Corrections to
Hochschild Cohomology for Algebras, S. J. Witherspoon, GSM 204, AMS, 2019
18 March 2026

Numbers in the itemized lists below refer to page numbers.

Chapter 1.

11 In the third to last line, $I \otimes_{A^e} M \to IM$ should be $M \otimes_{A^e} I \to MI$.
13 In Exercise 1.2.8, the third line should instead read "map $M \otimes_{A^e} I \to M$ given by $\sum_i m \otimes_{A^e} (a_i \otimes b_i) \mapsto \sum b_i m a_i$".

Chapter 2.

31 In line 5, for clarity, the sentence should instead be "This map is surjective since the images x, g, f of x, y, z generate $\mathrm{HH}^*(A)$ as we have seen."
32 In line 30, V_{n+m} should be V'_{n+m}.
37 In line 9, it is stated that all modules in the original sequences **f** and **g** are free as right A-modules. This is incorrect as stated. Instead it should have been assumed, without loss of generality, that the modules in those exact sequences are all projective as right A-modules. Then the hypotheses of the Künneth Theorem will hold and it may be applied as stated. It is indeed no loss of generality to assume this, since in the equivalence class of each generalized extension, there exists such an extension, for example by the correspondence described in the Appendix, pp. 219–220, between generalized extensions and cocycles. Specifically, starting with an m-cocycle, the construction of a corresponding m-extension as described there results in one where all but one of the modules is A^e-projective, and the remaining module is a pushout. An argument using syzygies shows that this pushout is projective as an A-module, being a direct summand of projective A-modules (one of them being A itself).
38 Exercise 2.4.4: Delete the last two sentences. (This is an exercise about extensions of A-modules, not A^e-modules.)

Chapter 4.

80 In the next to last line, [148, Proposition 3.3.6] should be [148, Proposition 3.3.7].
82 The last paragraph is incorrect as stated; it also depends on the field. See for example Corollary 9.2.9 and Theorem 9.2.11 in the book [223] by Weibel, or Corollary 7.6 in the introduction of the book by Curtis and Reiner, *Methods of Representation Theory with Applications to Finite Groups and Orders*, Volume I, Wiley, 1981.
88 In line 12, $bf(p)a$ should be $f(p)(a \otimes b)$.

Chapter 5.

107 Exercise 5.2.11: The reader is cautioned that the conclusion of this exercise is not the end of the tale. There are several other notions of rigidity in the literature. See for example [2] where the term "analytically rigid" corresponds to Definition 5.2.7 of rigid in this book. See [1] for a type of deformation of the Weyl algebra.

Chapter 9.

183 In lines 20 and 21, $\Delta(1\otimes\Delta)$ should be $(1\otimes\Delta)\Delta$ and $\Delta(\Delta\otimes 1)$ should be $(\Delta\otimes 1)\Delta$.
187 In line 11, Theorem 7.1.4 should instead be Theorem 7.1.14.
193 In lines 5 and 6 of Remark 9.3.7, "finite group scheme (noncocommutative Hopf algebra)" should be "finite group scheme (cocommutative Hopf algebra)"

Appendix A.

233 $E_0^{pq} = B^{pq}$.

References

[1] M. Gerstenhaber and A. Giaquinto, *Deformations associated with rigid algebras*, J. Homotopy Relat. Struct. 10 (2015), no. 3, 437–458.

[2] M. Gerstenhaber and S. D. Schack, *Relative Hochschild cohomology, rigid algebras, and the Bockstein*, J. Pure Appl. Algebra 43 (1986), no. 1, 53–74.