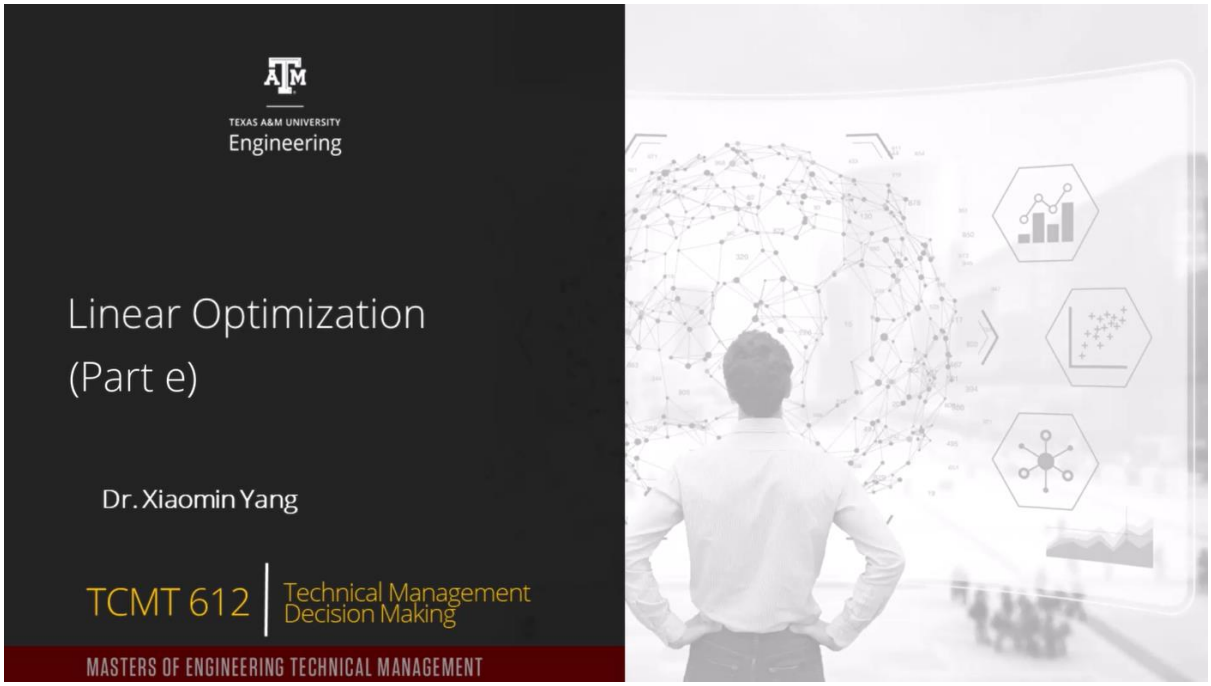
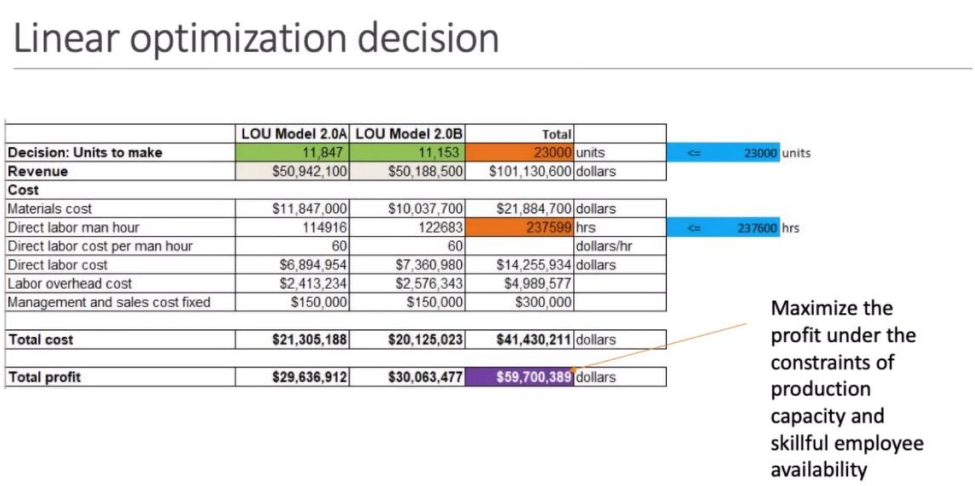
M7L2e. Linear Optimization

Slide #1



Slide #2



This table shows the optimization outcomes.

The objective is to maximize the profit under the constraints of production capacity and skillful employee availability.

The suggested decision is to produce 11,847 units of Model 2.0A and 11,153 units of Model 2.0B.

Totally 23,000 units will be produced, which is the same as the production capacity of the plant also producing.

This unit will take 237,599 human hours, which is almost the same as the maximum available human hours of 237,600 hours.

So limited production capacity and human resource both constrain the production and the profit.

The total profit is about 59,700,000.

Note that it is almost 3, 000, 000 more than our initial inputs without optimization.

The optimization analysis also provides additional insights about your business.

For instance, the limited production capacity and human resources both constrain the production.

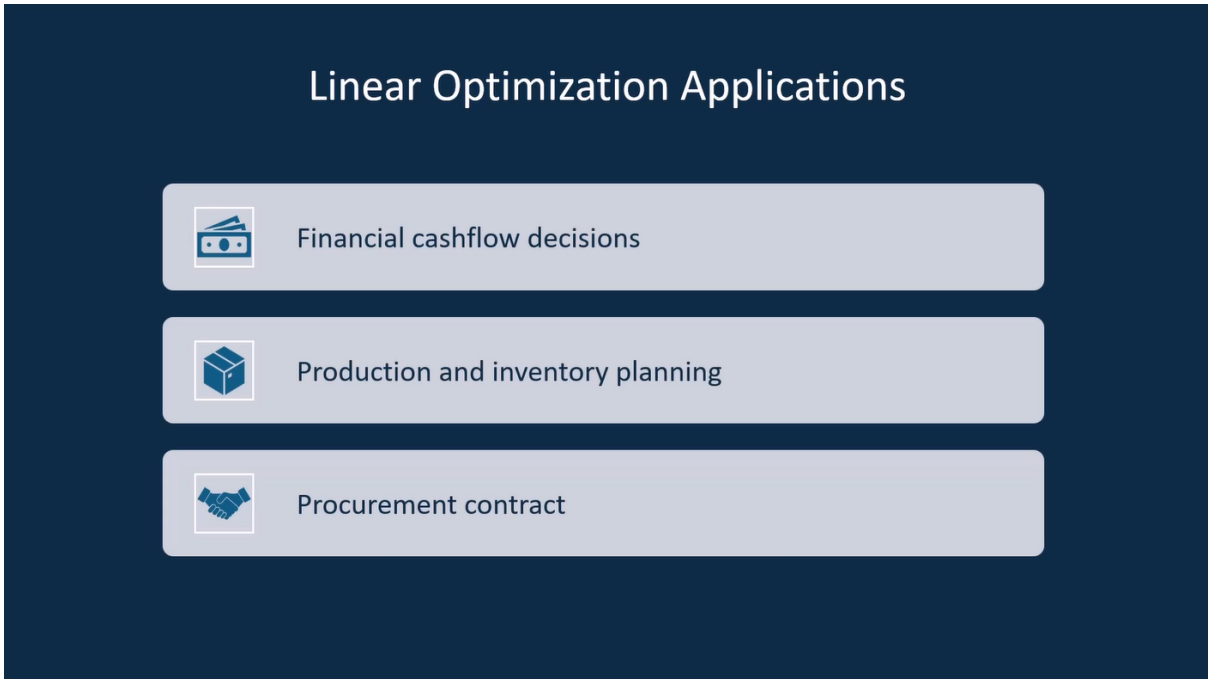
This implies that the Houston plant's human resource and production capacity match with each other very well.

If you desire to grow the business to a new level, you will need to increase both the production capacity and the human resources to meet the new greater demand.

Here I would like to emphasize that business models likely describe a simplified representation of your business situations and therefore optimization results may provide you a direction that approximates the optimum solutions to your business problems.

You should consider other non-quantifiable factors and the business strategy in addition to the optimization analysis in your final decisions.

Slide #3



This simple linear optimization model gives us a good idea how to build an optimization model and how to use analytic solver tool to find the optimum business decisions.

In the rest of this module, we will discuss some applications of business optimization analysis.

We will cover financial cash flow decision to minimize financial cost to support operations cash flow.

We will discuss production and operation planning to minimize the inventory and production costs.

I created an optimization template for each of the business applications.

You can find those tools in a resource folder on the Canvas website.

I expect you to understand the logic behind the business model and the principles of business optimization rather than recreating the model.

Feel free to use those templates for your assessment projects.