

Prof. Andrew Ross		Math 319 CRN 21245; 2:00-3:15 pm; Mon/Wed							
While I'm good at sticking to a schedule in Math 110, 120, 121, and Stat 360, I'm not so good at sticking to it in Math 319.									
Block #	Date 2020	day	unit	topics	Bonus Excel Material after class	HW assigned	HW due	Python goals	
1	6-Jan	Mon	general modeling	intro; math model examples; a math model has; graph sketching		M1			
2	8-Jan	Wed	general modeling	bloom's taxonomy; CCSS-M standards for mathematical practice; malaria nets--start simple; evacuation; modeling cycle	text-to-columns	M2	M1	import csv file	
3	13-Jan	Mon	general modeling	real modeling cycle; oper tact strat; airline problems; concept maps; intro to excel (graphing, label axes, title, autofill, control-shift-down)	left/mid/right and =DATE	M3	M2	matplotlib	
4	15-Jan	Wed		linear regression: houses, predictions, residuals, graph residuals!	vlookup	R1, R2	M3	statsmodels.OLS or sklearn.linear_model.LinearRegression	
	20-Jan	Mon	regression	Dr. Martin Luther King, Jr. Day; no classes; campus-wide celebration				ponder how math can support a more just society	
5	22-Jan	Wed	regression	R ² ; school district data; correlation/causation; ecological fallacy; common resid graphs; basic procedure; LSRL math model; averaging before regression?	marked scatterplots	R3	R1		
6	27-Jan	Mon	regression	Pre-Lab at home: 4-function pre-quiz; in-class: answers; exponential fits, compound interest	sparklines		R3 before class, R2		
7	29-Jan	Wed	regression	yeast; logplots; power fit	Pivot Tables	R4		logarithms and linear regression	
8	3-Feb	Mon	regression	log-of-log, model selection, occam's razor, multivariate regression school data	parallel axis plots	R5	R4	multiple regression	
9	5-Feb	Wed	regression	heat index; polynom; sines	LiveRegression		R5	numpy.polyfit or statsmodels.OLS	
10	10-Feb	Mon	regression	talstad.com java fourier app; waves and trends		R6		FFT? voiceprint?	
11	12-Feb	Wed	regression	Quiz on R5; Logistic; overfitting/crossvalidation; Machine Learning overview	generating random numbers	R7, R8, R9	R6	generating random numbers; scipy.optimize.curve_fit; sklearn.linear_model.LogisticRegression	
12	17-Feb	Mon	optimization	LP toys, wyndor (no sensitivity analysis), knapsack, swimmers		O1	R7	scipy.optimize.linprog vs PuLP	
13	19-Feb	Wed	optimization	shift scheduling; network flow		O2	R9		
	24-Feb	Mon		break week					
	26-Feb	Wed		break week					
14	2-Mar	Mon	optimization	Networks			O1		
15	4-Mar	Wed	optimization	MCNF node-node; ramen; brief fast-food intro; sensitivity analysis on wyndor; feas region; fundamental theorem of LP		O3, M4	O2		
16	9-Mar	Mon	optimization	example papers: dinosaur and relay; NLP: manufacturing, electricity	Word/PPI: live or dead copies?		O3, M4	scipy.optimize.minimize	
17	11-Mar	Wed	optimization	concavity			proposal 1		
18	16-Mar	Mon	optimization	airport		O4			
19	18-Mar	Wed	optimization	shotspotter		O5			
20	23-Mar	Mon	dynsys	Dynamical Systems; PID; credit card, repeated dosing			O4, O5	for-loop	
21	25-Mar	Wed	projects	Project Presentations			report 1; presentation 1		
22	30-Mar	Mon	projects	Project Presentations		M6			
23	1-Apr	Wed	dynsys	limited population growth; quiz		D1	M6 (yes, before M5.)		
24	6-Apr	Mon	dynsys	pagerank; leslie; SIR; pred/prey; oilspill		D2	D1		
25	8-Apr	Wed	dynsys	multiple initial conditions; equilibria; delta plots; phase-plane plots; fitting limited-pop growth		D3	proposal2		
26	13-Apr	Mon	dynsys	observation noise, process noise			D2		
27	15-Apr	Wed	dynsys	repeated dosing? accel/vel/pos? chaos? splines? PERT/CPM? wrapup; M5 & M6 discussion		D4, M5	D3		
28	20-Apr	Mon	projects	Presentations			D4, M5		
	22-Apr	Wed		no class--other classes having finals					
	27-Apr	Mon	projects	1:30-3:00 Presentations during "final exam" slot; HALF-HOUR EARLY!			report 2; presentation 2		