Introduction to Accounting 2

Modul 3

PLANT ASSETS, NATURAL RESOURCES, AND INTANGIBLE ASSETS

After studying this chapter, you should be able to:

- 1. Describe how the cost principle applies to plant assets.
- 2. Explain the concept of depreciation.
- 3. Compute periodic depreciation using different methods.
- 4. Describe the procedure for revising periodic depreciation.
- 5. Distinguish between revenue and capital expenditures, and explain the entries for these expenditures.
- 6. Explain how to account for the disposal of a plant asset.
- 7. Compute periodic depletion of natural resources.
- 8. Explain the basic issues related to accounting for intangible assets.
- 9. Indicate how plant assets, natural resources, and intangible assets are reported and analyzed

PLANT ASSETS

- Plant assets
 - o tangible resources used in the operations of a business
 - not intended for sale to customers
- Plant assets are subdivided into four classes:
 - 1. Land
 - 2. Land improvements
 - 3. Buildings
 - 4. Equipment



DETERMINING THE COST OF PLANT ASSETS (Study Objective 1)

- Plant assets are recorded at cost in accordance with the cost principle.
- Cost
 - consists of all expenditures necessary to acquire the asset and make it ready for its intended use
 - o includes purchase price, freight costs, and installation costs
- Expenditures that are not necessary
 - o recorded as expenses, losses, or other assets

LAND

- The cost of Land includes:
 - 1. cash purchase price
 - 2. closing costs such as title and attorney's fees
 - 3. real estate brokers' commissions
 - 4. accrued property taxes and other liens on the land assumed by the purchaser, for example:
 - a. Permits from government agencies
 - b. Broker's commissions
 - c. Title fees
 - d. Surveying fees
 - e. Delinquent real estate taxes
 - f. Razing or removing unwanted buildings, less any salvage
 - g. Grading and leveling
 - h. Paving a public street bordering the land
- All necessary costs incurred to make land ready for its intended use are debited to the Land account.

COMPUTATION OF COST OF LAND

Sometimes purchased land has a building on it that must be removed before construction of a new building. In this case, all demolition and removal costs, less any proceeds from salvaged materials are debited to the Land account.

Land	
Cash price of property	\$ 100,000
Net removal cost of warehouse	6,000

Attorney's fee	1,000
Real estate broker's commission	8,000
Cost of land	\$ 115,000

LAND IMPROVEMENTS

The cost of land improvements includes: all expenditures needed to make the improvements ready for their intended use such as:

- 1. Parking lots
- 2. Fencing
- 3. Lighting

BUILDINGS

- The cost
 - Includes all necessary expenditures relating to the purchase or construction of a building:
 - Costs include the purchase price, closing costs, and broker's commission
- Costs to make the building ready for its intended use include
 - Expenditures for remodeling and replacing or repairing the roof, floors, wiring, and plumbing
- If a new building is constructed, costs include
 - Contract price plus payments for architects' fees, building permits, interest payments during construction, and excavation costs

EQUIPMENT

- Cost of equipment
 - Consists of the cash purchase price and certain related costs
 - Costs include sales taxes, freight charges, and insurance paid by the purchaser during transit
 - Includes all expenditures required in assembling, installing, and testing the unit
- Recurring costs such as licenses and insurance are expensed as incurred.



ENTRY TO RECORD PURCHASE OF MACHINERY

Factory Machinery		
Cash price	\$ 50,000	
Sales taxes	3,000	
Insurance during shipping	500	
Installation and testing	1,000	
Cost of factory machinery	\$ 54,500	

The summary entry to record the cost of the factory machinery and related expenditures is as follows:

Factory Machinery 54.500 Cash 54.500

COMPUTATION OF COST OF DELIVERY TRUCK

The cost of equipment consists of the cash purchase price, sales taxes, freight charges, and insurance during transit paid by the purchaser. It also includes expenditures required in assembling, installing, and testing the unit. However, motor vehicle licenses and accident insurance on company cars and trucks are expensed as incurred, since they represent annual recurring events that do not benefit future periods.

Delivery Truck		
Cash price	\$ 22,000	
Sales taxes	1,320	

Painting and lettering 500

Cost of delivery truck \$23,820

Cost of Acquiring Fixed Assets Excludes:

- Vandalism
- Mistakes in installation
- Uninsured theft
- Damage during unpacking and installing
- Fines for not obtaining proper permits from government agencies

Classifying Costs

Is the purchased item long-lived?

NO→Expense

YES \rightarrow Is the asset used in a productive purpose?

If YES→Fixed Assets

If NO→Investment property

REVENUE EXPENDITURES: Normal and ordinary repairs and maintenance

CAPITAL EXPENDITURES:

- 1) Additions
- 2) Improvements
- 3) Extraordinary repairs



LEASING FIXED ASSETS:

A *capital lease* is accounted for as if the lessee has, in fact, purchased the asset. The asset is then amortized over the life of the capital lease.

A lease that is not classified as a capital lease for accounting purposes is classified as an *operating lease* (an operating leases is treated as an expense).

DEPRECIATION (Study Objective 2)

• Depreciation:

Allocation of the cost of a plant asset to expense over its useful (service) life in a rational and systematic manner.

- Cost allocation: Provides for the proper matching of expenses with revenues in accordance with the matching principle.
- Usefulness may decline because of wear and tear or obsolescence.
- Depreciation does not result in an accumulation of cash for the replacement of the asset.
- Land is the only plant asset that is not depreciated

FACTORS IN COMPUTING DEPRECIATION

Three factors that affect the computation of depreciation are:

- 1. Cost: all expenditures necessary to acquire the asset and make it ready for intended use
- 2. Useful life: estimate of the expected life based on need for repair, service life, and vulnerability to obsolescence
- 3. Salvage value: estimate of the asset's value at the end of its useful life

DEPRECIATION



USE OF DEPRECIATION METHODS IN 600 LARGE U.S. COMPANIES (Study Objective 3)

Three methods of recognizing depreciation are: 1 Straight-line, 2 Units of activity, and 3 Declining-balance. Each method is acceptable under generally accepted accounting principles. Management selects the method that is appropriate in the circumstances. Once a method is chosen, it should be applied consistently.



DELIVERY TRUCK DATA

Compare the three depreciation methods, using the following data for a small delivery truck purchased by Barb's Florists on January 1, 2005.

Cost	\$13,000
Expected salvage value	\$1,000
Estimated useful life in years	5
Estimated useful life in miles	100,000

STRAIGHT-LINE

- Straight-line method
 - Depreciation is the same for each year of the asset's useful life.
 - It is measured solely by the passage of time.
- It is necessary to determine depreciable cost.
- Depreciable cost
 - Total amount subject to depreciation and is computed as follows:
- Cost of asset salvage value

FORMULA FOR STRAIGHT-LINE METHOD

The formula for computing annual depreciation expense is: Depreciable Cost / Useful Life (in years) = Depreciation Expense



UNITS-OF-ACTIVITY

- Useful life = total units of production or total expected use expressed in hours, miles, etc.
- Depreciable Cost ÷ Total Units of Activity = Depreciation Cost per Unit
- Depreciation Cost per Unit X Units of Activity During the Year = Annual Depreciation Expense → It is often difficult to make a reasonable estimate of total activity.
- When productivity varies from one period to another, this method results in the best matching of expenses with revenues.

FORMULA FOR UNITS-OF-ACTIVITY METHOD

To use the units-of-activity method, 1) the total units of activity for the entire useful life are estimated, 2) the amount is divided into depreciable cost to determine the depreciation cost per unit, and 3) the depreciation cost per unit is then applied to the units of activity during the year to determine the annual depreciation.



DECLINING-BALANCE

- Decreasing annual depreciation expense over the asset's useful life
- Periodic depreciation is based on a *declining book value
 - o (cost accumulated depreciation)

- To compute annual depreciation expense
 - Multiply the book value at the beginning of the year by the decliningbalance depreciation rate
- Depreciation rate remains constant from year to year
 - book value declines each year
- Book value for the first year is the cost of the asset.
 - Balance in accumulated depreciation at the beginning of the asset's useful life is zero
- In subsequent years, book value is the difference between cost and accumulated depreciation at the beginning of the year.
- Formula for computing depreciation expense:
- Book Value at Beginning of Year x Declining Balance Rate = Annual Depreciation Expense
 - Method compatible with the matching principle the higher depreciation in early years is matched with the higher benefits received in these years.

FORMULA FOR DECLINING-BALANCE METHOD

Unlike the other depreciation methods, salvage value is ignored in determining the amount to which the declining balance rate is applied.

A common application of the declining-balance method is the double-declining-balance method, in which the declining-balance rate is double the straight-line rate.

If Barb's Florists uses the double-declining-balance method, the depreciation is 40% (2 X the straight-line rate of 20%).



PATTERNS OF DEPRECIATION



REVISING PERIODIC DEPRECIATION (STUDY OBJECTIVE 4)

- Changes should be made
 - Excessive wear and tear or obsolescence indicate that annual depreciation estimates are inadequate.
- When a change is made
 - No correction of previously recorded depreciation expense
 - Depreciation expense for current and future years is revised
- To determine the new annual depreciation expense
 - The depreciable cost at the time of the revision is divided by the remaining useful life.

REVISED DEPRECIATION COMPUTATION

Barb's Florists decides on January 1, 2008, to extend the useful life of the truck one year because of its excellent condition. The company has used the straight-line method to depreciate the asset to date, and book value is \$5,800 (\$13,000 - \$7,200). The new annual depreciation is \$1,600, calculated as follows:

Book value, 1/1/08 Less: Salvage value Depreciable cost	\$5,800 <u>1,000</u> \$4,800	
Remaining useful life	3 years	(2008-2010)
Revised annual depreciation (\$4,800 ÷ 3)	\$1,600	

EXPENDITURES DURING USEFUL LIFE (STUDY OBJECTIVE 5)

• Ordinary repairs

- expenditures to maintain the operating efficiency and productive life of the unit
- such repairs are debited to Repairs Expense as incurred and are often referred to as revenue expenditures.

EXPENDITURES DURING USEFUL LIFE

- Capital expenditures
- Additions and improvements increases the operating efficiency, productive capacity, or useful life of a plant asset
 - 1. Usually material in amount and occur infrequently.
 - 2. Increase the company's investment in productive facilities. Debit the plant asset affected.

PLANT ASSET DISPOSALS (STUDY OBJECTIVE 6)

- Retirement
 - Plant asset is scrapped or discarded.
 - Eliminate the book value of the plant asset at the date of sale by debiting accumulated depreciation and crediting the asset account for its cost.
 - Debit cash to record the cash proceeds from the sale.
 - Compute gain or loss.
- If the cash proceeds > the book value
 - Recognize a gain by crediting gain on disposal for the difference.
- If the cash proceeds are < the book value
 - Recognize a loss by debiting loss on disposal for the difference.

PLANT ASSET DISPOSALS



GAIN ON DISPOSAL

On July 1, 2005, Wright Company sells office furniture for \$16,000 cash. Original cost was \$60,000 and as of January 1, 2005, had accumulated depreciation of \$41,000.

Depreciation for the first 6 months of 2005 is \$8,000. The entry to record depreciation expense and update accumulated depreciation to July 1 is as follows:

Depreciation Expense	8.000	
Accumulated Depreciation		8.000

After the accumulated depreciation is updated, a gain on disposal of \$5,000 is computed:

Cost of office furniture	\$ 60,000
Less: Accumulated depreciation (\$41,000 + \$8,000)	49,000
Book value at date of disposal	11,000
Proceeds from sale	16,000
Gain on disposal	\$ 5,000

The entry to record the sale and the gain on disposal is as follows:

Cash	16.000	
Accumulated DeprOffice Furniture	49.000	
Office Furniture		60.000
Gain on Disposal		5.000

LOSS ON DISPOSAL

Instead of the selling the office furniture for \$16,000, Wright sells it for \$9,000. In this case, a loss of \$2,000 is computed:

Cost of office furniture	\$ 60,000
Less: Accumulated depreciation (\$41,000 + \$8,000)	49,000
Book value at date of disposal	11,000

Proceeds from sale	9,000
Loss on disposal	\$ 2,000

The entry to record the sale and the loss on disposal is as follows:

Cash	9.000	
Accumulated DeprOffice Furniture	49.000	
Loss on Disposal	2.000	
Office Furniture		60.000

NATURAL RESOURCES (STUDY OBJECTIVE 7)

- Natural resources consists of standing timber and underground deposits of oil, gas, and minerals
- These long-lived productive assets have two distinguishing characteristics:
 - 1. They are physically extracted in operations.
 - 2. They are replaceable only by an act of nature

DEPLETION

- Allocation of the cost of natural resources to expense in a rational and systematic manner over the resource's useful life.
- Units-of-activity method is generally used to compute depletion.
- Depletion generally is a function of the units extracted during the year

FORMULA TO COMPUTE DEPLETION EXPENSE



Helpful hint: This computation for depletion is similar to the computation for depreciation using the units-of-activity method of depreciation.

RECORDING DEPLETION

The Lane Coal Company invests \$5 million in a mine estimated to have 10 million tons of coal and no salvage value. In the first year, 800,000 tons of coal are extracted and sold. Using the formulas, the calculations are as follows:

 $5,000,000 \div 10,000,000 = 5.50$ depletion cost per ton

\$.50 X 800,000 = \$400,000 depletion expense

The entry to record depletion expense for the first year of operations is as follows:

Depletion Expense400.000Accumulated Depletion400.000

STATEMENT PRESENTATION OF ACCUMULATED DEPLETION

Accumulated Depletion is a contra asset account similar to accumulated depreciation. It is deducted from the cost of the natural resource in the balance sheet as follows:

Lane Coal Company Balance Sheet (partial)

Coal mine	\$5,000,00
	0
Less: Accumulated depletion	400,000

<u>\$4,600,00</u>

INTANGIBLE ASSETS (Study Objective 8)

- Intangible assets
 - Rights, privileges, and competitive advantages that result from the ownership of long lived assets that do not possess physical substance
 - May arise from government grants, acquisition of another business, and private monopolistic arrangements

ACCOUNTING FOR INTANGIBLE ASSETS

- In general, accounting for intangible assets parallels the accounting for plant assets.
- intangible assets are:
 - 1. Recorded at cost
 - 2. Written off over useful life in a rational and systematic manner
 - 3. At disposal, book value is eliminated and gain or loss, if any, is recorded
- Key differences between accounting for intangible assets and accounting for plant assets include:
 - The systematic write-off of an intangible asset is referred to as amortization
- To record amortization
 - Debit Amortization Expense and credit the specific intangible asset
 - Intangible assets typically amortized on a straight-line basis

PATENTS

- A patent
 - Exclusive right issued by the patent office
 - Manufacture, sell, or otherwise control an invention for a period of 20 years from the date of grant
- Cost of a patent
 - Initial cost is the cash or cash equivalent price paid to acquire the patent
 - Legal costs amount an owner incurs in successfully defending a patent are added to the patent account and amortized over the remaining useful life of the patent
 - Should be amortized over its 20-year legal life or its useful life, whichever is shorter.

RECORDING PATENTS

National Labs purchases a patent at a cost of \$60,000. If the useful life of the patent is 8 years, the annual amortization expense is \$7,500 ($$60,000 \div 8$).

Amortization Expense is classified as an operating expense in the income statement. The entry to record the annual patent amortization is:

Amortization Expense	7.500	
Patents		7.500

COPYRIGHTS

- Copyrights
 - Grants from the federal government
 - $\circ\;$ Gives the owner the exclusive right to reproduce and sell an artistic or published work
- Copyrights extend for the life of the creator plus 70 years.
- The cost of a copyright is the cost of acquiring and defending it.

TRADEMARKS AND TRADE NAMES TM

- A trademark or trade name is word, phrase, jingle or symbol identifying a particular enterprise or product
- Trademark or trade name purchased: the cost is purchase price
- Trademark developed by a company: the cost includes attorney's fees, registration fees, design costs and successful legal defense fees

FRANCHISES AND LICENSES

- Franchise
 - Contractual arrangement under which the franchisor grants the franchisee the right to sell certain products, render specific services, or use certain trademarks or trade names, usually restricted to a designated geographical area
- Another type of franchise, commonly referred to as a license or permit
 - Entered into between a governmental body and a business enterprise and permits the enterprise to use public property in performing its services.

GOODWILL

- Value of all favorable attributes that relate to a business enterprise
- Attributes may include exceptional management, desirable location, good customer relations and skilled employees
- Cannot be sold individually in the marketplace; it can be identified only with the business as a whole

Goodwill

- Recorded only when a transaction involves the purchase of an entire business
- Excess of cost over the fair market value of the net assets (assets less liabilities) acquired
- Not amortized
- Reported under intangible assets

RESEARCH AND DEVELOPMENT COSTS

- Research and development costs
 - Pertain to expenditures incurred to develop new products and processes
- These costs are not intangible costs
 - Recorded as an expense when incurred

FINANCIAL STATEMENT PRESENTATION (STUDY OBJECTIVE 9)

- Plant assets and natural resources
 - Under "property, plant, and equipment" in the balance sheet
 - Major classes of assets, such as land, buildings, and equipment, and accumulated depreciation by major classes or in total should be disclosed
 - Depreciation and amortization methods that were used should be described. Finally, the amount of depreciation and amortization expense for the period should be disclosed
- Intangibles are shown separately under intangible assets

LANDS' END'S PRESENTATION OF PROPERTY, PLANT, AND EQUIPMENT, AND INTANGIBLES

The financial statement presentation of property, plant, and equipment by Lands' End in its 2005 balance sheet is quite brief, as shown below:

Balance Sheet - Partial		
December 31, 2005 (in	thousands)	
	Jan. 28, 2005	Jan. 29, 2004
Property, plant and equipment, at costs		
Land and buildings	102,776	102,018
Fixtures and equipment	175,910	154,663
Leasehold improvements	4,453	5,475
Total property, plant and equipment	283,139	262,156
Less: accumulated depr. and amort.	117,317	101,570
Property, plant and equipment, net	165,822	160,586
Intangibles, net	966	1,030

The notes to Lands' End financial statements present greater details, namely, that "intangibles" contains goodwill and trademarks...

PRESENTATION OF PROPERTY, PLANT, AND EQUIPMENT AND INTANGIBLE ASSETS

A more comprehensive presentation of property, plant, and equipment is excerpted from the balance sheet of Owens-Illinois and shown below.

OWENS-ILLINOIS, INC.				
Balance Sheet - Partia	I			
(In millions of dollars)	-			
Property, plant, and equipment				
Timberlands, at cost, less accumulated depletion		\$	95.4	
Buildings and equipment, at cost	\$ 2,207.1			
Less: Accumulated depreciation	1,229.0		978.1	
Total property, plant, and equipment				\$ 1,073.5
Intangibles				
Patents				410.0
Total				\$ 1,483.5

EXCHANGES OF PLANT ASSETS

- Exchanges
 - Can be for similar or dissimilar assets
 - For similar assets, the new asset performs the same function as the old asset
- Necessary to determine two things:
 - 1. The cost of the asset acquired
 - 2. The gain or loss on the asset given up

LOSS TREATMENT

- Losses on exchange of similar assets Recognized immediately
- Cost of the new asset received Equal to the fair market value of the old asset exchanged plus any cash or other consideration given up
- Losses result when the book value is greater than the fair market value of the asset given up

COMPUTATION OF COST OF NEW OFFICE EQUIPMENT

Roland Company exchanges old office equipment for new similar office equipment. The book value of the old office equipment is \$26,000 (\$70,000 cost less \$44,000 accumulated depreciation), AND its fair market value is \$10,000, and \$81,000 of cash is paid. The cost of the new office equipment, \$91,000, is calculated as follows:

Fair market value of old office equipment\$ 10,000

Cash	81,000
Cost of new office equipment	\$ 91,000

COMPUTATION OF LOSS ON DISPOSAL

Through this exchange, a loss on disposal of \$16,000 is incurred. A loss results when the book value is greater than the fair market value of the asset given up. The calculation is as follows:

Book value of old office equipment (\$70,000 — \$44,000)	\$ 26,000
Fair market value of old office equipment	10,000
Loss on disposal	\$ 16,000

In recording the exchange at a loss three steps are required: 1) eliminate the book value of the asset given up, 2) record the cost of the asset acquired, and 3) recognize the loss on disposal.

Office Equipment (new)	91.000	
Accumulated Depreciation-Office Equipment	44.000	
Loss on Disposal	16.000	
Office Equipment (old)		70.000
Cash		81.000

GAIN TREATMENT

- Gains of similar assets not recognized immediately, but, are deferred by reducing the cost basis of the new asset
- Cost of the new asset fair market value of the old asset exchanged plus any cash or other consideration given up
- Gains result when the fair market value is greater than the book value of the asset given up

COST OF NEW EQUIPMENT (BEFORE DEFERRAL OF GAIN)

Mark's Express Delivery exchanges old delivery equipment plus \$3,000 cash for new delivery equipment. The book value of the old delivery equipment is \$12,000 (\$40,000 cost less \$28,000 accumulated depreciation), its fair market value is \$19,000. The cost of the new delivery equipment, \$22,000, is calculated as follows:

Fair market value of old delivery equipment	\$ 19,000
Cash	3,000
Cost of new delivery equipment (before deferral of gain)	\$ 22,000

COMPUTATION OF GAIN ON DISPOSAL

For Mark's Express Delivery, there is a gain of \$7,000, calculated as follows, on the disposal:

Fair market value of old delivery equipment	\$ 19,000
Book value of old delivery equipment (\$40,000 – \$28,000)	12,000
Gain on disposal	\$ 7,000

COST OF NEW DELIVERY EQUIPMENT (AFTER DEFERRAL OF GAIN)

The \$7,000 gain on disposal is then offset against the \$22,000 cost of the new delivery equipment. The result is a \$15,000 cost of the new delivery equipment, after deferral of the gain.

Cost of new delivery equipment (before deferral of gain)	\$ 22,000
Less: Gain on disposal	7,000
Cost of new delivery equipment (after deferral of gain)	\$ 15,000

The entry to record the exchange is as follows:

Delivery Equipment (new)	15.000	
Accumulated Depreciation - Delivery Equipment (old)	28.000	
Delivery Equipment (old)		40.000
Cash		3.000

ACCOUNTING RULES FOR PLANT EXCHANGES

Type o Event	Recognition
Loss	Recognize immediately by debiting Loss on Disposal
Gain	Defer and reduce cost of new asset

REVIEW

- 1. Depreciation is a process of:
- a. valuation.
- b. cost allocation.
- c. cash accumulation.
- d. appraisal.
- 2. In exchanges of similar assets:
- a. Neither gains nor losses are recognized immediately.
- b. Gains, but not losses, are recognized immediately.
- c. Losses, but not gains, are recognized immediately.
- d. Both gains and losses are recognized immediately.
- Manu Company, a furniture wholesale, acquired new equipment at a cost of Rp150.000.000,00 at the beginning of the fiscal year. The equipment has an estimated life of 5 years and estimated residual value or salvage value of Rp12.000.000,00. Ella Manu, the president, has requested information regarding alternative depreciation methods.

Instructions:

- Determine the annual depreciation for each of the 5 years of estimated useful life of the equipment, the accumulated depreciation at the end of each year, and the book value of the equipment at the end of the each year by (a) a straight-line method and (b) the double-declining-balance method
- 2. Assume that the equipment was depreciated under the double-decliningbalance method. In the first week of the fifth year, the equipment was traded

in for similar equipment priced at Rp175.000.000,00. The trade-in allowance on the old equipment was Rp10.000.000,00 and cash was paid for the balance. Journalize the entry to record the exchange.

Reference

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- Reeve, James M, Caarl S. Waren and Jonathan E. Duchac. Principles of Accounting. Singapore: Cengage Learning Asia Pte Ltd. (R)