

CPA BEC - STUDY UNIT 19

Product Costing and Related Topics: Core Concepts

A. Spoilage and Scrap

1. **Spoilage** consists of completed products that do not meet quality standards. Because they are defective, they will not fetch the normal selling price. Normal spoilage is an expected part of the production process.
2. **Scrap** consists of leftover raw materials after the production process is finished and is therefore in no sense a completed product like spoilage.

B. Job-Order Costing

1. Job-order costing is concerned with **accumulating costs by specific job**. This method is appropriate when producing products with individual characteristics or when identifiable groupings are possible, e.g., batches of certain styles or types of furniture.
2. Two of the three major components of product cost (**direct materials and direct labor**) are charged to work-in-process using the **actual amounts** incurred.
3. The third component, **manufacturing overhead**, is charged using an **estimated rate**. Overhead costs are applied to ("absorbed" by) each job based on a predetermined **overhead application rate** for the year. At the end of each period, it can be determined whether overhead was **over- or underapplied**.

C. Process Costing

1. Process cost accounting is used to assign costs to inventorable goods or services. It is applicable to **relatively homogeneous products** that are mass produced on a continuous basis (e.g., refined oil).
2. Process costing is an **averaging process** that calculates the average cost of all units. Direct materials are used by the first department in the process. The products move from one department to the next. The second department adds more direct materials. Direct labor costs incurred for the period are recorded.
3. Some units remain unfinished at the end of the period. For each department to adequately account for the costs attached to its unfinished units, the units must be restated in terms of **equivalent units of production (EUP)**.
 - a. An equivalent unit of production is the set of inputs required to manufacture one physical unit. The EUP conversion is a two-phase process: First, the **equivalent units** are determined, then the **per-unit cost** is calculated. The two calculations are made **separately for materials and conversion cost** (transferred-in costs are by definition 100% complete). Conversion costs are assumed to be uniformly incurred.
4. Two methods of calculating EUP are in common use: weighted-average and FIFO. Under the **weighted-average method**, units in beginning work-in-process inventory are treated as if they were started and completed during the current period. Beginning work-in-process is therefore not included in the EUP calculation. Under the **first-in, first-out (FIFO) method**, units in beginning work-in-process inventory are part of the EUP calculation. The calculation is thus more complex than weighted-average but tends to be more accurate.

D. Overhead Allocation

1. Inevitably, the overhead amounts applied throughout the year will vary from the amount actually incurred, which is only determinable once the job is complete. This variance is called **over- or underapplied overhead**.

2. During times of low production, per-unit overhead charges will skyrocket. This leads to higher product costs during years of lower production and to distortions in the financial statements. To prevent these distortions in the financial statements, **normal costing** derives the overhead application rate by looking at several years at a time, not just one. **Extended normal costing** applies the use of a normalized rate to direct costs as well as to manufacturing overhead.

E. **Activity-Based Costing**

1. Activity-based costing (**ABC**) is a response to the significant **increase** in the incurrence of **indirect costs** resulting from the rapid advance of technology. Under ABC, indirect costs are attached to **activities** which are then rationally allocated to end products. ABC may be used by manufacturing, service, or retailing entities.
2. **Step 1** in the design of an ABC system is **activity analysis**. Activities are classified in a hierarchy according to the level of the production process at which they take place. **Step 2** is **assign resource costs** to activities. This is termed first-stage allocation. **Step 3** is **allocate activity cost pools** to final cost objects. This is termed second-stage allocation.

F. **Backflush Costing and JIT Inventory**

1. **Backflush costing** is often used by firms that have adopted a **just-in-time (JIT)** production philosophy. Components are made available just in time to be used in the production process. **Work-in-process is usually eliminated**, journal entries to inventory accounts may be delayed until the time of product completion or even the time of sale, and standard costs are used to assign costs to units when journal entries are made, that is, to “flush” costs out of the system to the points at which inventories remain.

G. **Joint Products and By-Products**

1. When two or more separate products are produced by a common manufacturing process from a common input, the outputs from the process are **joint products**.
 - a. **Joint (common) costs** are those costs incurred up to the point where the products become separately identifiable, called the split-off point. Costs incurred after split-off are separable costs. **Separable costs** can be identified with a particular joint product and allocated to a specific unit of output.
2. Several methods are available to **allocate joint costs**. These can be grouped into two approaches.
 - a. A **physical measure-based approach** employs a physical measure such as volume, weight, or a linear measure.
 - b. A **market-based approach** assigns a proportionate amount of the total cost to each product on a quantitative basis. Three major methods of allocation are available under this approach: the sales-value at split-off method; the estimated net realizable value (NRV) method; and the constant gross-margin percentage NRV method.

H. **Service Cost Allocation**

1. **Service (support) department costs** are considered part of overhead (indirect costs). Thus, they cannot feasibly be traced to cost objects and therefore must be allocated to the operating departments that use the services. When service departments also render services to each other, their costs may be allocated to each other before allocation to operating departments.
2. **Three methods** of service department allocation are in general use: The **direct method** is the simplest. The direct method allocates service department costs directly to the producing departments. The **step** or **step-down method** allocates some of the costs of services rendered by service departments to each other. The **reciprocal method** is the most complex and the most theoretically sound of the three. It is also known as the simultaneous solution method.