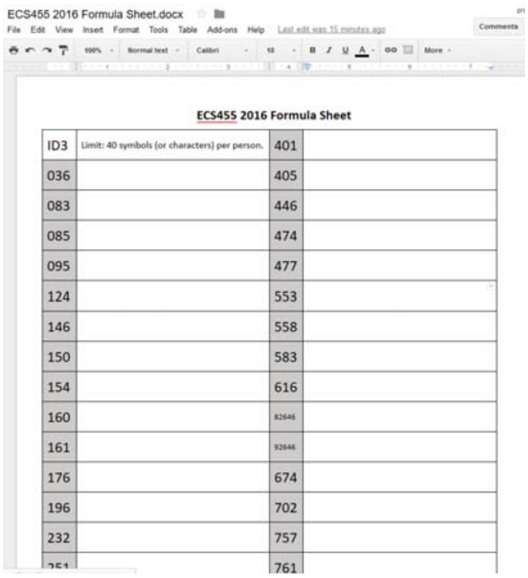
Study Sheet?

- Closed book. Closed note.
- No study sheet. However,…
- The whole class will collectively help to create one shared formula sheet online.
- The link to this google doc file is provided on the course website (the HW part).
- Deadline: 4:30PM, May 30
- This sheet will be included in the exam.

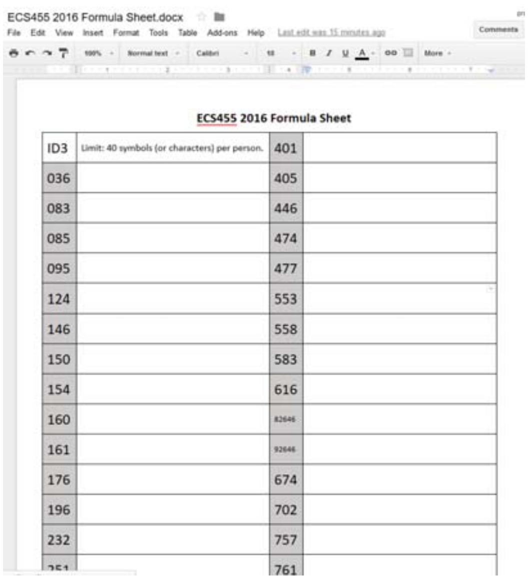

ECS455 2016 Formula Sheet.docx
File Edit View Insert Format Tools Table Add-ons Help Last edit was 15 minutes ago

ECS455 2016 Formula Sheet

ID3	Limit: 40 symbols (or characters) per person.	401	
036		405	
083		446	
085		474	
095		477	
124		553	
146		558	
150		583	
154		616	
160		82646	
161		92646	
176		674	
196		702	
232		757	
251		761	

Rules for Creating the Study Sheet

- One page only.
- You can fill in any text/formula that you want in your box.
  - Max. 40 symbols/characters in each box.
  - Have to fit inside your own box.
  - It is best not to change the size of your box because that will affect the spaces for other students.
- No drawing/photo/figure.
- Characters/symbols that are too small may not be visible. Exams are not produced by laser-printing.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Example

- Note that google doc can also create equations.

ECS455 2014 Formula Sheet

ID3	Limit: 40 symbols (or characters) per person.	536	Spreading Factor = $\frac{Tb}{Tc}$
053	FDMA: $s(t) = \sum_{k=0}^{l-1} S_k C(f - k\Delta f)$	555	$OFDM,\ \tilde{s} = \sqrt{N} IFFT(S)$ $y = x * h$ $\hat{R} = \frac{1}{\sqrt{N}} FFT(r),\ S = \frac{\hat{R}}{H}$
089	ifwht(eye(N)): Hadamard to Walsh	567	MulPathFadIncLaFDMGurband OrthFFTaIFFT
094	Engst Pm≠Pb, Pk=$\frac{\binom{n}{k}A_u^k}{\sum_{i=0}^{m}\binom{n}{i}A_u^i}$, $n \geq m \rightarrow 0$	575	$\Psi_N^{-(p-1)(q-1)}$; Ψ_N = e^(j2π/N); p-row,q-col(DFT)
095	From 555, $x = \hat{s} + CP$, $r = y - CP$	658	$H_{2N} = [H_N\ H_N;\ H_N\ (not)H_N]$
104	p[runs of length L] = 1/(2^L), L<r = 1/(2^(L-1), L>=r r = polynomial order	667	Irwin Jacobs (Cornell): Pioneer of Wireless Future
129	$s(t) = \sum_{k=0}^{N-1} S_k \frac{1}{\sqrt{N}} 1_{[0,T_s]}(t) exp\left(j\frac{2\pi kt}{T_s}\right)$	682	$f_k = \frac{k}{T_s}$, CDMA:Qualcomm
154	Er.C: $\frac{A^k}{m!m^{k-m}}p_0, k \geq m$ $\frac{A^k}{k!}p_0, k < m$	683	$1 + 0x + x^2 + x^3$ $R_0 R_1 R_2 \rightarrow 100$ $(R_1 + R_2) R_0 R_1 \rightarrow 010$
163	ErlangC: $\frac{A^m}{A^m + m!(1-\frac{A}{m})\sum_{k=0}^{m-1}\frac{A^k}{k!}}$	691	s(f)= $\sum_{k=0}^{l-1} S_k C_k$ where $C_{k1} \perp C_{k2}$
184	B = (½)RK, B = BW, R = Rate bits/sec, K = K-user orthogonal CDMA system	706	circular convolution cconv([1,2,3],[4,5,6],3) = 31 31 28
203	ErB. k+1: $\lambda\delta$ k-1: $k\mu\delta$, Andrew J.Viterbi:Viterbi algorithm	734	$\frac{1}{N}\Psi_N^* X = IDFT\{X\} = x$ $x \Leftrightarrow X = DFT\{x\} = \Psi_N x$
209	Mutual Orthogonality $\forall i \neq j,\ \int c_i(t) * c_j(t) dt = 0$	865	oversampling s[n]=s($n\frac{T_s}{N}$), $s^{(L)}$[n]=s($n\frac{T_s}{LN}$) L=over-sampling factor
253	Key CDMA Property: $\underline{s}C(= \sum_{k=1}^{N} s_k \underline{C}_k)\frac{1}{N}C^T = \underline{s}$	882	Our text authors: D. Tse, P .Visnavath, A.Goldsmith
290	$\oplus$: $same = 0,\ different\ =\ 1$	915	[1 2 3 0 0] cir.conv. [4 5 6 0 0] = [1 2 3]*[4 5 6]
296	An m - sequence covers all non-zero states in a cycle. 1) contain one more 1 than 0. 2) window width r can slide N=(2^r)-1 shifts	962	E.set k+1: $(n-k)\lambda_{\mu}\delta$ k-1: $k\mu\delta$
325	$h(t) = \sum_{i=0}^{v} \beta_i \delta(t - \tau_i)$	971	$Pb = Pm = \frac{A^m/m!}{\sum_{k=0}^{m} A^k/k!}$, A= $\lambda H, H = \frac{1}{\mu}$
361	S(f)= $\frac{1}{\sqrt{N}}\sum_{k=0}^{N-1}$ Sk $e^{-j2\pi(f-k\Delta f)\frac{T_s}{2}}$ $T_s sinc(\pi T_s(f - k\Delta f))$	993	MKChain:0,0(1- $\lambda\delta$);0,1($\lambda\delta$);1,1(1- $\mu\delta$);1,0($\mu\delta$)
395	Engset P_b = (n-m)p_m / $\sum_{k=0}^{m}$ (n-k)p_k	998	Ortho <a,b> = $\bar{a}\ dot\ \bar{b} complexconj.\ =\ 0$

These formula are provided...

$$G(f) = \int_{-\infty}^{\infty} g(t) e^{-j2\pi ft} dt$$

$$\text{DFT}: X[k] = \sum_{n=0}^{N-1} x[n] \exp\left(-jnk\frac{2\pi}{N}\right)$$

$$\text{IDFT}: x[n] = \frac{1}{N}\sum_{k=0}^{N-1} X[k] \exp\left(jnk\frac{2\pi}{N}\right)$$