M339D Topics

✓	Date	Day	Topic	Projects Out/Due
☐	**8/22/2022**	M	Orientation.	
			Basics of R.	
☐	**8/24/2022**	W	Setting up R and RStudio.	
☐	**8/26/2022**	F	Basics of R: Arithmetic. Vectors.	
☐	**8/29/2022**	M	R-scripts and R-notebooks. Data.	
☐	**8/31/2022**	W	Functions in R. `If ... else` in R. For loops.	
			Stocks and the Mean-Variance Theory.	
☐	**9/2/2022**	F	Standing assumptions and conventions. Risky assets. Transaction costs.	**Out:** Reading: p. 17 and Figure 1.0.1 from *Fahim*
☐	**9/7/2022**	W	Historical returns of stocks.	
☐	**9/9/2022**	F	Outright purchase. Short sales.	**Out:** *Project #1*
☐	**9/12/2022**	M	Expected return of a portfolio.	
☐	**9/14/2022**	W	Volatility of a portfolio. Diversification. Market indices.	**Out:** *Project #2*
☐	**9/16/2022**	F	Feasible sets. Efficient portfolios. Effect of correlation.	**Due:** *Project #1*
☐	**9/19/2022**	M	Sharpe ratio.	
☐	**9/21/2022**	W	CAPM.	**Out:** *Project #3*
			Forwards. Calls. Puts. Put-Call Parity.	
☐	**9/23/2022**	F	Payoff and profit curves. Long/short positions.	**Due:** *Project #2*
☐	**9/26/2022**	M	Basic risk management. Forward contracts.	
☐	**9/28/2022**	W	Hedging using forward contracts.	
☐	**9/30/2022**	F	European call options.	**Due:** *Project #3*
☐	**10/3/2022**	M	European put options. Moneyness.	
☐	**10/5/2022**	W	Finite probability spaces [revisited].	
☐	**10/7/2022**	F	Arbitrage portfolios. Law of the Unique Price. Replicating portfolios.	
☐	**10/10/2022**	M	Put-call parity.	**Out:** *Project #4*
			Monte Carlo.	
☐	**10/12/2022**	W	Random number generation.	
☐	**10/14/2022**	F	SLLN. Monte Carlo simulation.	**Out:** Project #5
☐	**10/17/2022**	M	***In-Term Exam I***	
			Binomial Option Pricing.	
☐	**10/19/2022**	W	The binomial asset-pricing model.	
☐	**10/21/2022**	F	Binomial option pricing: Pricing by replication.	**Due:** *Project #4*
☐	**10/24/2022**	M	Binomial option pricing: Risk-neutral probability.	
☐	**10/26/2022**	W	Binomial option pricing: Two periods.	
☐	**10/28/2022**	F	Multiple binomial periods.	**Due:** *Project #5*
☐	**10/31/2022**	M	Monte Carlo for binomial option pricing.	
☐	**11/2/2022**	W	The normal approximation to the binomial.	**Out:** *Project #6*

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			Black-Scholes Pricing with Delta-Hedging.	
☐	**11/4/2022**	F	The simple random walk.	
☐	**11/7/2022**	M	Scaled random walks.	
☐	**11/9/2022**	W	*In-Term Exam II*	
☐	**11/11/2022**	F	The limiting behavior of stock prices.	
☐	**11/14/2022**	M	The Black-Scholes pricing formula.	
☐	**11/16/2022**	W	Monte Carlo with Black-Scholes pricing.	**Out:** *Project #7*
☐	**11/18/2022**	F	Delta-hedging.	**Due:** *Project #6*
☐	**11/28/2022**	M	Implied volatility.	
☐	**11/30/2022**	W	Problem-solving session.	
☐	**12/2/2022**	F	Problem-solving session.	Due: *Project #7*
☐	**12/5/2022**	M	*In-Term Exam III*	