also affect the calculation of $\mathbb{E}\left[Y|X = x\right]$ in exercise (9) (found by James Cripps, Vancouver, BC).

Page 69, lines 8 and 9: the denominator of the exponent of $e$ inside the improper integral is missing a $\sigma^2$ term.

Page 73, Eq. (3.19) possesses some extraneous 2's multiplying $K$ (found by Hong-Ming Yin, professor at Washington State University and Chinese University Hong Kong). The equation should appear as follows.

$$\begin{aligned}&\mathbb{E}\left[((X-K)^+)^2\right]\\ &\quad = \quad \left((\mu-K)^2+\sigma^2\right)\Phi\left(\frac{\mu-K}{\sigma}\right)+\frac{(\mu-K)\sigma}{\sqrt{2\pi}}e^{-\frac{(\mu-K)^2}{2\sigma^2}}.\end{aligned}$$

Page 74, proof of Lemma 3.2: everywhere the appearance of $2K$ should be replaced by $K$ (found by Hong-Ming Yin, professor at Washington State University and Chinese University Hong Kong).

Page 74, Eq. (3.20) possesses some extraneous 2's multiplying $K$. The equation should appear as follows.

$$\begin{aligned}&\mathbb{V}\left((X-K)^+\right)\\ &\quad = \quad \left((\mu-K)^2+\sigma^2\right)\Phi\left(\frac{\mu-K}{\sigma}\right)+\frac{(\mu-K)\sigma}{\sqrt{2\pi}}e^{-(\mu-K)^2/2\sigma^2}\\ &\qquad -\left(\frac{\sigma}{\sqrt{2\pi}}e^{-(\mu-K)^2/2\sigma^2}+(\mu-K)\Phi\left(\frac{\mu-K}{\sigma}\right)\right)^2.\end{aligned}$$

**Chapter 4**

Page 104, line −10: "Let $p_j$ is the probability" should read "Let $p_j$ be the probability" (found by Dr. Iwan Praton, Department of Mathematics, Franklin & Marshall College).

Page 104, line −7: the summation in the unnumbered equation is missing an upper limit. It should read as follows.

$$S^i(0)=\frac{1}{1+r}\sum_{j=1}^{m}p_jS^i(\omega_j)$$

Page 106, line −11: the notation of $\mathbf{S}^T(\omega_j)\mathbf{y}$ is inconsistent with earlier notation. It should be formatted as $(\mathbf{S}(\omega_j))^T\mathbf{y}$.

Page 108, exercise (13): the constraints should include $y_2 \geq 0$ (suggested by Dr. Iwan Praton, Department of Mathematics, Franklin & Marshall College).

**Chapter 5**

Page 119, lines −8 to −6: The sentence reading "If $i$ is the smallest non-negative integer such that $m_i = 0$ (and hence that $S(i) = 0$) then by the absorbing boundary condition $S(k) = 0$ for all $k \geq i$." should be changed to "If $i$ is the smallest non-negative integer such that $S(i) = 0$ then by the absorbing boundary condition $S(k) = 0$ for all $k \geq i$." (found by Dr. Iwan Praton, Department of Mathematics, Franklin & Marshall College).

Page 121, line 10: The symbol $m_{50}$ is used incorrectly, the displayed equation should be

$$\begin{aligned}\mathbb{P}\left(S(50)=16\wedge S_{\min}(50)>0\,|\,S(0)=10\right) &= \left[\binom{50}{28}-\binom{50}{12}\right]2^{-50}\\ &\approx 0.0787178\end{aligned}$$

(found by Dr. John P. Nolan, Department of Mathematics and Statistics, American University).

Page 121, lines $-2$ and $-1$: The symbol $m_{n-1}$ is used incorrectly, the displayed equation should be

$$\begin{aligned}&\mathbb{P}\left(S(n)=A\wedge S_{\min}(n-1)>A\,|\,S(0)=i\right)\\ &\quad=\ \mathbb{P}\left(S(n)=0\wedge S_{\min}(n-1)>0\,|\,S(0)=i-A\right)\end{aligned}$$

(found by Dr. John P. Nolan, Department of Mathematics and Statistics, American University).

Page 122, line 1: The symbol $m_{n-1}$ is used incorrectly, the inequality should read as $S_{\min}(n-1)$ (found by Dr. John P. Nolan, Department of Mathematics and Statistics, American University).

Page 122, lines 3 and 4: The symbol $m_{n-1}$ is used incorrectly, the displayed equation should be

$$\begin{aligned}&\mathbb{P}\left(T_0=n\,|\,S(0)=i-A\right)\\ &\quad=\ \mathbb{P}\left(X_n=-1\wedge S(n-1)=1\wedge S_{\min}(n-1)>0\,|\,S(0)=i-A\right)\\ &\quad=\ \frac{1}{2}\mathbb{P}\left(S(n-1)=1\wedge S_{\min}(n-1)>0\,|\,S(0)=i-A\right)\\ &\quad=\ \frac{1}{2}f_{1,(i-A)}(n-1)\end{aligned}$$

(found by Dr. John P. Nolan, Department of Mathematics and Statistics, American University).

Page 136, line 9: the definite integral is missing a term (found by Ben Baer, student Millersville University). The line should read as

$$\mathbb{V}\left(\int_0^t \sin\tau\,dW(\tau)\right)=\int_0^t \sin^2\tau\,d\tau=\frac{t}{2}-\frac{1}{4}\sin 2t.$$

Page 153, line 17: there is an incorrect minus sign in the differential equation. The equation should be

$$dX=\frac{1}{2}\left[f(t)\right]^2\,dt+f(t)\,dW(t)$$

(found by Dr. John P. Nolan, Department of Mathematics and Statistics, American University).

**Chapter 6**

Page 160, line −15: the phrase "forward contract the we can adopt" should read "forward contract we can adopt".

**Chapter 7**

Page 189, line −14: the phrase "an asset it to" should read "an asset is to" (found by Dr. Iwan Praton, Department of Mathematics, Franklin & Marshall College).

Page 192, line −3: the mentioned strangle should be a straddle (found by William Doyle, student at Franklin and Marshall College).

Page 196, line −7: the purchased option is a call not a put.

Page 197, line 3: the purchased option is a put not a call.

**Appendix B**

Page 347, lines 10–13: the definite integral calculated is for the present value of the investment, not the future value as intended (found by Fernando Del Pozo Cosio and Jacob Hikes, students Millersville University). The correct equation should be as follows.

$$\begin{aligned} 1,000,000 &= e^{0.0249(6)} \int_0^6 S e^{-0.0249t}\, dt \\ &= \frac{S e^{0.0249(6)}}{-0.0249} e^{-0.0249t}\Big|_0^6 \\ &= 6.4713796S \\ S &\approx \$154,526.56/\text{yr.} \end{aligned}$$

Page 348, line −2: the expression 0.055 in the exponent should be 0.045 (found by Victor DeCaria, student Millersville University).

Page 349, line 7: the lower limit of integration should be 1 (found by Christopher Reuling, student Millersville University).

Page 351, line −4: the joint probability rather than the conditional probability is shown (found by Christopher Schneider, student Millersville University). The correct probability is

$$\begin{aligned} \mathbb{P}\left(\text{4th ace}|\text{1st, 2nd, 3rd ace}\right) &= \frac{\mathbb{P}\left(\text{1st, 2nd, 3rd, 4th ace}\right)}{\mathbb{P}\left(\text{1st, 2nd, 3rd ace}\right)} \\ &= \frac{\frac{4}{52}\frac{3}{51}\frac{2}{50}\frac{1}{49}}{\frac{4}{52}\frac{3}{51}\frac{2}{50}} \\ &= \frac{1}{49}. \end{aligned}$$

Page 362, line $-1$: the joint probability distribution function should be $f(x, y) = x^2y^2/162$. The final result is unaffected (found by James Cripps, Vancouver, BC).

Page 380, lines 16 and 17: the sign constraints on $x$ and $y$ are incorrect (found by Fernando Del Pozo Cosio and Jacob Hikes, students at Millersville University). The inequalities should be as follows.

$$\begin{aligned} x &\geq 0 \\ y &\geq 0 \end{aligned}$$

Page 402, line $-10$: the subscripts are transposed. The inequality should read $C(K_1) - C(K_2) > 0$ (found by Cara Nance, student Millersville University).

Page 405, lines $-2$ and $-1$: the strike price of the put is $K = 495$. The profit is therefore

$$(475 + 45)e^{0.0295(3/12)} - \max\{495, 485\} \approx 28.85.$$

(found by Adriana Quezada, student at Millersville University)

Page 406, line 1: the strike price of the put is $K = 495$. The profit is therefore

$$(475 + 45)e^{0.0295(3/12)} - \max\{495, 515\} \approx 8.85.$$

(found by Adriana Quezada, student at Millersville University)