There have been a few changes to the syllabus for the October 2013 exam.
I have posted a free supplement on my webpage www.howardmahler.com/Teaching
It covers all of the changes.
I have included a discussion of each of the new topics, as well as problems to do.
At the end of the supplement are a new Practice Exam and new Seminar Style Slides, covering the new material.

page 63: The probability generating functions of the zero-truncated distributions are given in Appendix B.
The probability generating functions of the zero-modified distributions are given in terms of those of the corresponding zero-truncated distribution, by: $P^M[z] = p_0^M + (1 - p_0^M)\, P^T[z]$.

page 398: For θ = **10**

page 495 & 511: If applying the Chi-Square Goodness of Fit Test to data with total claims and exposures by year, then the number of degrees of freedom is the number of years **minus the number of fitted parameters**.

Page 996:

In general,

the Bayes Estimate of the mean is:

$$\frac{\int (\text{Mean given } q)\ \pi(q)\ \text{Prob}(\text{Obs.} \mid q)\ dq}{\int \pi(q)\ \text{Prob}(\text{Obs.} \mid q)\ dq}$$

Page 998: **6.43. B.** If b were 300, then claim sizes are uniform from 300 to 400, and we could observe a claim of size 300.
If b were 200, then claim sizes are uniform from 200 to 300, and we could observe a claim of size 300.
b can be 200, 300, or anything in between.

Given $200 \le b \le 300$, the chance of the observation given b is 1/100.
$\pi(b) = e^{-b/80} / 80$.
The probability weight is: $(e^{-b/80} / 80)\ (1/100)$.
$\Rightarrow$ Posterior distribution of b is proportional to:
$e^{-b/80}$, $200 \le b \le 300$.

$$\int_{200}^{300} e^{-b/80}\, db = -80\, e^{-b/80} \Big]_{b=200}^{b=300}$$

$= 80\ (e^{-2.5} - e^{-3.75}) = 4.685$.

Thus the posterior distribution of b is:

$\frac{e^{-b/80}}{4.685}$, $200 \le b \le 300$.

Given b, the mean severity is: b + 50.

⇒ The expected value of the next claim from

the same insured is: $\int_{200}^{300} (b + 50) \frac{e^{-b/80}}{4.685} db =$

$\frac{1}{4.685} \int_{200}^{300} b\, e^{-b/80}\, d + 50 \int_{200}^{300} \frac{e^{-b/80}}{4.685} db =$

$\frac{1}{4.685} (-80b\, e^{-b/80} - 80^2 e^{-b/80})\Big]_{b=200}^{b=300} +$

(50)(1) = 239.845 + 50 = **289.845**.

<u>Comment</u>: The integral of the posterior density of b over its support has to be one.

See 4, 11/01, Q.14 (2009 Sample Q.64).