About the exam

A number of questions has be asked about the exam. This hopefully captures most.

- It is a 3-hour closed book exam on December 17
- The exam will consist of 3 questions. The first will consist of 8 questions, that randomly pick questions in the curriculum. This will be a combination of calculation-based exercises and more verbal questions. The last two are more classical exercises within the topics of the course.
- Obviously the exam (in length) will reflect that is only a 3-hour exam
- I will in December publish a list of formulas, that you need to remember, as these will be included in the exam set
- No calculators allowed, however excel will be available
- I have been told that you can bring a dictionary
- Version of excel and word can be seen at pc-eksamen.ku.dk
- You can select an english and danish exam. I have been told, that this will also be reflected in the word and excel versions.
- Furthermore it is not certain that the solver function will be available. If this is the case, the exam questions will reflect this
- The formulas given on the next page need not be memorized - the list is somewhat shorter than last year. The formulas listed will be available, if needed. However you obviously still need to understand the formulas!

List of important formulas

Interest definition:

$$y(0,t) = \frac{1}{d_t}^{\frac{1}{t}} - 1 = r_t$$

Bond payment profiles:

	Payment (c_t)	Interest (i_t)	Deduction (δ_t)
Bullet bond	RF for $t < \tau$ (1+RF) for t=τ	RF	0 for $t < \tau$ F for t=τ
Serial bond	$\frac{F}{\tau} + R\left(F - \frac{t-1}{\tau}F\right)$	$R\left(F - \frac{t-1}{\tau}F\right)$	$\frac{F}{\tau}$
Annuity	$F\alpha^{-1}_{\tau\neg R}$	$R\frac{F}{\alpha_{\tau\neg R}}\alpha_{\tau-t+1\neg R}$	$\frac{F}{\alpha_{\tau\neg R}}\left(1 - R\alpha_{\tau-t+1\neg R}\right)$

Note: A list of $\alpha_\neg$ will be provided if necessary.

CAPM:

$$r_i = r_f + \beta\left(r_m - r_f\right),$$

where r_i is the return on portfolio i, r_f is the risk-free rate and r_m is the return on the market portfolio.

Black-Scholes:

$$\begin{aligned}
call &= SN(d_1) - Ke^{-r_f t}N(d_2) \\
put &= Ke^{-r_f t}N(-d_2) - SN(-d_1) \\
d_1 &= \frac{\ln\left(S/K\right) + \left(r_f + \sigma^2/2\right)t}{\sigma\sqrt{T}} + \frac{\sigma\sqrt{T}}{2} \\
d_2 &= d_1 - \sigma\sqrt{T} \\
N(d) &= \text{cumulative normal probability density function} \\
S &= \text{stock price now} \\
K &= \text{exercise price of option} \\
t &= \text{number of periods to exercise date} \\
\sigma &= \text{standard deviation (volatility) per period of stock return} \\
r_f &= \text{interest rate per period}
\end{aligned}$$

Put-call parity

$$c_0 + PV\left(K\right) = p_0 + S_0$$

$$p_0 = c_0 + PV\left(K\right) - S_0$$