GERMANNA
ACADEMIC CENTER
FOR EXCELLENCE

# ACC 212: Cost Analysis & Budgeting

**Bonds:**

- Interest Rate > Market Value = Premium Bonds
- Interest Rate = Market Value = Par-Value Bonds
- Interest Rate < Market Value = Discounted Bond

**Interest Expense Calculation:**

I = P × r × t; where P is Principal, r is the issued interest rate (remember, 8% = 0.08), and t is the time frame of the interest.

Total Interest Paid = (number of payments) × (single interest payment)
Total Interest Expense = Total Interest Paid + Discount **or** Total Interest Paid - Premium

Amortization is the perpetual adjustment of a premium/discount to the interest expense account.

**Example Problem:**

On January 1, XYZ Inc. issued a $200,000 bond that had a semi-annual interest rate of 8% for 4 years. The bond was issued at a discount, and XYZ Inc. received $185,000 cash. Record journal entries for the bond's issuance, payment of interest, and maturity date. Find the total interest expense and create an amortization table.

Discount = $200,000 - $185,000 = **$15,000**

Amortization Amount = (premium or discount) / (number of payments) Amortization Amount = $15,000 / 8 = **$1,875**

Interest Payment = P × r × t = $200,000 × 0.08 × (6/12) // 8% = 0.08, and the time is semi- annual (every 6 months)

Interest Payment = **$8,000**

Total Interest Paid = (number of payments) × (interest payment) Total Interest Paid = (4 years × 2/year) × $8,000

Total Interest Paid = 8 × $8,000 = **$64,000**

Total Interest Expense = (total interest paid) + (discount) Total Interest Expense = $64,000 + $15,000 = **$79,000**

**Bond Issuance at Discount:**

| | | | | |
|---|---|---|---|---|
| Jan. | 1 | Cash | $185,000 | |
| | | Discount on Bonds Payable | | 15,000 |
| | | Bonds Payable | | 200,000 |

**Bond Interest Payment with Straight-line Amortization:**

| | | | | |
|---|---|---|---|---|
| Jun. | 30 | Interest Expense | $9,875 | |
| | | Discount on Bonds Payable | | 1,875 |
| | | Cash | | 8,000 |

**Bond Retirement at Maturity:**

| | | | | |
|---|---|---|---|---|
| Dec. | 31 | Bonds Payable | $200,000 | |
| | | Cash | | 200,000 |

*NOTE*- There may also be an interest payment on the date of maturity

| Amortization Table of Discount | | |
|---|---|---|
| Date | Unamortized Discount | Carrying Value |
| 1/1/2007 | $ 15,000 | $ 185,000 |
| 6/30/2007 | $ 13,125 | $ 186,875 |
| 12/31/2007 | $ 11,250 | $ 188,750 |
| 6/30/2008 | $ 9,375 | $ 190,625 |
| 12/31/2008 | $ 7,500 | $ 192,500 |
| 6/30/2009 | $ 5,625 | $ 194,375 |
| 12/31/2009 | $ 3,750 | $ 196,250 |
| 6/30/2010 | $ 1,875 | $ 198,125 |
| 12/31/2010 | $ - | $ 200,000 |

**NOTE** - The amortization amount may be different on the last entry if the discount or premium was not evenly divisible by the number of payments. In this case, the last interest payment should remove the remaining balance.

**Statement of Cash Flows**

Direct Method lists each specific account involving cash receipts (i.e. payment for merchandise, cash from customers, etc). The method subtracts all the cash outflows from cash inflows (revenues).
Indirect Method adjusts the net income with the changes in the balance of various accounts. This method does not report any specific transactions.

Each method divides the statement into three sections

- Operating Activities – Transactions that determine net income
- Investing Activities – Transactions that affect long-term assets
- Financing Activities – Transactions that affect long-term liabilities and equity
- Just like other statements, use a column to sum the total of a section.

- The last two steps of each method involve adding the cash balance at the beginning Of the period; the result produces the cash balance at the end of the year.
- Set up scenarios with the indirect method to determine if the value is positive Or negative.
    - Example: The comparison of balance sheets displays a decrease in accounts receivable. This produces a positive value because the company received payment for a service and decreases receivables.

**Manufacturing Statement**

- The goal of a manufacturing statement is to find the cost of the goods manufactured. Cost = Direct Materials + Direct Labor + Factory Overhead
- Direct Materials Used = Beginning Inventory + Purchases – Ending Inventory
- The statement also requires an evaluation of goods in process inventory as the cost to produce them has already incurred.
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**Cost Classification**

- Fixed Cost – a cost that does not change with level of production
    - Example: rent expense
- Variable Cost – a cost that changes with production
    - Example: number of tires needed to manufacture a bicycle
- Direct vs. Indirect – direct costs are traceable to a single cost object where as indirect costs are not
    - Example: direct – wages of a worker; indirect – factory administration
- Product vs. Period cost – Product costs are expenditures required to manufacture a final product. Period costs are those that are not classified as product costs
    - Example: product – direct materials, labor and factory overhead
- Prime vs. Conversion cost – Prime costs and conversion costs are types of product costs. Prime costs are costs of direct labor and materials; conversion costs are expenditures to convert raw materials into finished goods.

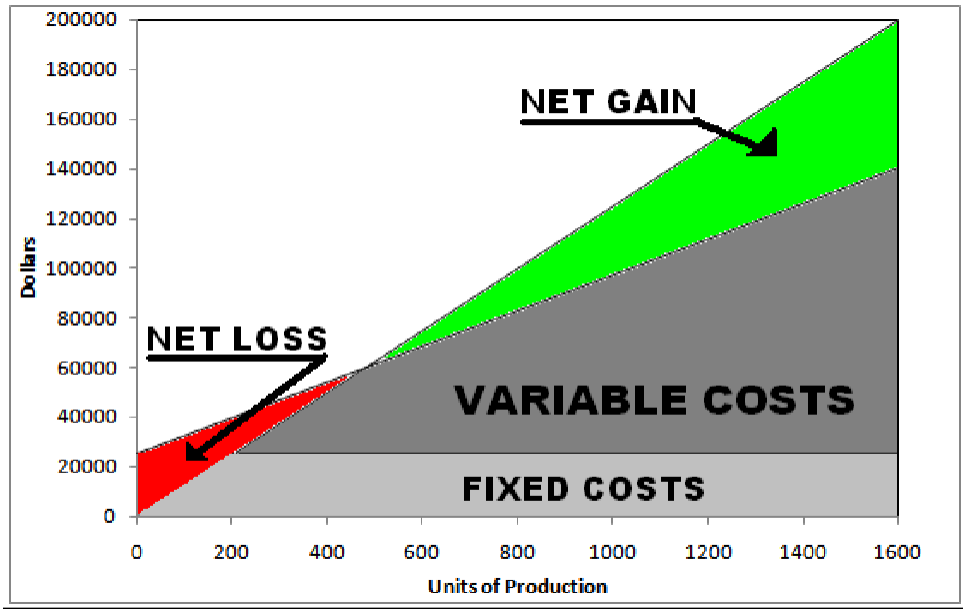
**Manufacturing Tips**

- Process Cost Accounting is used to determine the costs of goods in process.
    - E.U.P. – Equivalent Units of Production: This value creates a value of produced units that resembles the costs incurred with the process goods.
    - Total Costs / E.U.P. = cost per equivalent unit of production
- Job Order Costing is based around just-in-time production producing when an order arrives.

  Each job has documented procedures
    - Materials Requisition – request for raw materials from storage

- Materials Ledger – displays received materials and costs
- Time Tickets and Clock Cards – recording of labor costs (time ticket = daily and clock card = pay period)

**Cost Analysis (CVP analysis)**




**Contribution Margin per Unit** = **Sales Price per Unit** − **Total Variable Cost per Unit**

**Contribution Margin Ratio** = $\frac{\text{Fixed Costs}}{\text{Sales Price per Unit}}$

**Break-Even Point in Units** = $\frac{\text{Fixed Costs}}{\text{Contribution Margin per Unit}}$

**Break-Even Point in Dollars** = $\frac{\text{Fixed Costs}}{\text{Contribution Margin Ratio}}$

**Target After-Tax Income** = $\frac{\text{Fixed Costs} + \text{Target Pretax Income}}{\text{Contribution Margin Ratio}}$

- You can perform the same operation to find targeted unit sales by replacing Contribution Margin Ratio with Contribution Margin per unit

$$\textbf{Target Pretax Income} = \frac{\textbf{Target After-Tax Income}}{\textbf{[ 1 - (tax rate) ]}}$$

- For Example: XYZ Inc. desires a $100,000 net income with a 35% income tax rate
  - Target Pretax Income = $100,000 / (1 - 0.35) = $**153,847**

**Budgets**

**Master Budget** is a comprehensive compilation of operating, capitol and financial budgets.

- Operating Budgets:
  - **Sales Budget** lists expected unit sales, budgeted retail price per unit and total revenue for each month.
  - **Merchandise Purchase Budget** organizes the budgeted purchases for each month. Most companies prefer to have a percentage of next month's sales in stock at the end of the current month.

**Total Units to be Purchased** = **Expected Ending Inventory** + **Expected Sales** - **Beginning Inventory**

  - **Selling Expenses Budget** lists each month with expected sales, sales commission, and salaries/expenses associated with selling goods.
  - **General and Administrative Budget** lists each month with budgeted administrative salaries and depreciation; this budget includes the operating expenditures that are not included in the selling expense budget.

- Capital Expenditures Budget:
  - Budget for purchases and disposal of plant assets.
- Financial Budgets:
  - **Cash Budget** plans future cash flows by combining the other budgets and evaluating the collection/payment of debts.
  - It is common for companies to have a minimum balance loan. If the cash balance at the end of the month is below a certain amount, the company automatically takes out a loan to reach the minimum balance. If the cash balance is above, the company will repay the loan, if applicable.
    - Remember to pay interest on the loan within the cash budget
    - Track the loan balance at the bottom of the budget
  - Receivables are typically collected in the months after they incur; make a table to track what has been collected and what is still outstanding.

- Purchases are typically performed in a similar manner as receivables; create a table to track payables.
- **Budgeted Statements** are created in the same format as regular statements; the only difference is the values come from a Master Budget instead of an actual trial balance.

**Flex Budgets**

- **Fixed Budget Performance Report** is a comparison of master budget to actual results. It includes a column for the variance and notes whether the variance was favorable / unfavorable (did it increase/decrease net income).
- **The Flex Budget Process:**
  - Separate Fixed and Variable costs.
  - Determine the variable cost per unit by dividing the total variable cost by total units produced (from actual results).
    - It may involve individual expenditures (labor, materials, etc).
  - Multiply the total variable cost per unit by the desired number of units to calculate the total variable cost.
  - Add the total fixed costs to the total variable cost (they do not change with production level) to calculate the Total Cost.
  - Subtract Total Cost from Total Revenue to find the income from operations.
    - Total Revenue = units produced × retail price per unit
- You can perform the same process with different amounts of production levels to determine a desired level of production and to compare cost progressions over time.

**Managerial Decisions:**

- When making decisions about a production mix, consider the market demand; do not produce units that are not going to sell.
  - The first goal is to determine the best product to produce by calculating the contribution margin per machine hour.
  - The product with the highest CM/hr. is the best good to produce.

$$\textbf{Contribution Margin per Machine Hour} = \frac{\textbf{Contribution Margin per Unit}}{\textbf{Machine Hours per Unit}}$$

- Make or buy decisions require listing all the costs involved and determining the total variable cost per unit. Then you must compare it to the retail cost of purchasing the good.
  - When making a decision, it is also helpful to evaluate the changes in revenue, fixed costs, and demand.
  - How will it affect overall revenue? Prepare flex budgets to aid the decision-making process.