

Material for Exam 2

Correlation Lecture
z-Scores and Correlation Lecture
Regression Lecture
Probability Lecture
pp. 116 – 133, and 162 – 260 of the text

Equations to Know

Variance (slide 10 of dispersion):	$\sigma^2 = \frac{\sum (X - \mu)^2}{N}$
Line (slide 24 of correlation):	$Y = \text{slope} * X + \text{intercept}$
z (slide 5 of z-scores):	$z = \frac{X - \bar{X}}{s}$
r (slide 9 of z-scores):	$r = \frac{\sum z_X z_Y}{N}$
“best fit” (slide 12 of regression):	minimizes $\sum (Y - Y')^2$
slope (slide 21 of regression):	$\text{slope} = r \cdot \frac{s_Y}{s_X}$
intercept (slide 23 of regression):	$\text{intercept} = \bar{Y} - \text{slope} \cdot \bar{X}$
total variance (slide 25 of reg.):	$s^2 = \frac{\sum (Y - \bar{Y})^2}{N}$
explained variance (slide 26):	$s^2 = \frac{\sum (Y' - \bar{Y})^2}{N}$
unexplained variance (slide 27):	$s^2 = \frac{\sum (Y - Y')^2}{N}$
addition rule (slide 10 of prob):	$p(A \text{ or } B) = p(A) + p(B) - p(A \text{ and } B)$
multiplication rule for independent events (slide 12 of probability):	$p(A \text{ and } B) = p(A) \times p(B)$
conditional probability of B given A (slide 19 of probability):	$p(B A) = p(A \text{ and } B) / p(A)$
multiplication rule for non independent events (slide 22):	$p(A \text{ and } B) = p(A) \times p(B A)$