Curriculum TMA4267 Spring 2026

Part 0

Assumed previous knowledge is curriculum of TMA4240/45 or ST1101 and ST1201 or similar, including simple linear regression as covered in Chapter 6 of the book. Some knowledge regarding matrices is also assumed, otherwise use Chapter 2. We covered Chapter 2.13 on idempotent matrices.

Part 1

Chapters 3, 4, 5 of the textbook, details given below.

Chapter 3

Sections 3.1, 3.2, 3.3, 3.5 and 3.6.

Chapter 4

Sections 4.1, 4.2, 4.3 and 4.4.

Chapter 5

Sections 5.1, 5.2 (only Theorems 5.2a. (with proof) and 5.2c. (without proof)), 5.3, 5.4, 5.5 (only Corollary 1 and 2 to Thm 5.5, with proof of Corollary 1, see notes), and 5.6 (only Theorems 5.6a., 5.6b.)

Part 2

Chapters 7, 8, 9, and 17 of the textbook, details given below.

Chapter 7

Sections 7.1, 7.2, 7.3 (Theorems 7.3a, 7.3b, 7.3c, 7.3f with proofs), 7.4, 7.6 (Theorem 7.6b with proof), 7.7 (until and including R squared adjusted), 7.8 (Theorem 7.8a without proof, and 7.8.2 on model mis-specification), 7.9 (Theorem 7.9a with proof, 7.9c without proof), 7.10 (only Theorem 7.10, with proof)

Chapter 8

Sections 8.1 (F test overall regression), 8.2 (Partial F test), 8.4 (general linear hypothesis test), 8.5.1, 8.5.2 (Bonferroni only), 8.6, 8.7. Note that we did not cover all tests in the same detail as the book, see notes.

Chapter 9

Sections 9.1, 9.2 (hat matrix), 9.3 (only studentized residuals), 9.4 (Cook's distance). We also used a multivariate normal distribution for residuals (see notes). We covered three (R built in) plots; residuals vs fitted values (r plot 1), QQ plot (r plot 2) and residuals vs leverage (r plot 5).

Chapter 17

Sections 17.1, 17.2, 17.4, 17.5 (up to and including 17.5.2).

Part 3

Note that analysis in variance is in the book covered in much greater detail than what we have time for. We have covered cell means and effects models. We have discussed dummy coding and effect coding (see notes). Here are some relevant book sections:

One-way ANOVA: Sections 13.1, 13.2, for estimates and tests, see notes.

Two-way ANOVA: Sections 14.1