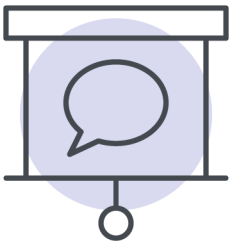
UofG

ACCT 2230

MIDTERM EXAM

STUDY GUIDE



Lecture Notes

Chapter 2

Manufacturing Costs: DM + DL + OH

- Direct materials
  - Raw materials that are an integral part of the end product
  - I.e. radio in car
- Direct labour
  - Labour costs that are easily traced back to the individual units of product
  - I.e. assembly line worker wages
- Manufacturing overhead
  - Costs not easily traced to the product
  - Indirect materials
    - I.e. glue, nails, etc
  - Indirect labour
    - I.e. janitors, security guards, etc
- Traceable to the product

Classifications of Costs

- Prime cost
  - Direct material + direct labour
- Conversion costs
  - Direct labour + manufacturing overhead
  - Costs involved in converting raw materials to final products

Non-Manufacturing Costs

- Marketing or selling costs
  - Costs necessary to market, order, + deliver the product
- Administrative costs
  - All executive, organizational, and clerical costs
- SG&A -> selling, general, and administration costs

Product Costs vs Period Costs

- Product costs
  - same as manufacturing costs
  - Moves from inventory to cost of goods sold
- Period costs
  - Same as non-mfg. Costs
  - Recorded in the same period the costs occur as an expense

The Income Statement

- COGS for manufacturers differs from COGS for merchandisers
- For manufacturers, COGS includes total manufacturing costs: raw materials, direct labour, overhead costs
- Merchandisers only have inventory costs
- See slide 9 ch. 2 lecture slides

Basic Equation for Inventory Accounts

- Beginning balance + additions to inventory = ending balance + withdrawals from inventory

Product Cost Flows

- Mfg. Costs -> Cost of Goods Manufactured -> Cost of Goods Sold
- Work in Progress (for unfinished goods)
- COGM = Beginning WIP + total mfg costs - Ending WIP
    - Total mfg costs = direct labour + direct materials + mfg overhead
- COGS = COGM + Beginning final goods - ending final goods inventory

Manufacturing Cost Flows

- Costs
    - Product costs
    - Period costs
- Balance sheet
    - Raw materials inventory
        - Direct materials used in production
    - Work in progress inventory
    - Finished goods inventory
- Income statement
    - Cost of goods sold
    - Selling & admin expenses

Cost Classifications for Predicting Cost Behaviour

- How costs react to changes of activity levels within the relevant range
- Variable costs
    - Change when activity level changes
    - Variable cost per unit remains the same over wide ranges of activity
- Fixed costs
    - Remain unchanged regardless of activity level
    - Average fixed cost per unit goes down as activity level increases
    - I.e. rent per unit produced decreases as unit production increases

Opportunity Cost

- The potential outcome given up in favour of another

Sunk Costs

- Have already occurred and cannot be changed in the future
- Should not factor into future decision making

Practice: E2-4

Direct Materials

Beginning raw materials	$66,000
+Purchase	$528,000
=Available	$594,000
- Ending raw materials	(78,000)
Raw Materials used	$516,000

Direct Labour	
Direct Labour	$258,000
Overhead	
Overhead	$456,000
Mfg. Costs	$1,230,000
Beginnning WIP	$228,000
Available WIP	$1,458,000
Ending WIP	$264,000
COGM	**$1,194,000**

Chapter 3

Variable Cost Factors
- Units produced
- Machine hours
- Miles driven
- Labour hours

Variable Costs
- A cost whose total dollar amount depends proportionally to activity level (changes as activity level changes)
- E.g. long distance phone bill depends on how many minutes you talk

Variable Cost per Unit
- A variable cost remains constant if expressed on a per unit basis
- I.e. 10 cents per minute

Fixed Costs
- Remain the same regardless of activity level

Fixed Cost per Unit Example
- Average fixed costs per unit decrease as activity level increase
- i.e. fixed cost / local call decreases as more local costs are made

Mixed Costs
- Contains both fixed and variable costs
- I.e. utility costs (fixed monthly charge + variable cost per kW)
- y = a + b*x
  - y = total mixed cost
  - a = total fixed cost (vertical intercept)
  - b = unit variable cost (slope)
  - x = level of activity
  - b*x = total variable cost

How to Break Down Mixed Costs into Fixed & Variable Costs?

High-Low Method

- Find highest & lowest cost based on the level of activity (i.e. hours)
- Subtract low level of activity from high level of activity
- Subtract low level of cost from high level of cost
- Variable cost per hour = change in cost / change in hours
- Find total fixed cost
    - Total fixed cost = total cost - total variable cost
        - Total fixed cost = total cost - (unit variable cost * hours)
- Sub values of low level or high level of activity into above equation to find total fixed cost

The Contribution Format

- Traditional income statement format does not distinguish fixed and variable costs
- Separating fixed & variable costs are crucial in decision making
- Facilitates planning, control, and decision making
- Contribution margin
    - Sales revenue - variable costs = contribution margin
    - Emphasizes cost behaviour
    - Covers fixed costs and provides for income
    - Unit contribution margin = total contribution margin / # of units produced
- Used for:
    - Cost-volume-profit analysis (ch4)
    - Budgeting (ch9)
    - Segmented reporting of profit data (ch11)
    - Special decisions (i.e. pricing & make-or-buy analysis) (ch12)
- Used by management (whereas traditional approach is mostly used for external reporting)

E3-5

Level of Activity	60,000 units	80,000 units	100,000 units
Total VC	$150,000	$2.50 * 80,000 = $200,000	$2.50 * 100,000 = $250,000
Total FC	$360,000	$360,000	$360,000
Total Costs	$510,000	$560,000	$610,000
Unit VC	$150,000 / 60,000 = $2.50 / unit	$2.50 / unit	$2.50 / unit
Unit FC	$360,000 / 60,000 = $6	$360,000 / 80,000 = $4.50	$360,000 / 100,000 = $3.60
Unit TC	$2.50 + $6 = $8	$2.50 + $4.50 = $7	$2.50 + $3.60 = $6.10

Sales	90,000 * $7.50 =	$675,000
Total VC	90,000 * $2.50 =	($225,000)
CM		$450,000
TFC		($360,000)
Net Operating Income		$20,000

Unit CM	= unit price - unit VC =$7.50 - $2.50	$5

Chapter 4

.Cost-Volume-Profit Interactions

- Prices of products (p)
- Volume/level of activity (q)
- Unit per variable costs (unit VC)
- Total fixed costs (FC)
- Mix of products sold

Basics of CVP Analysis

- Contribution format income statement
  - Itemize based on cost behaviour
- Helpful in judging impact of profits of changes in price, cost, or volume
- Contribution margin (CM) is the remainder of sales revenue less variable expenses
- Total CM = S - VC
- Total CM = unit CM *q
- Can also be expressed as a per-unit basis (Unit contribution margin)

- Unit CM = p - unit VC

CM Ratio
- Can be expressed as:
  - Unit contribution margin / selling price per unit
  - Contribution margin / sales
- For each additional dollar you are selling, you are making (CM ratio%) more profit

The Contribution Approach
- Break even point: where no losses or profits occur
  - Net income = 0
- Ex:
  - q = 400, profit = 0
  - q = 401, profit = $200
    - $200 = 1 * unit CM
  - q = 410, profit = $2000
    - $2000 = 10 * unit CM
- Check CH4 lecture slides 9-10 to see CVP graph

Break-Even Analysis
- Equation method
- Formula method
- Profits = (Sales - Variable expenses) - Fixed expenses
- Sales = Variable expenses + Fixed expenses + Profits
  - At break even, profit = 0
- Total sales = sale price * q
- Variable expenses = unit cost * quantity
  - I.e. $500Q = $300Q + $80,000 + $0
    - $200Q = $80,000
    - Q = $80,000 / $200 per bike
    - Q = 200 bikes
- BEP in units sold = Fixed costs / CM per unit
  = FC / p - unit VC
- BEP in total sales dollars = Fixed costs / CM ratio
  = Q of BEP * price

Changes in Fixed Costs and Sales Volume
- How will profit change if unit sales increase from 500 to 540 by increasing the monthly advertising budget by $10,000
- Given: Unit CM = $200
- Change in unit sales = 40 units
- Total CM = $200 * 40 = $8,000
- Total FC = $10,000

EX: Exercise 4-3
In March, Mitchell Ltd. had sales of $250,000 (50,000 units), total VC of $190,000, and total fixed expenses of $36000.
1. What is the CM ratio

2. Calculate break-even level of sales in dollars
3. Estimate the change in come if total sales increase by $20,000

1. CM Ratio = Contribution margin / sales
   = (Sales - VC) / Sales
   = ($250,000 - $190,000) / $250,000
   = 0.24 --> 24%
2. Sales at break-even = FC / CM ratio
   = $36,000 / 0.24
   = $150,000
3. CM ratio = 24%
   Changes in S = $1 -> changes in profit = $0.24
   Changes in S = $20,000 -> changes in profit = $0.24 * $20,000 = $4,800

EX: Exercise 4-5
Mackson products distributes a single product. It is $8/unit and the VC is $6/unit. The monthly FC is $5500

1. Solve BEP in unit sales
2. Solve BEP in sales dollars

1. qBEP = FC / unit CM
   = $5500 / $8 - $6
   = 2750

2. S = q * p
   = 2750 * $8 = $22,000

Target Profit Analysis

- Equation & formula methods can be used to determine the sales volume needed to achieve a target profit
- I.e. how many bikes must be sold to achieved a profit of $100,000
- $500Q = $300Q + $80,000 + $100,000
- $200Q = $180,000
- Q = 900 bikes
- Unit sales to attain target profit = (fixed expenses + target profit) / Unit CM

Margin of Safety

- MOS units = total sales - break even sales
- MOS dollars = (total sales - break even sales) / unit price
- Budgeted (actual) sales minus the break even volume of sales
- Can be expressed as number of units sold or in dollars
- Can be expressed as a percentage
  - MOS dollars / total sales
  - MOS units / total units sold
- Higher MOS is better

Cost Structure and Profit Stability

- The relative proportion of fixed and variable costs in an organization

- Managers often have some latitude in determining the organization's cost structure
- Use higher FC % for high volume sales
  - Unit FC decreases as units increase
- Use higher VC % for lower volume sales
  -

Operating Leverage
- Measures how sensitive net operating income is to percentage changes in sales
- Degree of operating leverage = contribution margin / net operating income
  = (Sales - VC) / (Sales - VC - FC)
- FC = 0 -> DOL = 1
- FC > 0 -> DOL > 1
- Higher operating leverage means higher risk (more reliance on higher sales - more volatile)
- Helps determine the impact of sales on profit

Chapter 5

Process Costing
- A company produces many units of a single product
  - I.e. coca-cola
- 1 unit is indistinguishable to another unit of product
- Average cost per unit is equal as each unit is identical to the next

Job-Order Costing
- A variety of products are produced each period
- Products are made-to-order
- Each order is unique and thus requires allocating costs to and maintaining cost records for each job
  - i.e. bombardier, hallmark, bechtel intl (construction)

Process vs Job-Order Costing
- Job-order:
  - Many jobs worked
  - Cost accumulated by job
  - Avg cost computed by job
- Process
  - Single product
  - Cost accumulated by department
  - Avg cost computed by department

Job-Order Costing: an Overview
- Charge direct labour and direct materials to each job as work is performed
- Easy to trace DL & DM
- Manufacturing overhead and indirect labour are allocated to all jobs - not traced to each
  - Hard to trace

Use an Allocation Base for MOH
- For applying manufacturing overhead to individual jobs
  - I.e. direct labour hours, direct labour dollars, or machine hours
  - Use only one allocation base (for now)
  - If a product requires more DL hours, more manufacturing overhead must be applied to the job
- Is a cost driver - drives cost up/down

Manufacturing Overhead application
- Predetermined overhead rate (POHR) used to apply overhead to jobs
  - You can't wait until the end of the period to estimate these costs
- Determined before job begins
- POHR = Estimated total mfg overhead cost for the coming period / estimated total units in the allocation base for the coming period
  - Ideally allocation base is a cost driver that causes overhead
    - I.e. Est. annual total OH costs = $100,000
    - Allocation base = DLH
    - Est. DLH = 1,000
    - POHR = $100,000 / 1,000 = $100 per hour
    - For each hour worked on a specific item, $100 OH must be allocated to that item
      - If product A requires 2 hours, OHC = 2hrs * $100 = $200

Need for a POHR
- Makes it possible to estimate total job costs sooner
- Actual overhead is not known until the end of the period
- POHR is based on estimates - not actual results

Application of Manufacturing Overhead
- Overhead applied = POHR * Actual Activity
  - I.e. $1000 / 100 direct labour hours (DLH)
  - **POHR is based on estimates**
  - Actual activity is based on actual level of activity

Purchase & Issue (use) of Raw Materials
- Direct materials:
  - Credit work in process inventory
  - Debit raw materials inventory
- Indirect materials
  - Credit mfg. Overhead
  - Debit raw materials inventory

Recording of Labour Costs
- Direct labour:
  - Credit work in process inventory
  - Debit salaries and wages payable
- Indirect labour

- Credit mfg. Overhead
- Debit salaries and wages payable

Recording of Labour Costs
- Cost of direct labour incurred increases work in process
- Cost of indirect labour increases manufacturing overhead
    - E.g:
    - Debit Work in Process Inventory
    - Debit Manufacturing Overhead
    - Credit Salaries & Wages Payable

Recording Actual Manufacturing Overhead
- Indirect labour and indirect materials
- Includes A/P, property taxes, and accumulated depreciation
- Other manufacturing costs are charged to Manufacturing Overhead account
    - Charged as they are incurred

Applying Manufacturing Overhead
- If actual and applied manufacturing overhead are not equal, you must adjust them at the end of the year
- Work in Process is increased when Manufacturing Overhead is applied to jobs

Clearing Accounts
- Actual overhead costs are charged to the account as these costs are incurred thruout the period
- Overhead is applied to Work in Process using the predetermined overhead rate

Non-Manufacturing Cost
- Not assigned to individual jobs / specific products
- Expensed in the period incurred
    - Period costs
    - I.e. salary expenses of employees working in marketing, admin, or sales
    - Advertising expenses are expensed in the period incurred

Complications of Overhead Application
- Over-applied overhead
    - Overhead applied to jobs during the period using the POHR > overhead actually incurred during the period
- Under-applied overhead
    - Overhead applied to jobs during the period using the POHR < overhead actually incurred during the period

What to Do With Under/Over Applied Overhead
- Can be allocated to Work in Process, Finished Goods Inventory, & Cost of Goods Sold
    - Based on ending balance of each account
    - Calculate proportions of WIP, Finished Goods, and Cost of Goods Sold
    - Assign overapplied/underapplied overhead based on respective proportions

    - If over-applied, after adjustment Work in Process, Finished Goods, and Cost of Goods Sold will decrease (and thus operating income will increase)
    - If under-applied, after adjustment Work in Process, Finished Goods, and Cost of Goods Sold will increase (and thus operating income will decrease)
- OR just to Cost of Goods Sold
    - Debit/credit Mfg. overhead & debit/credit COGS
    - If over-applied, after adjustment COGS will decrease (and thus operating income will increase)
    - If under-applied, after adjustment COGS will increase (and thus operating income will decrease)

Practice: E5-6

Chapter 7

How Are Costs Treated Under Activity Based Costing?

- ABC assigns both manufacturing and non manufacturing costs to products
- ABC does not assign all manufacturing costs to products
- ABC uses more cost pools - not just volume measures (i.e. DLH)
- ABC is more accurate - gives more detail on cost drivers
- Bases level of activity on used capacity
- Activity
    - An event causing consumption of overhead resources
- Activity cost pool
    - A “cost bucket” in which costs related to a particular activity measure are accumulated
- Activity measure / cost driver
    - Allocation base. Common types are transaction and duration drivers
    - Transaction driver: counts number of times an activity occurs
    - Duration driver: measures amt of time needed for an activity
- Defines 5 levels of activity largely unrelated to volume of units produced
    - Traditional cost systems usually use volume measures (i.e. DLH & MH) to allocate overhead costs to products
    - Unit level activity
    - Batch level activity
    - Product level activity
    - Organization sustaining activity
    - Customer level activity

Steps for Implementing ABC

1. Identify and define activities, activity cost pools, and activity measures
2. Assign overhead costs to activity cost pools
    a. Only assign indirect costs
3. Calculate activity rates
    a. Individual activity rate = total cost of each activity / total activity level
        i. I.e. $320,000 / 1,000 orders = $320 per order
4. Assign overhead costs to cost objects using activity rates and measures

   a. Customer-level cost is assigned to customers directly, not assigned to products
5. Prepare management reports
   a. Gather product sales and direct cost data
   b. Incorporate activity based cost assignments
   c. Calculate profit margins

Differences between ABC and Traditional Product COsts
- Traditional costing allocates all manufacturing overhead to products
- ABC only assigns manufacturing overhead consumed by products to those products
- Traditional costing allocates all manufacturing overhead costs using volume-related allocation base
- ABC uses non-volume related allocation bases
- Traditional costing does not account for selling and admin expenses (they are considered period costs)
- ABC traces shipping costs to products and includes non-manufacturing overhead costs caused by products in the activity cost pools that are assigned to products

ABC Limitations
- Requires a lot of resources to implement + maintain (a lot of money and time)
- Desire to fully allocate all costs to products
- Resistance to unfamiliar numbers and reports
- Potential misinterpretation of unfamiliar numbers
- Doesn't conform to GAAP - may need 2 costing systems

Practice: E7-2 E7-14

We did it, yeah fuck econ

MIDTERM
- 35 m/c 40%
- 6 short answer 60%
- Chapters 1,2,3,4,5,7
- Review end of chapter, connect, and top hat questions
- Bring ID and calculator

Chapter 2

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Practice: E2-4

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E3-5

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CM		$450,000
TFC		($360,000)
Net Operating Income		$20,000

Unit CM	= unit price - unit VC =$7.50 - $2.50	$5

Chapter 4

.Cost-Volume-Profit Interactions

- Prices of products (p)
- Volume/level of activity (q)
- Unit per variable costs (unit VC)
- Total fixed costs (FC)
- Mix of products sold

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    - $200 = 1 * unit CM
  - q = 410, profit = $2000
    - $2000 = 10 * unit CM
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Break-Even Analysis
- Equation method
- Formula method
- Profits = (Sales - Variable expenses) - Fixed expenses
- Sales = Variable expenses + Fixed expenses + Profits
  - At break even, profit = 0
- Total sales = sale price * q
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  - I.e. $500Q = $300Q + $80,000 + $0
    - $200Q = $80,000
    - Q = $80,000 / $200 per bike
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Changes in Fixed Costs and Sales Volume
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- Given: Unit CM = $200
- Change in unit sales = 40 units
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EX: Exercise 4-3
In March, Mitchell Ltd. had sales of $250,000 (50,000 units), total VC of $190,000, and total fixed expenses of $36000.
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   = 0.24 --> 24%
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   = $36,000 / 0.24
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   Changes in S = $20,000 -> changes in profit = $0.24 * $20,000 = $4,800

EX: Exercise 4-5
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1. Solve BEP in unit sales
2. Solve BEP in sales dollars

1. qBEP = FC / unit CM
   = $5500 / $8 - $6
   = 2750

2. S = q * p
   = 2750 * $8 = $22,000

Target Profit Analysis

- Equation & formula methods can be used to determine the sales volume needed to achieve a target profit
- I.e. how many bikes must be sold to achieved a profit of $100,000
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- $200Q = $180,000
- Q = 900 bikes
- Unit sales to attain target profit = (fixed expenses + target profit) / Unit CM

Margin of Safety

- MOS units = total sales - break even sales
- MOS dollars = (total sales - break even sales) / unit price
- Budgeted (actual) sales minus the break even volume of sales
- Can be expressed as number of units sold or in dollars
- Can be expressed as a percentage
  - MOS dollars / total sales
  - MOS units / total units sold
- Higher MOS is better

Cost Structure and Profit Stability

- The relative proportion of fixed and variable costs in an organization

- Managers often have some latitude in determining the organization's cost structure
- Use higher FC % for high volume sales
  - Unit FC decreases as units increase
- Use higher VC % for lower volume sales
  -

Operating Leverage
- Measures how sensitive net operating income is to percentage changes in sales
- Degree of operating leverage = contribution margin / net operating income
  = (Sales - VC) / (Sales - VC - FC)
- FC = 0 -> DOL = 1
- FC > 0 -> DOL > 1
- Higher operating leverage means higher risk (more reliance on higher sales - more volatile)
- Helps determine the impact of sales on profit

Chapter 5

Process Costing
- A company produces many units of a single product
  - I.e. coca-cola
- 1 unit is indistinguishable to another unit of product
- Average cost per unit is equal as each unit is identical to the next

Job-Order Costing
- A variety of products are produced each period
- Products are made-to-order
- Each order is unique and thus requires allocating costs to and maintaining cost records for each job
  - i.e. bombardier, hallmark, bechtel intl (construction)

Process vs Job-Order Costing
- Job-order:
  - Many jobs worked
  - Cost accumulated by job
  - Avg cost computed by job
- Process
  - Single product
  - Cost accumulated by department
  - Avg cost computed by department

Job-Order Costing: an Overview
- Charge direct labour and direct materials to each job as work is performed
- Easy to trace DL & DM
- Manufacturing overhead and indirect labour are allocated to all jobs - not traced to each
  - Hard to trace

Use an Allocation Base for MOH
- For applying manufacturing overhead to individual jobs
  - I.e. direct labour hours, direct labour dollars, or machine hours
  - Use only one allocation base (for now)
  - If a product requires more DL hours, more manufacturing overhead must be applied to the job
- Is a cost driver - drives cost up/down

Manufacturing Overhead application
- Predetermined overhead rate (POHR) used to apply overhead to jobs
  - You can't wait until the end of the period to estimate these costs
- Determined before job begins
- POHR = Estimated total mfg overhead cost for the coming period / estimated total units in the allocation base for the coming period
  - Ideally allocation base is a cost driver that causes overhead
    - I.e. Est. annual total OH costs = $100,000
    - Allocation base = DLH
    - Est. DLH = 1,000
    - POHR = $100,000 / 1,000 = $100 per hour
    - For each hour worked on a specific item, $100 OH must be allocated to that item
      - If product A requires 2 hours, OHC = 2hrs * $100 = $200

Need for a POHR
- Makes it possible to estimate total job costs sooner
- Actual overhead is not known until the end of the period
- POHR is based on estimates - not actual results

Application of Manufacturing Overhead
- Overhead applied = POHR * Actual Activity
  - I.e. $1000 / 100 direct labour hours (DLH)
  - **POHR is based on estimates**
  - Actual activity is based on actual level of activity

Purchase & Issue (use) of Raw Materials
- Direct materials:
  - Credit work in process inventory
  - Debit raw materials inventory
- Indirect materials
  - Credit mfg. Overhead
  - Debit raw materials inventory

Recording of Labour Costs
- Direct labour:
  - Credit work in process inventory
  - Debit salaries and wages payable
- Indirect labour

- Credit mfg. Overhead
- Debit salaries and wages payable

Recording of Labour Costs
- Cost of direct labour incurred increases work in process
- Cost of indirect labour increases manufacturing overhead
    - E.g:
    - Debit Work in Process Inventory
    - Debit Manufacturing Overhead
    - Credit Salaries & Wages Payable

Recording Actual Manufacturing Overhead
- Indirect labour and indirect materials
- Includes A/P, property taxes, and accumulated depreciation
- Other manufacturing costs are charged to Manufacturing Overhead account
    - Charged as they are incurred

Applying Manufacturing Overhead
- If actual and applied manufacturing overhead are not equal, you must adjust them at the end of the year
- Work in Process is increased when Manufacturing Overhead is applied to jobs

Clearing Accounts
- Actual overhead costs are charged to the account as these costs are incurred thruout the period
- Overhead is applied to Work in Process using the predetermined overhead rate

Non-Manufacturing Cost
- Not assigned to individual jobs / specific products
- Expensed in the period incurred
    - Period costs
    - I.e. salary expenses of employees working in marketing, admin, or sales
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Complications of Overhead Application
- Over-applied overhead
    - Overhead applied to jobs during the period using the POHR > overhead actually incurred during the period
- Under-applied overhead
    - Overhead applied to jobs during the period using the POHR < overhead actually incurred during the period

What to Do With Under/Over Applied Overhead
- Can be allocated to Work in Process, Finished Goods Inventory, & Cost of Goods Sold
    - Based on ending balance of each account
    - Calculate proportions of WIP, Finished Goods, and Cost of Goods Sold
    - Assign overapplied/underapplied overhead based on respective proportions

    - If over-applied, after adjustment Work in Process, Finished Goods, and Cost of Goods Sold will decrease (and thus operating income will increase)
    - If under-applied, after adjustment Work in Process, Finished Goods, and Cost of Goods Sold will increase (and thus operating income will decrease)
- OR just to Cost of Goods Sold
    - Debit/credit Mfg. overhead & debit/credit COGS
    - If over-applied, after adjustment COGS will decrease (and thus operating income will increase)
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Practice: E5-6

Chapter 7

How Are Costs Treated Under Activity Based Costing?

- ABC assigns both manufacturing and non manufacturing costs to products
- ABC does not assign all manufacturing costs to products
- ABC uses more cost pools - not just volume measures (i.e. DLH)
- ABC is more accurate - gives more detail on cost drivers
- Bases level of activity on used capacity
- Activity
    - An event causing consumption of overhead resources
- Activity cost pool
    - A “cost bucket” in which costs related to a particular activity measure are accumulated
- Activity measure / cost driver
    - Allocation base. Common types are transaction and duration drivers
    - Transaction driver: counts number of times an activity occurs
    - Duration driver: measures amt of time needed for an activity
- Defines 5 levels of activity largely unrelated to volume of units produced
    - Traditional cost systems usually use volume measures (i.e. DLH & MH) to allocate overhead costs to products
    - Unit level activity
    - Batch level activity
    - Product level activity
    - Organization sustaining activity
    - Customer level activity

Steps for Implementing ABC

1. Identify and define activities, activity cost pools, and activity measures
2. Assign overhead costs to activity cost pools
    a. Only assign indirect costs
3. Calculate activity rates
    a. Individual activity rate = total cost of each activity / total activity level
        i. I.e. $320,000 / 1,000 orders = $320 per order
4. Assign overhead costs to cost objects using activity rates and measures

   a. Customer-level cost is assigned to customers directly, not assigned to products
5. Prepare management reports
   a. Gather product sales and direct cost data
   b. Incorporate activity based cost assignments
   c. Calculate profit margins

Differences between ABC and Traditional Product COsts
- Traditional costing allocates all manufacturing overhead to products
- ABC only assigns manufacturing overhead consumed by products to those products
- Traditional costing allocates all manufacturing overhead costs using volume-related allocation base
- ABC uses non-volume related allocation bases
- Traditional costing does not account for selling and admin expenses (they are considered period costs)
- ABC traces shipping costs to products and includes non-manufacturing overhead costs caused by products in the activity cost pools that are assigned to products

ABC Limitations
- Requires a lot of resources to implement + maintain (a lot of money and time)
- Desire to fully allocate all costs to products
- Resistance to unfamiliar numbers and reports
- Potential misinterpretation of unfamiliar numbers
- Doesn't conform to GAAP - may need 2 costing systems

Practice: E7-2 E7-14

We did it, yeah fuck econ

MIDTERM
- 35 m/c 40%
- 6 short answer 60%
- Chapters 1,2,3,4,5,7
- Review end of chapter, connect, and top hat questions
- Bring ID and calculator

Chapter 2

Manufacturing Costs: DM + DL + OH

- Direct materials
  - Raw materials that are an integral part of the end product
  - I.e. radio in car
- Direct labour
  - Labour costs that are easily traced back to the individual units of product
  - I.e. assembly line worker wages
- Manufacturing overhead
  - Costs not easily traced to the product
  - Indirect materials
    - I.e. glue, nails, etc
  - Indirect labour
    - I.e. janitors, security guards, etc
- Traceable to the product

Classifications of Costs

- Prime cost
  - Direct material + direct labour
- Conversion costs
  - Direct labour + manufacturing overhead
  - Costs involved in converting raw materials to final products

Non-Manufacturing Costs

- Marketing or selling costs
  - Costs necessary to market, order, + deliver the product
- Administrative costs
  - All executive, organizational, and clerical costs
- SG&A -> selling, general, and administration costs

Product Costs vs Period Costs

- Product costs
  - same as manufacturing costs
  - Moves from inventory to cost of goods sold
- Period costs
  - Same as non-mfg. Costs
  - Recorded in the same period the costs occur as an expense

The Income Statement

- COGS for manufacturers differs from COGS for merchandisers
- For manufacturers, COGS includes total manufacturing costs: raw materials, direct labour, overhead costs
- Merchandisers only have inventory costs
- See slide 9 ch. 2 lecture slides

Basic Equation for Inventory Accounts

- Beginning balance + additions to inventory = ending balance + withdrawals from inventory

Product Cost Flows

- Mfg. Costs -> Cost of Goods Manufactured -> Cost of Goods Sold
- Work in Progress (for unfinished goods)
- COGM = Beginning WIP + total mfg costs - Ending WIP
    - Total mfg costs = direct labour + direct materials + mfg overhead
- COGS = COGM + Beginning final goods - ending final goods inventory

Manufacturing Cost Flows

- Costs
    - Product costs
    - Period costs
- Balance sheet
    - Raw materials inventory
        - Direct materials used in production
    - Work in progress inventory
    - Finished goods inventory
- Income statement
    - Cost of goods sold
    - Selling & admin expenses

Cost Classifications for Predicting Cost Behaviour

- How costs react to changes of activity levels within the relevant range
- Variable costs
    - Change when activity level changes
    - Variable cost per unit remains the same over wide ranges of activity
- Fixed costs
    - Remain unchanged regardless of activity level
    - Average fixed cost per unit goes down as activity level increases
    - I.e. rent per unit produced decreases as unit production increases

Opportunity Cost

- The potential outcome given up in favour of another

Sunk Costs

- Have already occurred and cannot be changed in the future
- Should not factor into future decision making

Practice: E2-4

Direct Materials

Beginning raw materials	$66,000
+Purchase	$528,000
=Available	$594,000
- Ending raw materials	(78,000)
Raw Materials used	$516,000

Direct Labour	
Direct Labour	$258,000
Overhead	
Overhead	$456,000
Mfg. Costs	$1,230,000
Beginnning WIP	$228,000
Available WIP	$1,458,000
Ending WIP	$264,000
COGM	**$1,194,000**

Chapter 3

Variable Cost Factors
- Units produced
- Machine hours
- Miles driven
- Labour hours

Variable Costs
- A cost whose total dollar amount depends proportionally to activity level (changes as activity level changes)
- E.g. long distance phone bill depends on how many minutes you talk

Variable Cost per Unit
- A variable cost remains constant if expressed on a per unit basis
- I.e. 10 cents per minute

Fixed Costs
- Remain the same regardless of activity level

Fixed Cost per Unit Example
- Average fixed costs per unit decrease as activity level increase
- i.e. fixed cost / local call decreases as more local costs are made

Mixed Costs
- Contains both fixed and variable costs
- I.e. utility costs (fixed monthly charge + variable cost per kW)
- y = a + b*x
  - y = total mixed cost
  - a = total fixed cost (vertical intercept)
  - b = unit variable cost (slope)
  - x = level of activity
  - b*x = total variable cost

How to Break Down Mixed Costs into Fixed & Variable Costs?

High-Low Method

- Find highest & lowest cost based on the level of activity (i.e. hours)
- Subtract low level of activity from high level of activity
- Subtract low level of cost from high level of cost
- Variable cost per hour = change in cost / change in hours
- Find total fixed cost
    - Total fixed cost = total cost - total variable cost
        - Total fixed cost = total cost - (unit variable cost * hours)
- Sub values of low level or high level of activity into above equation to find total fixed cost

The Contribution Format

- Traditional income statement format does not distinguish fixed and variable costs
- Separating fixed & variable costs are crucial in decision making
- Facilitates planning, control, and decision making
- Contribution margin
    - Sales revenue - variable costs = contribution margin
    - Emphasizes cost behaviour
    - Covers fixed costs and provides for income
    - Unit contribution margin = total contribution margin / # of units produced
- Used for:
    - Cost-volume-profit analysis (ch4)
    - Budgeting (ch9)
    - Segmented reporting of profit data (ch11)
    - Special decisions (i.e. pricing & make-or-buy analysis) (ch12)
- Used by management (whereas traditional approach is mostly used for external reporting)

E3-5

Level of Activity	60,000 units	80,000 units	100,000 units
Total VC	$150,000	$2.50 * 80,000 = $200,000	$2.50 * 100,000 = $250,000
Total FC	$360,000	$360,000	$360,000
Total Costs	$510,000	$560,000	$610,000
Unit VC	$150,000 / 60,000 = $2.50 / unit	$2.50 / unit	$2.50 / unit
Unit FC	$360,000 / 60,000 = $6	$360,000 / 80,000 = $4.50	$360,000 / 100,000 = $3.60
Unit TC	$2.50 + $6 = $8	$2.50 + $4.50 = $7	$2.50 + $3.60 = $6.10

Sales	90,000 * $7.50 =	$675,000
Total VC	90,000 * $2.50 =	($225,000)
CM		$450,000
TFC		($360,000)
Net Operating Income		$20,000

Unit CM	= unit price - unit VC =$7.50 - $2.50	$5

Chapter 4

.Cost-Volume-Profit Interactions

- Prices of products (p)
- Volume/level of activity (q)
- Unit per variable costs (unit VC)
- Total fixed costs (FC)
- Mix of products sold

Basics of CVP Analysis

- Contribution format income statement
  - Itemize based on cost behaviour
- Helpful in judging impact of profits of changes in price, cost, or volume
- Contribution margin (CM) is the remainder of sales revenue less variable expenses
- Total CM = S - VC
- Total CM = unit CM *q
- Can also be expressed as a per-unit basis (Unit contribution margin)

- Unit CM = p - unit VC

CM Ratio
- Can be expressed as:
  - Unit contribution margin / selling price per unit
  - Contribution margin / sales
- For each additional dollar you are selling, you are making (CM ratio%) more profit

The Contribution Approach
- Break even point: where no losses or profits occur
  - Net income = 0
- Ex:
  - q = 400, profit = 0
  - q = 401, profit = $200
    - $200 = 1 * unit CM
  - q = 410, profit = $2000
    - $2000 = 10 * unit CM
- Check CH4 lecture slides 9-10 to see CVP graph

Break-Even Analysis
- Equation method
- Formula method
- Profits = (Sales - Variable expenses) - Fixed expenses
- Sales = Variable expenses + Fixed expenses + Profits
  - At break even, profit = 0
- Total sales = sale price * q
- Variable expenses = unit cost * quantity
  - I.e. $500Q = $300Q + $80,000 + $0
    - $200Q = $80,000
    - Q = $80,000 / $200 per bike
    - Q = 200 bikes
- BEP in units sold = Fixed costs / CM per unit
  = FC / p - unit VC
- BEP in total sales dollars = Fixed costs / CM ratio
  = Q of BEP * price

Changes in Fixed Costs and Sales Volume
- How will profit change if unit sales increase from 500 to 540 by increasing the monthly advertising budget by $10,000
- Given: Unit CM = $200
- Change in unit sales = 40 units
- Total CM = $200 * 40 = $8,000
- Total FC = $10,000

EX: Exercise 4-3
In March, Mitchell Ltd. had sales of $250,000 (50,000 units), total VC of $190,000, and total fixed expenses of $36000.
1. What is the CM ratio

2. Calculate break-even level of sales in dollars
3. Estimate the change in come if total sales increase by $20,000

1. CM Ratio = Contribution margin / sales
   = (Sales - VC) / Sales
   = ($250,000 - $190,000) / $250,000
   = 0.24 --> 24%
2. Sales at break-even = FC / CM ratio
   = $36,000 / 0.24
   = $150,000
3. CM ratio = 24%
   Changes in S = $1 -> changes in profit = $0.24
   Changes in S = $20,000 -> changes in profit = $0.24 * $20,000 = $4,800

EX: Exercise 4-5
Mackson products distributes a single product. It is $8/unit and the VC is $6/unit. The monthly FC is $5500

1. Solve BEP in unit sales
2. Solve BEP in sales dollars

1. qBEP = FC / unit CM
   = $5500 / $8 - $6
   = 2750

2. S = q * p
   = 2750 * $8 = $22,000

Target Profit Analysis

- Equation & formula methods can be used to determine the sales volume needed to achieve a target profit
- I.e. how many bikes must be sold to achieved a profit of $100,000
- $500Q = $300Q + $80,000 + $100,000
- $200Q = $180,000
- Q = 900 bikes
- Unit sales to attain target profit = (fixed expenses + target profit) / Unit CM

Margin of Safety

- MOS units = total sales - break even sales
- MOS dollars = (total sales - break even sales) / unit price
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    - I.e. Est. annual total OH costs = $100,000
    - Allocation base = DLH
    - Est. DLH = 1,000
    - POHR = $100,000 / 1,000 = $100 per hour
    - For each hour worked on a specific item, $100 OH must be allocated to that item
      - If product A requires 2 hours, OHC = 2hrs * $100 = $200

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Product Cost Flows

- Mfg. Costs -> Cost of Goods Manufactured -> Cost of Goods Sold
- Work in Progress (for unfinished goods)
- COGM = Beginning WIP + total mfg costs - Ending WIP
    - Total mfg costs = direct labour + direct materials + mfg overhead
- COGS = COGM + Beginning final goods - ending final goods inventory

Manufacturing Cost Flows

- Costs
    - Product costs
    - Period costs
- Balance sheet
    - Raw materials inventory
        - Direct materials used in production
    - Work in progress inventory
    - Finished goods inventory
- Income statement
    - Cost of goods sold
    - Selling & admin expenses

Cost Classifications for Predicting Cost Behaviour

- How costs react to changes of activity levels within the relevant range
- Variable costs
    - Change when activity level changes
    - Variable cost per unit remains the same over wide ranges of activity
- Fixed costs
    - Remain unchanged regardless of activity level
    - Average fixed cost per unit goes down as activity level increases
    - I.e. rent per unit produced decreases as unit production increases

Opportunity Cost

- The potential outcome given up in favour of another

Sunk Costs

- Have already occurred and cannot be changed in the future
- Should not factor into future decision making

Practice: E2-4

Direct Materials

Beginning raw materials	$66,000
+Purchase	$528,000
=Available	$594,000
- Ending raw materials	(78,000)
Raw Materials used	$516,000

Direct Labour	
Direct Labour	$258,000
Overhead	
Overhead	$456,000
Mfg. Costs	$1,230,000
Beginnning WIP	$228,000
Available WIP	$1,458,000
Ending WIP	$264,000
COGM	**$1,194,000**

Chapter 3

Variable Cost Factors
- Units produced
- Machine hours
- Miles driven
- Labour hours

Variable Costs
- A cost whose total dollar amount depends proportionally to activity level (changes as activity level changes)
- E.g. long distance phone bill depends on how many minutes you talk

Variable Cost per Unit
- A variable cost remains constant if expressed on a per unit basis
- I.e. 10 cents per minute

Fixed Costs
- Remain the same regardless of activity level

Fixed Cost per Unit Example
- Average fixed costs per unit decrease as activity level increase
- i.e. fixed cost / local call decreases as more local costs are made

Mixed Costs
- Contains both fixed and variable costs
- I.e. utility costs (fixed monthly charge + variable cost per kW)
- y = a + b*x
  - y = total mixed cost
  - a = total fixed cost (vertical intercept)
  - b = unit variable cost (slope)
  - x = level of activity
  - b*x = total variable cost

How to Break Down Mixed Costs into Fixed & Variable Costs?

High-Low Method

- Find highest & lowest cost based on the level of activity (i.e. hours)
- Subtract low level of activity from high level of activity
- Subtract low level of cost from high level of cost
- Variable cost per hour = change in cost / change in hours
- Find total fixed cost
    - Total fixed cost = total cost - total variable cost
        - Total fixed cost = total cost - (unit variable cost * hours)
- Sub values of low level or high level of activity into above equation to find total fixed cost

The Contribution Format

- Traditional income statement format does not distinguish fixed and variable costs
- Separating fixed & variable costs are crucial in decision making
- Facilitates planning, control, and decision making
- Contribution margin
    - Sales revenue - variable costs = contribution margin
    - Emphasizes cost behaviour
    - Covers fixed costs and provides for income
    - Unit contribution margin = total contribution margin / # of units produced
- Used for:
    - Cost-volume-profit analysis (ch4)
    - Budgeting (ch9)
    - Segmented reporting of profit data (ch11)
    - Special decisions (i.e. pricing & make-or-buy analysis) (ch12)
- Used by management (whereas traditional approach is mostly used for external reporting)

E3-5

Level of Activity	60,000 units	80,000 units	100,000 units
Total VC	$150,000	$2.50 * 80,000 = $200,000	$2.50 * 100,000 = $250,000
Total FC	$360,000	$360,000	$360,000
Total Costs	$510,000	$560,000	$610,000
Unit VC	$150,000 / 60,000 = $2.50 / unit	$2.50 / unit	$2.50 / unit
Unit FC	$360,000 / 60,000 = $6	$360,000 / 80,000 = $4.50	$360,000 / 100,000 = $3.60
Unit TC	$2.50 + $6 = $8	$2.50 + $4.50 = $7	$2.50 + $3.60 = $6.10

Sales	90,000 * $7.50 =	$675,000
Total VC	90,000 * $2.50 =	($225,000)
CM		$450,000
TFC		($360,000)
Net Operating Income		$20,000

Unit CM	= unit price - unit VC =$7.50 - $2.50	$5

Chapter 4

.Cost-Volume-Profit Interactions

- Prices of products (p)
- Volume/level of activity (q)
- Unit per variable costs (unit VC)
- Total fixed costs (FC)
- Mix of products sold

Basics of CVP Analysis

- Contribution format income statement
  - Itemize based on cost behaviour
- Helpful in judging impact of profits of changes in price, cost, or volume
- Contribution margin (CM) is the remainder of sales revenue less variable expenses
- Total CM = S - VC
- Total CM = unit CM *q
- Can also be expressed as a per-unit basis (Unit contribution margin)

- Unit CM = p - unit VC

CM Ratio
- Can be expressed as:
  - Unit contribution margin / selling price per unit
  - Contribution margin / sales
- For each additional dollar you are selling, you are making (CM ratio%) more profit

The Contribution Approach
- Break even point: where no losses or profits occur
  - Net income = 0
- Ex:
  - q = 400, profit = 0
  - q = 401, profit = $200
    - $200 = 1 * unit CM
  - q = 410, profit = $2000
    - $2000 = 10 * unit CM
- Check CH4 lecture slides 9-10 to see CVP graph

Break-Even Analysis
- Equation method
- Formula method
- Profits = (Sales - Variable expenses) - Fixed expenses
- Sales = Variable expenses + Fixed expenses + Profits
  - At break even, profit = 0
- Total sales = sale price * q
- Variable expenses = unit cost * quantity
  - I.e. $500Q = $300Q + $80,000 + $0
    - $200Q = $80,000
    - Q = $80,000 / $200 per bike
    - Q = 200 bikes
- BEP in units sold = Fixed costs / CM per unit
  = FC / p - unit VC
- BEP in total sales dollars = Fixed costs / CM ratio
  = Q of BEP * price

Changes in Fixed Costs and Sales Volume
- How will profit change if unit sales increase from 500 to 540 by increasing the monthly advertising budget by $10,000
- Given: Unit CM = $200
- Change in unit sales = 40 units
- Total CM = $200 * 40 = $8,000
- Total FC = $10,000

EX: Exercise 4-3
In March, Mitchell Ltd. had sales of $250,000 (50,000 units), total VC of $190,000, and total fixed expenses of $36000.
1. What is the CM ratio

2. Calculate break-even level of sales in dollars
3. Estimate the change in come if total sales increase by $20,000

1. CM Ratio = Contribution margin / sales
   = (Sales - VC) / Sales
   = ($250,000 - $190,000) / $250,000
   = 0.24 --> 24%
2. Sales at break-even = FC / CM ratio
   = $36,000 / 0.24
   = $150,000
3. CM ratio = 24%
   Changes in S = $1 -> changes in profit = $0.24
   Changes in S = $20,000 -> changes in profit = $0.24 * $20,000 = $4,800

EX: Exercise 4-5
Mackson products distributes a single product. It is $8/unit and the VC is $6/unit. The monthly FC is $5500

1. Solve BEP in unit sales
2. Solve BEP in sales dollars

1. qBEP = FC / unit CM
   = $5500 / $8 - $6
   = 2750

2. S = q * p
   = 2750 * $8 = $22,000

Target Profit Analysis

- Equation & formula methods can be used to determine the sales volume needed to achieve a target profit
- I.e. how many bikes must be sold to achieved a profit of $100,000
- $500Q = $300Q + $80,000 + $100,000
- $200Q = $180,000
- Q = 900 bikes
- Unit sales to attain target profit = (fixed expenses + target profit) / Unit CM

Margin of Safety

- MOS units = total sales - break even sales
- MOS dollars = (total sales - break even sales) / unit price
- Budgeted (actual) sales minus the break even volume of sales
- Can be expressed as number of units sold or in dollars
- Can be expressed as a percentage
  - MOS dollars / total sales
  - MOS units / total units sold
- Higher MOS is better

Cost Structure and Profit Stability

- The relative proportion of fixed and variable costs in an organization

- Managers often have some latitude in determining the organization's cost structure
- Use higher FC % for high volume sales
  - Unit FC decreases as units increase
- Use higher VC % for lower volume sales
  -

Operating Leverage
- Measures how sensitive net operating income is to percentage changes in sales
- Degree of operating leverage = contribution margin / net operating income
  = (Sales - VC) / (Sales - VC - FC)
- FC = 0 -> DOL = 1
- FC > 0 -> DOL > 1
- Higher operating leverage means higher risk (more reliance on higher sales - more volatile)
- Helps determine the impact of sales on profit

Chapter 5

Process Costing
- A company produces many units of a single product
  - I.e. coca-cola
- 1 unit is indistinguishable to another unit of product
- Average cost per unit is equal as each unit is identical to the next

Job-Order Costing
- A variety of products are produced each period
- Products are made-to-order
- Each order is unique and thus requires allocating costs to and maintaining cost records for each job
  - i.e. bombardier, hallmark, bechtel intl (construction)

Process vs Job-Order Costing
- Job-order:
  - Many jobs worked
  - Cost accumulated by job
  - Avg cost computed by job
- Process
  - Single product
  - Cost accumulated by department
  - Avg cost computed by department

Job-Order Costing: an Overview
- Charge direct labour and direct materials to each job as work is performed
- Easy to trace DL & DM
- Manufacturing overhead and indirect labour are allocated to all jobs - not traced to each
  - Hard to trace

Use an Allocation Base for MOH
- For applying manufacturing overhead to individual jobs
  - I.e. direct labour hours, direct labour dollars, or machine hours
  - Use only one allocation base (for now)
  - If a product requires more DL hours, more manufacturing overhead must be applied to the job
- Is a cost driver - drives cost up/down

Manufacturing Overhead application
- Predetermined overhead rate (POHR) used to apply overhead to jobs
  - You can't wait until the end of the period to estimate these costs
- Determined before job begins
- POHR = Estimated total mfg overhead cost for the coming period / estimated total units in the allocation base for the coming period
  - Ideally allocation base is a cost driver that causes overhead
    - I.e. Est. annual total OH costs = $100,000
    - Allocation base = DLH
    - Est. DLH = 1,000
    - POHR = $100,000 / 1,000 = $100 per hour
    - For each hour worked on a specific item, $100 OH must be allocated to that item
      - If product A requires 2 hours, OHC = 2hrs * $100 = $200

Need for a POHR
- Makes it possible to estimate total job costs sooner
- Actual overhead is not known until the end of the period
- POHR is based on estimates - not actual results

Application of Manufacturing Overhead
- Overhead applied = POHR * Actual Activity
  - I.e. $1000 / 100 direct labour hours (DLH)
  - **POHR is based on estimates**
  - Actual activity is based on actual level of activity

Purchase & Issue (use) of Raw Materials
- Direct materials:
  - Credit work in process inventory
  - Debit raw materials inventory
- Indirect materials
  - Credit mfg. Overhead
  - Debit raw materials inventory

Recording of Labour Costs
- Direct labour:
  - Credit work in process inventory
  - Debit salaries and wages payable
- Indirect labour

- Credit mfg. Overhead
- Debit salaries and wages payable

Recording of Labour Costs
- Cost of direct labour incurred increases work in process
- Cost of indirect labour increases manufacturing overhead
    - E.g:
    - Debit Work in Process Inventory
    - Debit Manufacturing Overhead
    - Credit Salaries & Wages Payable

Recording Actual Manufacturing Overhead
- Indirect labour and indirect materials
- Includes A/P, property taxes, and accumulated depreciation
- Other manufacturing costs are charged to Manufacturing Overhead account
    - Charged as they are incurred

Applying Manufacturing Overhead
- If actual and applied manufacturing overhead are not equal, you must adjust them at the end of the year
- Work in Process is increased when Manufacturing Overhead is applied to jobs

Clearing Accounts
- Actual overhead costs are charged to the account as these costs are incurred thruout the period
- Overhead is applied to Work in Process using the predetermined overhead rate

Non-Manufacturing Cost
- Not assigned to individual jobs / specific products
- Expensed in the period incurred
    - Period costs
    - I.e. salary expenses of employees working in marketing, admin, or sales
    - Advertising expenses are expensed in the period incurred

Complications of Overhead Application
- Over-applied overhead
    - Overhead applied to jobs during the period using the POHR > overhead actually incurred during the period
- Under-applied overhead
    - Overhead applied to jobs during the period using the POHR < overhead actually incurred during the period

What to Do With Under/Over Applied Overhead
- Can be allocated to Work in Process, Finished Goods Inventory, & Cost of Goods Sold
    - Based on ending balance of each account
    - Calculate proportions of WIP, Finished Goods, and Cost of Goods Sold
    - Assign overapplied/underapplied overhead based on respective proportions

    - If over-applied, after adjustment Work in Process, Finished Goods, and Cost of Goods Sold will decrease (and thus operating income will increase)
    - If under-applied, after adjustment Work in Process, Finished Goods, and Cost of Goods Sold will increase (and thus operating income will decrease)
- OR just to Cost of Goods Sold
    - Debit/credit Mfg. overhead & debit/credit COGS
    - If over-applied, after adjustment COGS will decrease (and thus operating income will increase)
    - If under-applied, after adjustment COGS will increase (and thus operating income will decrease)

Practice: E5-6

Chapter 7

How Are Costs Treated Under Activity Based Costing?

- ABC assigns both manufacturing and non manufacturing costs to products
- ABC does not assign all manufacturing costs to products
- ABC uses more cost pools - not just volume measures (i.e. DLH)
- ABC is more accurate - gives more detail on cost drivers
- Bases level of activity on used capacity
- Activity
    - An event causing consumption of overhead resources
- Activity cost pool
    - A “cost bucket” in which costs related to a particular activity measure are accumulated
- Activity measure / cost driver
    - Allocation base. Common types are transaction and duration drivers
    - Transaction driver: counts number of times an activity occurs
    - Duration driver: measures amt of time needed for an activity
- Defines 5 levels of activity largely unrelated to volume of units produced
    - Traditional cost systems usually use volume measures (i.e. DLH & MH) to allocate overhead costs to products
    - Unit level activity
    - Batch level activity
    - Product level activity
    - Organization sustaining activity
    - Customer level activity

Steps for Implementing ABC

1. Identify and define activities, activity cost pools, and activity measures
2. Assign overhead costs to activity cost pools
    a. Only assign indirect costs
3. Calculate activity rates
    a. Individual activity rate = total cost of each activity / total activity level
        i. I.e. $320,000 / 1,000 orders = $320 per order
4. Assign overhead costs to cost objects using activity rates and measures

   a. Customer-level cost is assigned to customers directly, not assigned to products
5. Prepare management reports
   a. Gather product sales and direct cost data
   b. Incorporate activity based cost assignments
   c. Calculate profit margins

Differences between ABC and Traditional Product COsts
- Traditional costing allocates all manufacturing overhead to products
- ABC only assigns manufacturing overhead consumed by products to those products
- Traditional costing allocates all manufacturing overhead costs using volume-related allocation base
- ABC uses non-volume related allocation bases
- Traditional costing does not account for selling and admin expenses (they are considered period costs)
- ABC traces shipping costs to products and includes non-manufacturing overhead costs caused by products in the activity cost pools that are assigned to products

ABC Limitations
- Requires a lot of resources to implement + maintain (a lot of money and time)
- Desire to fully allocate all costs to products
- Resistance to unfamiliar numbers and reports
- Potential misinterpretation of unfamiliar numbers
- Doesn't conform to GAAP - may need 2 costing systems

Practice: E7-2 E7-14

We did it, yeah fuck econ

MIDTERM
- 35 m/c 40%
- 6 short answer 60%
- Chapters 1,2,3,4,5,7
- Review end of chapter, connect, and top hat questions
- Bring ID and calculator