

ISE410 Planning and Scheduling
Session 2
August 26, 2021

OUTLINE

- **Costing**
- **Tools**

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- **Costs**
 - **Definitions**
 - **Calculations**
 - **Examples**

Material
material overhead

MOH %
~ 1%

Labor pay \$/hr

Labor overhead
FOH \$/hr (192.65)

Total other
Expense
~ 35M

Allocation in proportion to the
labor hrs, Total labor hrs.

Definitions

- **Earned hours – time spent that can be charged to a customer**
 - established by standards for each of the products produced
- **Efficiency – the ratio of earned hours divided by time spent by a person performing the work – usually assumed to be 85%**
- **The cost of an hour of labor, including benefits, for example, \$30.**
Indirect labor – the total cost of everything that is not involved directly in producing products or services
- **Total Materials cost – the amount spent on all materials that go into all the different products that are produced**
- **Material overhead costs – sum of money spent on acquiring and handling the material used in making products**

Adding up the costs (example)

- An electronics plant generates 290,000 earned hours (established by standards for each of the products produced). These hours are used to produce 500 different products, a total of one million units.
- An 85% efficiency is assumed.
- The cost of an hour of labor, including benefits, is \$30
- Indirect labor totals \$25M
- Materials cost \$100M
- Material overhead costs are \$1.3M
- What is the cost of a product containing 0.35 hours of standard labor and \$29.50 of material?
- We first calculate the total (or loaded) labor rate as $(25,000,000 + 290,000 * 30 / 0.85) / 290,000 = \$121.50/\text{hour}$

$$\frac{1.3M}{100M} = 1.3\%$$

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Total cost for labor

$$\begin{aligned} \text{Olt} &= 25\text{M} \\ \text{HRS} &= \frac{290,000 \times \$30/\text{hr}}{.85} = \text{TOTAL \$} \end{aligned}$$

$$\frac{\text{TOT \$}}{\text{HRS}}$$

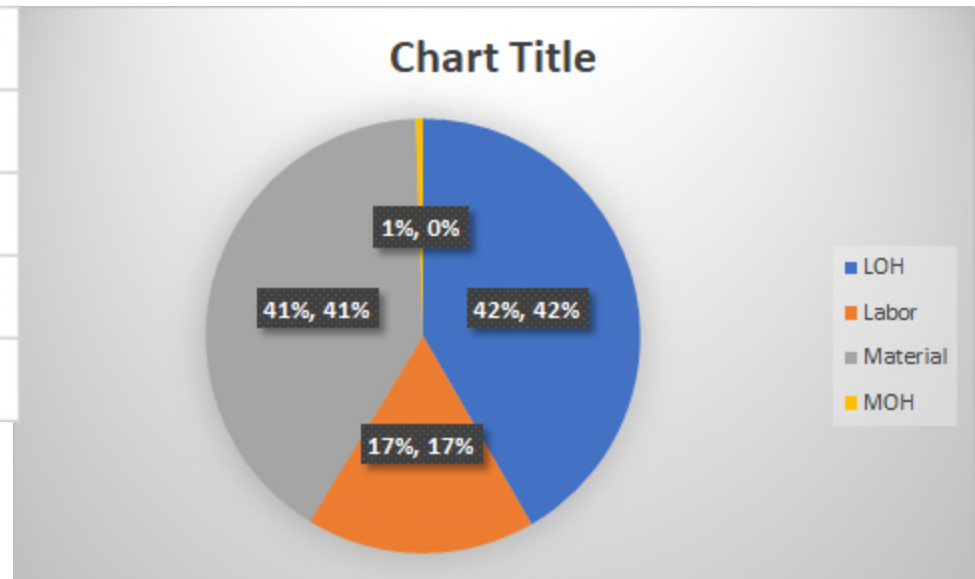
Adding up the costs (example continued)

- Material overhead = $\$1.3\text{M}/\$100\text{M} = 1.3\%$
- Direct and indirect labor = $0.35^* \$121.50 = \42.53 ✓
- Material = $\$29.50$ ✓
- Material Overhead = $0.013 * 29.50 = \$0.38$
- Total Cost = $\$72.41$
- And you can see why everyone attacks overhead
- If you are independent company, the profit would add another 10% or so. It is very dependent on the industry and level of investment
- Also see the spreadsheet with data for a whole operation

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Cost Distribution

LOH	42%	\$30.17
Labor	17%	\$12.35
Material	41%	\$29.50
MOH	1%	\$0.38
		\$72.41



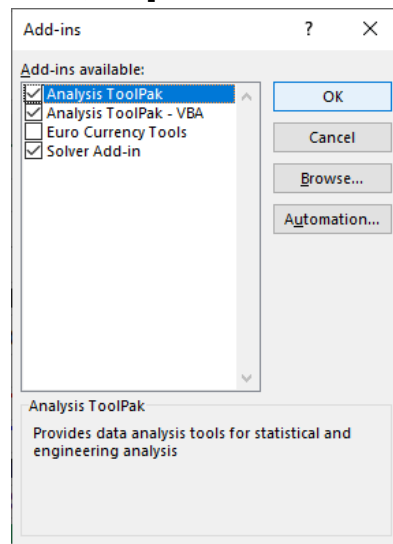
Tools for this class

- **Excel**
 - **Frequently used features**
 - » **Functions, Sorting, Lookups, Tracing, Goal Seek**
 - **Add –ins**
 - » **Data Analysis (mostly statistical procedures)**
 - » **Solver (Optimizes a functions by varying the parameters on which it depends)**
 - **VBA (Visual Basic for Applications)**

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Add-ins

- Created by vendors for use in Excel
- Loaded at the time you open Excel (takes time)
- Can be turned off and on
 - **File, Options, Add-Ins, Manage Excel Add-ins, Go**



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VBA

- **A way to augment Excel with programming**
- **Alt F11 toggles between Excel and its Visual Basics View**
- **You can write code directly or have Excel write it with recording a sequence of steps you perform in Excel**

