

- Slide 9-2: “with” should be “wish”. “a informational signa” should be “an informational signal”.
- Slide 9-3: “now” should be “Now”.
- Slide 9-7: “even” should be “event”.
- Slide 9-11: “and” is inserted between “losslessly” and “uniquely-decodably”.
- Slide 9-12: Add a comment as “(why no uniquely-decodability here? Because of no such for a single source.)”
- Slide 9-14: An “=” is added after “ ℓ_k ”.
- Slide 9-18: “holds” is added after “equality”.
- Slide 9-20: “sampled” is replaced by “sample”.
- Slide 9-27: “optima” should be “optimal”.
- Slide 9-28: “obtained” should be “obtain”.
- Slide 9-35: “Discrete memory channels” should be “Discrete memory-less channels”.
- Slide 9-42: “holds” is inserted between “equality” and “if” in the small box. $\log\left(1 - \frac{p(x)p(y)}{p(x,y)}\right)$ should be $\left(1 - \frac{p(x)p(y)}{p(x,y)}\right)$. Also, “(measured in unit of nats)” is added in the first line.
- Slide 9-45: The first statement should be “if R (bits/channel usage) $> C \Rightarrow P_e$ (word error rate) cannot be made arbitrarily small;”
- Slide 9-48: “all code” should be “all codes”.
- Slide 9-49: “otherwise” should be “Otherwise”.
- Slide 9-52: “is infinity” is replaced by “is infinite”. “uniform” should be “uniformly”.
- Slide 9-54: “ $\log(2)$ ” is added, two places, in the derivation of $h(X)$.
- Slide 9-56: “ $-\log_2 \frac{1}{\Delta}$ ” should be “ $+\log_2 \frac{1}{\Delta}$ ”, two places.

- Slide 9-57: $\frac{1}{2BT} \sum_{k=0}^{2BT} x_k^2 \leq P$ is replaced by $\frac{1}{2BT} \sum_{k=0}^{2BT-1} x_k^2 \leq P$.
- Slide 9-64: “volumn” should be “volume”. “maximumm” should be “maximum”.
- Slide 9-67: The y -label “0” should be replaced by “1”.
- Slide 9-71: “(for n interleaving PCM users)” is inserted.
- Slide 9-73: “FSk” should be “FSK”.
- Slide 9-75: “deviate” is replaced by “deviates”.
- Slide 9-79: $\frac{1}{2BT} \sum_{k=0}^{2BT} x_k^2 \leq P$ is replaced by $\frac{1}{2BT} \sum_{k=0}^{2BT-1} x_k^2 \leq P$.
- Slide 9-80: “Assume that there are N sub-intervals.” is added.
- Slide 9-81: $\frac{1}{2BT} \sum_{k=0}^{2BT} x_k^2 \leq P$ is replaced by $\frac{1}{2BT} \sum_{k=0}^{2BT-1} x_k^2 \leq P$.
- Slide 9-84: Remove “ $|f| \leq B$, where K is chosen to satisfy $P = \int_{-B}^B S_N^*(f)df$.” Also, “ $S_{N'}(f) \geq K$ ” is replaced by “ $0 \geq K - S_{N'}(f)$ ”.
- Slide 9-86: “ \int_{-B}^B ” is replaced by “ $\int_{\mathcal{F}}$ ”, two places. Also, the equality sign before the first $\int_{\mathcal{F}}$ is replaced by approximation sign. Extra note is added as “where K is chosen to satisfy $P = \int_{\mathcal{F}} \max\{K - S_{N'}(f), 0\}df$, and \mathcal{F} is the signal band.”
- Slide 9-87: “ $B = \Delta f/2$ ” is removed.
- Slide 9-90: The comment in box has been rephrased as follows.

As a final remark, my $S_{N'}(f)$ is exactly $S_N(f)/|H(f)|^2$ in the textbook, in which the noise N is placed after the filter. Hence, equivalent $S_{N'}(f)$ will be affected by $H(f)$ after it is equivalently modeled to be placed before the filter. My comment above indicates that once $S_{N'}(f)$ is fixed, $H(f)$ becomes irrelevant to the capacity.

- Slide 9-94: “ $\Pr[X = 0] = \Pr[X = 1]$ ” is replaced by “ $\Pr[X = 0] = 1 - \Pr[X = 1]$ ”.