Unit 3: Linear Programming

KEY

SA	could be used as a stand alone lesson, provided prior knowledge is met
Time	approximate # of 45-50 min periods
Coding	These lessons are geared towards Julia; lessons will need modification for other languages. “Coding” includes: basic commands, loops, if/else.
C+L	Computer with desired language installed
SC/GC	Scientific/Graphing calculator
(T)	May need extra time for tech troubleshooting

Title	Topics	Prior knowledge	Equipment	Sequence	Slides	Practice Problems	Time
3.1 intro and graphical	• definition of constraints • writing constraints • graphing a feasible region • optimizing with corner points • active and inactive constraints	• Algebra	0	SA	21	5	2
3.2 matrix operations	• intro to matrices • add, subtract, multiply • inverses and division	• Algebra • coding	C+L	SA	20	4	1.5
3.3 row redux solving	• array commands • row replacement and Gaussian elimination	• Algebra • coding	C+L	SA	19	6	2
3.4 building a simplex tableau	• Converting equations • Setting up an initial tableau	• Algebra	0	3.1	14	5	1.5
3.5 pivoting	• Reading a solution • pivoting • writing a program to pivot	• Algebra • coding+arrays	C+L	3.1, 3.3, 3.4	15	5	2
3.6 simplex max	• choosing a pivot • solving using pivot program • graphical meaning	• Algebra • coding + arrays	C+L	3.1, 3.3-3.5	17	4	1.5
3.7 full problems	• simplex solving from words to final tableau	• Algebra • coding + arrays	C+L	3.1, 3.3-3.6	3	2	1
3.8 duality and minimization	• setting up a dual matrix • solving and reading a solution	• Algebra • coding + arrays	C+L	3.1, 3.3-3.7	11	3	1.5
3.9 nonstandard max	• setting up with = or ≥ constraints • getting to feasible • maximizing	• Algebra • coding + arrays	C+L	3.1, 3.3-3.6	20	4	2

Total time, not including assessment/extra: 15 days