This is a file of corrections for my book. I hope this book is a lot cleaner than my previous ones. So far, it seems so.

Note. When defining mollifiers on p.17ff, I used the incorrect notation on Line 2 at the top of Page 18. I used the notation for convolution, when in fact I (correctly) gave the expression commonly known as the correlation of two functions. This is not too terrible in itself except that, in Line 3 on Page 204, when I indeed wished to define convolution, I wrote the incorrect formula, that is, I accidentally wrote the formula for correlation! No ultimate harm was done, since I did not actually use it in the sequel, but it should not have happened. I can only offer my abject apologies.

Correction. Page 41, Line 3:
Reads as: $-\Psi^{-1}(\Psi^{-2} - \Phi^{-2})\text{tr}A_{\psi}S_{\psi}$
Should read as: $+\Psi^{-1}(\Psi^{-2} - \Phi^{-2})\text{tr}A_{\psi}S_{\psi}$

Correction. Page 74, Line 11:
Reads as: discontinuity of $\phi$.
Should read as: discontinuity of $\phi$ (we may have to redefine $\phi$ at these points).

Correction. Page 74, Line -3:
Reads as: $st_y s_{xy} s_{x}$
Should read as: $st_y s_{x}$

Correction. Page 83, Line 9:
Reads as: I.3.3 below)
Should read as: I.3.3)

Correction. Page 87, Line 5:
Reads as: exterior unit vector field
Should read as: exterior normal unit vector field
Correction. Page 87, Line -5:
Reads as: exterior unit vector field
Should read as: exterior normal unit vector field

Correction. Page 93, Line 6:
Reads as: $P(\partial E_t)$
Should read as: $P(E_t)$

Correction. Page 103, Line -3:
Reads as: pick open $(1/k)$-covers
Should read as: pick $(1/k)$-covers

Correction. Page 110, Line 5:
Reads as: $\psi$–measurable
Should read as: Borel sets

Correction. Page 110, Line 16ff:
Reads as: the equality is where we use the $\psi$–measurability of $A$).
Should read as: the equality follows from the $\psi$–measurability of Borel sets $A$).

Correction. Page 111, Line 5ff:
Reads as: $\psi$–measurable
Should read as: Borel

Correction. Page 112, Line -9:
Reads as: Any linear transformation
Should read as: Any univalent linear transformation

Correction. Page 113, Line -8:
Reads as: subcover $G_k$, and set $G = \cup_k G_k$.
Should read as: subcover $G_{s,k}$, and set $G = \cup_{s,k} G_{s,k}$.

Correction. Page 114, Line 9:
Reads as: Proof If
Should read as: Proof It suffices to assume $A$ is a Borel set. If

Correction. Page 115, Line 11,14:
Reads as: $\epsilon (\text{Lip } f + \epsilon)^{n-1}$
Should read as: $\epsilon (\text{Lip } f + \epsilon)^{m-1}$

Correction. Page 143, Line -4:
Reads as: $n_A(\lambda) = V(\gamma; \lambda)/2\kappa$,
Should read as: $n_A(\lambda) = 1 + \{V(\gamma; \lambda) - 1\}/2\kappa$,

Correction. Page 152, Line 11:
Reads as: (I.1.5) implies
Should read as: Minkowski’s inequality implies
Correction. Page 161, Line 10:
Reads as: The inequality
Should read as: The $L^1$ inequality

Correction. Page 166, Line 12:
Reads as: $\alpha_\nu(\Omega) = \lambda(\Omega)V(\Omega)^{2/\nu}$,
Should read as: $\alpha_\nu(\Omega) = \inf_{D \subset \subset \Omega} \lambda(D)V(D)^{2/\nu}$,

Correction. Page 168, Line 8:
Reads as: $= 1$,
Should read as: $\geq 1$,

Correction. Page 170, Line Example VI.3.1: In the final typeset it is difficult to distinguish between the "vee"s and the "mu"s. The independent variable of the function $g$ and $\Lambda$ is a "vee", and the exponent for the isopermetric inequalities is "mu".

Correction. Page 174, Line 10:
Reads as: from the argument of Lemma VI.4.2.
Should read as: from Lemma VI.4.2.

Correction. Page 174, Line 10:
Reads as: from the argument of Lemma VI.4.2.
Should read as: from Lemma VI.4.2.

Correction. Page 180, Line 3:
Reads as:
$$|Sf|^p(x) \leq \sum_{\xi \in \mathcal{G}} |f|^p(\xi)\phi_\xi(x) = \sum_{\xi \in B(x;\rho)} |f|^p(\xi)\phi_\xi(x) \leq \sum_{\xi \in B(x;\rho)} |f|^p(\xi),$$
Should read as:
$$|Sf|^p(x) \leq \sum_{\xi \in \mathcal{G}} |f|^p(\xi)\phi_\xi(x) = \sum_{\xi \in B(x;2\rho)} |f|^p(\xi)\phi_\xi(x),$$

Correction. Page 180, Line 5:
Reads as:
$$\leq \int_{B(\alpha;R)} \left\{ \sum_{\xi \in B(x;2\rho)} |f|^p(\xi) \right\} dV(x)$$
Should read as:
$$\leq \int_{B(\alpha;R)} \left\{ \sum_{\xi \in B(x;\rho)} |f|^p(\xi)\phi_\xi(x) \right\} dV(x)$$
Correction. Page 180, Line 6:
Reads as:
\[ \sum_{\xi \in B(\sigma; R+\rho)} |f|^{p}(\xi) V(\xi; \rho) \]
Should read as:
\[ \leq \sum_{\xi \in B(\sigma; R+2\rho)} |f|^{p}(\xi) V(\xi; \rho) \]

Correction. Page 185, Line 12:
Reads as: operator of
Should read as: operator

Correction. Page 254, Line 6:
Reads as: principles for Riemannian
Should read as: principles for Riemannian

Additional Bibliographic Notes

1. We never gave a general existence and regularity theorem for minimizing area with volume kept constant, in a general Riemannian manifold. We refer the reader to A. Ros’ The Isoperimetric Problem, Lecture notes of short course at Clay Mathematics Summer Institute on the Global Theory of Minimal Surfaces, Summer 2001, Math. Sci. Res. Inst., Berkeley, California, for the statement of the basic result with references. It goes as follows:

**Theorem.** Assume \( M^n \) is a relatively compact Riemannian manifold. Then for any \( t \in (0, V(M)) \), there exists a relatively compact region \( \Omega \subset M \) whose boundary \( \Sigma = \partial \Omega \) minimizes area among regions of volume \( t \). Except for a closed singular set of Hausdorff dimension at most \( n - 8 \), the boundary \( \Sigma \) of any minimizing region is a smooth imbedded hypersurface with constant mean curvature, and if \( \partial M \cap \Sigma \neq \emptyset \), then \( \partial M \) and \( \Sigma \) intersect orthogonally.

If \( M \) is not compact, but its isometry group \( G \) is such that \( M/G \) is compact, then the result remains valid.

Using this result, with the regularity condition, one can give a variant of the argument of (our) Theorem I.2.3, to prove that in \( \mathbb{R}^n \) the area minimizer for fixed volume is always a sphere. The argument also works in the simply connected space forms of constant sectional curvature (spheres and hyperbolic spaces).

Ros’ lectures also feature a large number of 3-dimensional results in isoperimetric inequalities, the case of surfaces being well-known.