

# Subject SP9

## Corrections to 2020 study material

### 0 Comment

This document contains details of any errors and ambiguities in the Subject SP9 study materials for the 2020 exams that have been brought to our attention. We will incorporate these changes in the study material each year. We are always happy to receive feedback from students, particularly details concerning any errors, contradictions or unclear statements in the courses. If you have any such comments on this course please email them to [SP9@bpp.com](mailto:SP9@bpp.com).

You may also find it useful to refer to the Subject SP9 threads on the Actuarial Discussion Forum. (You can reach the Forums by clicking on the 'Discussion Forums' button at the top of the ActEd homepage, or by going to [www.acted.co.uk/forums/](http://www.acted.co.uk/forums/).)

# 1 Course Notes

## Module 18

**Page 23**

**(added on 16 July 2019)**

An appendix that used to be in Module 15 of the Subject ST9 Course Notes was removed (as it covered material that is beyond the syllabus of Subject SP9). The reference to an appendix in Module 15, which appears at the top of page 23 in Module 18 in the Course Notes, should have been removed at the same time. Please delete this erroneous reference.

**Page 41**

**(added on 16 July 2019)**

At the bottom of the summary on this page, the reference to 'Appendix B' should read simply as 'appendix' (as there is only one appendix in this module).

## Module 23

**Page 7**

**(added on 16 January 2020)**

In the section on 'Obtaining information', the second sentence should say, 'The borrower has much better knowledge about the risks they are creating than the lender, *ie* than the party ultimately holding the credit risk.'

## Module 30

**Page 26**

**(added on 07 September 2020)**

There is an errant summation sign in the differentiation at the top of page 26. The differentiation should proceed as follows:

$$\begin{aligned}
 C_j &= \left. \frac{\partial F(L)}{\partial p_j} \right|_{\mathbf{p}=1} \\
 &= \left. \frac{\partial (\text{Var}(L)^{1/2})}{\partial p_j} \right|_{\mathbf{p}=1} \\
 &= \left[ \left( \frac{1}{2} \text{Var}(L)^{-1/2} \right) \right] \times \left[ 2p_j \text{Var}(L_j) + \sum_{\substack{j=1 \\ j \neq i}}^n 2p_j \text{Cov}(L_i, L_j) \right] \\
 &= \frac{\text{Cov}(L_j, L)}{\sqrt{\text{Var}(L)}}
 \end{aligned}$$

Additionally, the line below the calculations should read:

The *Value at Risk* measure:  $F(L) = \text{VaR}_\alpha(L)$

## Assignment X3 Questions

**Page 2**

**(added on 16 July 2019)**

In Question X3.4(iii)(a), the probability should be 2.89%, rather than 2.88%.

## Assignment X3 Solutions

**Page 7**

**(added on 16 July 2019)**

In the final line of the solution to X3.4(i), it should read  $\alpha = 3.005\%$ , rather than  $\alpha = 3.0005\%$ .

**Page 7**

**(added on 16 July 2019)**

In the solution to X3.4(iii)(a), the probability that both companies are ruined should read

$(u^{-2} + v^{-2} - 1)^{-1/2}$ , rather than  $(u^2 + v^2 - 1)^{-1/2}$ . The subsequent lines of the probability calculation are correct.

**Page 12**

**(added on 16 July 2019)**

In the final line of algebra in the solution to X3.7(i), the copula should read  $\left(\frac{uv}{u+v-uv}\right)$ , rather than  $\left(\frac{uv}{u+v-ux}\right)$ .

## Assignment X4 Solutions

**Page 2**

**(added on 16 July 2019)**

In the solution to X4.1(iii), the likelihood function should read  $L(\gamma, \beta, Y) = \sum_{j=1}^{N_u} \ln f_{\gamma, \beta}(Y_j)$ , rather

than  $L(\gamma, \beta, Y) = \sum_{j=1}^{N_u} \ln g_{\gamma, \beta}(Y_j)$ .

**Page 15**

**(added on 16 July 2019)**

The solution to X4.3(iii) has been corrected to say 'third to eighth' (not 'third to ninth').

**Page 16****(added on 16 July 2019)**

The solution to X4.3(vii) has been corrected to say 'Factors numbered 1, 2 and 3 are the dominant factors, by order of importance, for 1- and 5-week maturities.'

**Mock Exam****Page 9****(added on 16 July 2019)**

In the solution to 3(iv), the probability calculation should read  $\frac{4.93\%}{1-11.83\%} = 5.591\%$ , rather than

$$\frac{4.93\%}{1-11.83\%} = 6.034\% .$$

**ASET (2014 to 2017 papers)****Page 2, Solution to Subject ST9 September 2014, Question 1 (added on 3<sup>rd</sup> September 2019)**

In the solution, Southern Insurance and Northern Insurance have been incorrectly transposed.