Notation

X	a scalar or vector random variable, $X = (X_1, \dots, X_n)$
$X \sim$	X has the distribution ...
$\mathbb{E}X$, $\mathrm{var}(X)$	mean and variance of X
μ, σ^2	mean and variance as typically used for $N(\mu, \sigma^2)$
RV, IID	'random variable', 'independent and identically distributed'
$\mathrm{beta}(m, n)$	beta distribution
$B(n, p)$	binomial distribution
χ^2_n	chi-squared distribution with n d.f.
$\mathcal{E}(\lambda)$	exponential distribution
$F_{m,n}$	F distribution with m and n d.f.
$\mathrm{gamma}(n, \lambda)$	gamma distribution
$N(\mu, \sigma^2)$	normal (Gaussian) distribution
$P(\lambda)$	Poisson distribution
$U[a, b]$	uniform distribution
t_n	Student's t distribution with n d.f.
Φ	distribution function of $N(0, 1)$
ϕ	density function of $N(0, 1)$
z_α, $t^{(n)}_\alpha$, $F^{(m,n)}_\alpha$	upper α points of $N(0, 1)$, t_n and $F_{m,n}$ distributions
θ	a parameter of a distribution
$\hat\theta(X)$, $\hat\theta(x)$	an estimator of θ, a estimate of θ.
MLE	'maximum likelihood estimator'
$F_X(x \mid \theta)$	distribution function of X depending on a parameter θ
$f_X(x \mid \theta)$	density function of X depending on a parameter θ
$f_\theta(x)$	density function depending on a parameter θ
$f_{X\mid Y}$	conditional density of X given Y
$p(\theta \mid x)$	posterior density of θ given data x
$x_1, \dots, x_n$	n observed data values
$x_{i\cdot}$, $x_{\cdot j}$, $x_{\cdot\cdot}$	$\sum_j x_{ij}$, $\sum_i x_{ij}$ and $\sum_{ij} x_{ij}$
$T(x)$	a statistic computed from $x_1, \dots, x_n$
H_0, H_1	null and alternative hypotheses
f_0, f_1	null and alternative density functions
$L_x(H_0), L_x(H_1)$	likelihoods of H_0 and H_1 given data x
$L_x(H_0, H_1)$	likelihood ratio $L_x(H_1)/L_x(H_0)$
$t^{(n)}_\alpha$, $F^{(m,n)}_\alpha$	points to the right of which lie $\alpha 100\%$ of T_n and $F_{m,n}$
C	critical region: reject H_0 if $T(x) \in C$.
$W(\theta)$	power function, $W(\theta) = \mathbb{P}(X \in C \mid \theta)$
α,β	probabilities of Type I and Type II error
	intercept and gradient of a regression line, $Y_i = \alpha + \beta w_i + \epsilon_i$
o_i, e_i, δ_i	observed and expected counts; $\delta_i = o_i - e_i$
$\bar X$	mean of $X_1, \dots, X_n$
S_{XX}, S_{YY}, S_{XY}	$\sum(X_i - \bar X)^2$, $\sum(Y_i - \bar Y)^2$, $\sum(X_i - \bar X)(Y_i - \bar Y)$
s.e.	'standard error',
	square root of an unbiased estimator of a variance.
R	residual sum of square in a regression model
s^2	unbiased estimate of the variance, $s^2 = S_{XX}/(n-1)$.
$d(X)$	decision function, $d(X) = a$.
$L(\theta, a)$	loss function when taking action a.
$R(\theta, d)$	risk function, $R(\theta, d) = \mathbb{E}[L(\theta, d(X))]$.
$B(d)$	Bayes risk, $\mathbb{E}[R(\theta, d)]$.

WWW site

There is a web page for this course, with copies of the lecture notes, examples sheets, corrections, past tripos questions, statistical tables and other additional material. It can be accessed as `http://www.statslab.cam.ac.uk/~rrw1/stats/`