ACC 202: Cost and Management Accounting

Course Objective
The primary objective of the module is to provide students with an understanding of the concepts, tools and techniques of cost and management accounting and their application in managerial decision making.

Course Description
This course comprises conceptual foundation of cost and management accounting, segregation of cost, accounting for material and labour, allocation apportionment and absorption of overhead cost, income statement under variable and absorption costing technique, standard costing system with material and labour cost variance, flexible budgeting under different levels of activities, overhead cost variance, preparation of functional and financial budget in a manufacturing/non-manufacturing concern, decision regarding alternative choices.

Unit 1: Conceptual Foundation LH 4
Cost & management accounting: Meaning, objectives, importance, advantages and limitations, differences between financial accounting and cost accounting, management accounting and cost accounting.
Cost concept and its classification.
Concept and method of cost segregation: i) Two point method and ii) Least square method & iii) Estimation of cost

Unit 2: Accounting for Materials LH 3
Materials/Inventory: Concept, reasons and objectives for holding material / inventory.
Inventory Control: Meaning, importance and techniques, Economic order quantity with and without discount, Re-order, maximum, minimum, danger and average stock levels under the condition of certainty.

Unit 3: Accounting for Labour Cost LH 3
Labour cost: Concept and need for control of labour cost.
Incentive wages Plan: Halsey and Rowan premium Plan, Taylor's differential piece rate system, Gantt's Task and Bonus plan.

Unit 4: Accounting for Overhead Cost: LH 4
Overhead cost: Meaning, classification, importance
Accounting and Distribution of overhead cost: Allocation, apportionment and absorption of overhead cost.

Unit 5: Accounting for Profit Planning LH 8
Absorption costing: Concept, importance, income statement under absorption costing technique, limitations.
Variable costing: Concept, importance, income statement under variable costing technique, reconciliation statement between absorption and variable costing techniques showing the causes of difference.
Cost Volume profit analysis: Meaning, importance, Contribution margin analysis, Break-even-analysis: under constant and the following underlying situations: changes on selling price, fixed cost, & variable cost, and under step fixed cost, Break-even-analysis of multi-products firms, assumptions of CVP analysis and its limitations.

Unit 6: Standard costing LH 4
Standard costing: Concept, preliminaries to establish standard costing system, difference between standard costing and budgetary control, advantages and limitations.

Variance analysis:
Material variance: Concept and calculation of cost, price, usage, mix and yield variances.
Labour variance: Concept and calculation of cost, efficiency, rate, mix, idle time and yield variances.

Unit 7: Flexible budgeting   LH 4
Flexible budgeting: Limitations of static budget, concept, importance of flexible budget, flexible budgeting for overhead cost control, flexible budget in different level of activity.
Overhead cost variance: Concept and calculation of capacity, efficiency and spending variances.

Unit 8: Budgeting and Profit Planning   LH 12
Concept and objectives of budget. Preparation of budget for manufacturing and non-manufacturing concern: sales budget, production budget, purchase budget, direct labour and overhead cost budget. Cash collection and disbursement budget, budgeted income statement, budgeted balance sheet.

Unit 9: Accounting for Alternative Choices for Decision Making   LH 6
Concept of decision making, types of decision making: Make of buy decision, Drop or continue decision, Accept or reject special offer, decision to sell or further processing.

Suggested Books
Ronald W. Hilton, and David E. Platt *Managerial Accounting*, MCgraw Hill, Irwin.
Charles T. Horngren, Srikant M. Datar and George foster, *Cost Accounting , A managerial Emphasis,* Pearson Education
Colin Drury, *Management and Cost Accounting*, ELBS with Chapman and HallJerry J. Weygandt,
Jawahar Lal, *Cost Accounting,* Tata McGraw Hill Co., New Delhi
T. Lucy, *Cost Accounting,* Tata McGraw Hill Co., New Delhi.
M.R. Koirala, and et.al, *Cost and Management Accounting,* Buddha Academy Publication House, Kathmandu.
Yamesh man Singh, Khagendra P. Ojha, Chiranjibi Acharya, *Cost and Management Accounting*, Buddha Academic Publishers and Distributors Pvt.Ltd.
R.M. Dangol and et.al, *Cost and Management Accounting,* Taleju Publishing House, Kathmandu
Koirala, Y.R. and et.al, *Cost and Management Accounting,* Ashmita Publication, Kathmandu.

ECO 201: Microeconomics

Course Objectives

This module aims to develop students' understanding of the microeconomic concepts and theories in order to enhance their skill in analyzing business opportunities, market and risks.

Course Description

Microeconomics: concepts and uses. Theory of demand and supply: demand function, change in quantity demanded and change in demand, supply function: change in quantity supplied and change in supply, elasticity of demand and supply – concepts, degrees and measurements. Utility Analysis: cardinal vs ordinal utility and indifference curve analysis. Theory of production: Production function, laws of production. Cost and revenue curves. Pricing: Price and output determination under perfect competition, monopoly and monopolistic competition, concept of oligopoly. Factor pricing: rent (modern theory of rent) wages (marginal productivity theory), interest (loanable fund theory and liquidity preference theory) and profit (dynamic theory and innovation theory).

Course Details

Unit 1: Introduction to Microeconomics   LH 3

Meaning, Scope, Types, Uses

Unit 2: Theory of Demand and Supply   LH 6

Demand function : Meaning and types, Movement along a demand curve and shifts in demand curve. Supply Function. Meaning and types, Movement along a supply curve and shifts in supply curve Concept of Elasticity of demand and supply, Price elasticity of demand: degrees, measurement (percentage, total outlay, point and arc methods), uses in business decision making, Income elasticity of demand: degrees, measurement (percentage, arc and point methods), Cross elasticity of demand: types, measurement (percentage and arc methods), Price elasticity of supply: degrees, measurement (percentage, point and arc methods).

Measurement of elasticity

Unit 3: Theory of Consumer's Behaviour   LH 8

Cardinal vs ordinal utility. Indifference curve analysis : Meaning, assumptions and properties, Principle of MRS, Consumer's equilibrium, Price effect – derivation of PCC and demand curves for normal goods (substitutes and complements), Income effect – derivation of ICC and Engel curves for normal goods and inferior goods , Substitution effect – Hicksian approach, Decomposition of price effect into income and substitution effects – Hicksian approach , Applications – tax and subsidy, income leisure choice of workers

Computations and Numerical assignments

Unit 4: Theory of Production   LH 7

Concept of total, average and marginal product. Production function – meaning, types (short run and long run production function, Cobb-Douglas production function. Law of variable proportions (explanation of three stages of production with reasons). Isoquants: Meaning, assumptions and properties, Principle of marginal rate of technical substitution, Optimal employment of two inputs (or least cost combination of two inputs), Laws of returns to scale, Explanation with table and diagram (using IQ).

Computations and Numerical assignments

Unit 5: Cost and Revenue Curves   LH 8

Cost function. Various concepts of costs: opportunity cost, explicit and implicit costs, accounting and economic costs. Short run costs: Behavior of short run total costs, Behavior of average and marginal cost curves, Relation between AC and MC, TVC and MC and AC and AFC and AVC. Long run costs, Meaning, Derivation of U-shaped and L-shaped LAC with reasons. Revenue: Revenue under perfect competition, Revenue under imperfect competition, Relationship of Revenues (TR, AR and MR) with price elasticity of demand.

Computations and Numerical assignments

Unit 6: Theory of Product Pricing   LH 10

Profit maximization and equilibrium of a firm: TR-TC approach (table and diagram), MR-MC approach (table and diagram). Equilibrium price and output determination under perfect competition: Meaning and characteristics, Derivation of short run supply curve of a firm, Short run equilibrium (firm and industry), Long run equilibrium (firm and industry). Equilibrium price and output determination under monopoly: Meaning and characteristics, Short run equilibrium, Long run equilibrium, Meaning and conditions of price discrimination, Degrees of price discrimination, Equilibrium of firm under third degree discrimination. Equilibrium price and output determination under monopolistic competition: Meaning and characteristics, Short run equilibrium, Long run equilibrium of a firm. Oligopoly: Meaning and characteristics.

Computations and Numerical assignments

Unit 7: Theory of Factor Pricing   LH 6

Rent: Concept of economic rent and its determination: modern theory of rent. Wages: Marginal productivity theory of wages. Interest: Loanable funds theory of interest, Liquidity preference theory of interest. Profits, Dynamic theory of profits, Innovation theory of profits.

Computations and Numerical assignments

References

Ahuja, H.C. *Advanced Economic Theory – Micro Economic Analysis,* New Delhi – S. Chand (Latest ed.)

Browning and Browning (1994), *Microeconomic Theory and Applications,* New Delhi, Kalyani Publishers

Case, Karl E. and Ray C. Fair, (2002), *Principles of Economics,* Singapore, Pearson Education

Dwibedi DN (2003), *Microeconomics Theory and Applications,* Delhi, Pearson Education Pvt. Ltd.

Dwibedi DN (2010), *Microeconomics Theory and Practice,* New Delhi, Tata McGraw Hill.

Koutsoyianis, A (1979), *Modern Microeconomics,* London, Macmillan

McConnell CR and S. Brue, (2002), *Economics : Principles, Problems and Policies,* New York, McGraw Hill.

IT 218: Data Structure and Algorithm with Java

Course Objectives

This course aims to provide a systematic introduction to data structures and algorithms for constructing efficient computer programs. The course emphasizes on data abstraction issues (through ADTs) in the program development process, and on efficient implementation of chosen data structures and algorithms. Laboratory work is essential in this course.

Course Description

The course contains Complexity Analysis, Linked Lists, Stacks and Queues, Recursion, Binary Trees, Multiway Trees, Graph, Sorting, Hashing.

Course Details

Unit 1: Complexity Analysis **LH 4**

Computational and Asymptotic Complexity. Big-O Notation. Properties of Big-O Notation and Q. Possible Problems. Examples of Complexities. Finding Asymptotic Complexity: Examples. The Best, Average, and Worst Cases 66. Amortized Complexity 69. NP-Completeness 73.

Unit 2: Linked Lists **LH 5**

Singly Linked Lists: Insertion, Deletion, Search. Doubly Linked Lists: Circular Lists, Skip Lists, Self-Organizing Lists. Sparse Tables. Case Study: A Library.

Unit 3: Stacks and Queues **LH 4**

Stacks, Queues, Priority Queues. Case Study: Existing a Maze.

Unit 4: Recursion **LH 4**

Recursive Definitions. Method Calls and Recursion Implementation. Anatomy of a Recursive Call. Tail Recursion. Nontail Recursion. Indirect Recursion. Nested Recursion. Excessive Recursion. Backtracking.

Unit 5: Binary Trees **LH 9**

Trees, Binary Trees, and Binary Search Trees. Implementing Binary Trees. Searching a Binary Search Tree. Tree Traversal. Breadth-First Traversal. Depth-First Traversal. Insertion, Deletion, Deletion by Merging, Deletion by Copying. Balancing a Tree. The DSW Algorithm. AVL Trees. Self-Adjusting Trees. Self-Restructuring Trees, Splaying. Heaps: Heaps as Priority Queues, Organizing Arrays as Heaps, Polish Notation and Expression Trees. Operations on Expression Trees. Case Study: Computing Word Frequencies 280.

Unit 6: Multiway Trees   **LH 5**

   The Family of B-Trees. B-Trees, B*-Trees, B+-Trees. Case Study: Spell Checker

Unit 7: Graphs   **LH 6**

   Graph Representation. Graph Traversals, Shortest Paths, All-to-All Shortest Path Problem, Cycle
   Detection. Spanning Trees. Connectivity. Connectivity in Undirected Graphs, Connectivity in
   Directed Graphs. Topological Sort, Networks.

Unit 8: Sorting   **LH 6**

   Elementary Sorting AlgorithmsInsertion Sort, Selection Sort, Bubble Sort. Efficient Sorting
   Algorithms: Heap Sort, Quicksort, Mergesort, Radix Sort. Case Study: Adding Polynomials.

Unit 9: Hashing   **LH 5**

   Hash Functions: Division, Folding, Mid-Square Function, Extraction. Collision Resolution: Open
   Addressing, Chaining, Bucket Addressing, Deletion. Case Study: Hashing with Buckets.

   Textbooks:
   Drozdek Adam, Data Structures and Algorithms in Java, 3ʳᵈ edition
   Reference:
   - Duncan A. Buell, Data Structures Using Java
   - Main Michael, Data Structures and Other Objects Using Java, Prentice Hall (4ᵗʰ edition),
   - Robert Lafore, Data Structures and Algorithms in Java, Sams Publishing;
   - Narasimha Karumanchi, Data Structures And Algorithms Made Easy In Java, CareerMonk
      Publications

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IT 219: Web Technology - II

Credits: 3
Lecture Hours: 48

Course Objective
This course will teach to develop interactive and dynamic web sites. Currently dynamism has become vital part of web site for any organization. This course will be of great help for student in integrating dynamism in their web sites that have competitive advantage.

Course Description:
Orientation and First Steps, Working with Text and Numbers, Making Decisions and Repeating, working with arrays, function, Web forms, working with databases, Remembering Users with Cookies and Sessions, Handling Dates and Times, Working with Files

Unit 1: Orientation and First Steps   **LH 2**
PHP's Place in the Web World, What's So Great About PHP?, PHP in Action, Basic Rules of PHP Programs.

Unit 2: Working with Text and Numbers   **LH 2**
Text, Numbers, Variables

Unit 3: Making Decisions and Repeating Yourself   **LH 5**
Understanding true and false, Making Decisions, Building Complicated Decisions, Repeating Yourself.

Unit 4: Working with Arrays   **LH 5**
Array Basics, Looping Through Arrays, Modifying Arrays, Sorting Arrays, Using Multidimensional Arrays.

Unit 5: Functions   **LH 5**
Declaring and Calling Functions, Passing Arguments to Functions, Returning Values from Functions, Understanding Variable Scope.

Unit 6: Making Web Forms   **LH 8**
Useful Server Variables, Accessing Form Parameters, Form Processing with Functions, Validating Data, Displaying Default Values, Putting It All Together.

Unit 7: Working with Databases   **LH 12**
Organizing Data in a Database, Connecting to a Database Program, Creating a Table, Putting Data into the Database, Inserting Form Data Safely, Generating Unique IDs, A Complete Data Insertion Form, Retrieving Data from the Database, Changing the Format of Retrieved Rows, Retrieving Form Data Safely, A Complete Data Retrieval Form, MySQL Without PEAR DB.

Unit 8: Remembering Users with Cookies and Sessions   **LH 3**
Working with Cookies, Activating Sessions, Storing and Retrieving Information, Configuring Sessions, Login and User Identification, Why setcookie( ) and session_start( ) Want to Be at the Top of the Page.

Unit 9: Handling Dates and Times   **LH 2**

        Displaying the Date or Time, Parsing a Date or Time, Dates and Times in Forms, Displaying a Calendar.

Unit 10: Working with Files   **LH 4**

        Understanding File Permissions, Reading and Writing Entire Files, Reading and Writing Parts of Files, Working with CSV Files, Inspecting File Permissions, Checking for Errors, Sanitizing Externally Supplied Filenames.

References:

-       David Sklar,"*Learning PHP 5, A Pain-Free Introduction to Building Interactive Web* Sites" O'Reilly Media

-       Kevin Tatroe, Peter MacIntyre, Rasmus Lerdorf, "**Programming PHP",** O'Reilly Media
-       Robin Nixon**, "*Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5*",**
-       Luke Welling ,PHP and MySQL Web Development, Addison-Wesley Professional O'Reilly Media

IT 220: Database Management System

Course Objective

The main objective of this module is to provide strong theoretical and practical knowledge of the database management system.

Course Description

Database system, Data Abstraction, Data Models, Database users, Entity-Relation Model, Constraints, E-R Diagrams, Design of E-R Database Schema, Relational Data Model, Structure of Relational Database, Relational Algebra, Fundamental Operations, Additional Operating, Modifying the database, Structured Query Language Data Definition Language, Data manipulation Language, Transaction Control Language, Join Operations, Integrity Constraints, Assertion, Triggers, Relational database design issues, Normalization, Transaction Management, Database System Architectures.

Course Details

Unit 1: Introduction – Database Management Systems   LH 4

Purpose of Database Systems. Data Abstraction. Data Models: The E-R Model, The Object-Oriented Model, The Relational Model, The Network Model, The Hierarchical Model, Physical Data Models. Instances and Schemes. Data Independence. Database Administrator. Database Users. Application Architecture (One tier, two tier and n-tire). Overall Database System Structure and Components.

Unit 2: Entity-Relationship Model   LH 8

Entities and Entity Sets. Relationships and Relationship Sets. Attributes. Mapping Constraints. Keys (Super key, Candidate key and Primary key): Primary Keys for Entity Sets and Relationship Sets. The Entity Relationship Diagram. Reducing E-R Diagrams to Tables: Representation of Strong Entity Sets, Representation of Weak Entity Sets, Representation of Relationship Sets. Generalization and Specialization. Aggregation. Mapping Cardinalities: Representation of Mapping Cardinalities in E-R Diagram. Use of Entity or Relationship Sets. Use of Extended E-R Features. Design of an E-R Database Scheme (Case study).

Unit 3: Structured Query Language (SQL)   LH 15

Background, Data Definition Language: Domain Types in SQL, Schema Definition in SQL. Data Manipulation Language: The select Clause, The where Clause, The from Clause, The Rename Operation, Tuple Variables, String Operations, Ordering the Display of Tuples, Duplicate Tuples. Set Operations. Aggregate Functions. Null Values. Nested Subqueries: Set Membership, Set Comparison, Test for Empty Relations, Test for the Absence of Duplicate Tuples. Derived Relations: Views. Modification of the Database: Deletion, Insertion, Updates, Updates, Update of a view. Joined Relations: Join types and Conditions. Embedded SQL. Dynamic SQL. Transaction Control Language (Commit, Rollback).

Unit 4: Integrity Constraints   **LH 5**

Domain Constraints. Referential Integrity: Basic Concepts, Referential Integrity in the E-R Model, Database Modification, Referential Integrity in SQL

Unit 5: Relational Database Design   **LH 6**

Pitfalls in Relational DB Design. Representation of Information: Anomalies. Functional Dependencies: Basic Concepts, Closure of a Set of Functional Dependencies, Closure of Attribute Sets. Decomposition: Lossless-Join Decomposition, Dependency Preservation. Normalization: First Normal Form, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form, Comparison of BCNF and 3NF.

Unit 6: Transaction Management   **LH 5**

ACID Properties. Transaction States: Implementation of Atomicity and Durability, Serializability, Basic Concept of Concurrency Control and Recovery, Locking Protocols, Time Stamp Based Protocol.

Unit 7: Case Study   **LH 5**

MSSQL server, ORACLE, MYSQL

Note:
  - The students are required to undertake a project work. The project work can be done individually or in group (at most 4-5 students). The format of the project report is as follows:
      - Project Description
      - Description of entities or object considered in the project
      - Algorithm or Diagram showing description of project
      - Conclusion of the project

    The project report should be original, and the reproduction of others' work is strictly prohibited. Number of pages of the report should be at least 4.

References:

Abraham Silberchatz, Henry F. Korth, S. Sudarshan; *Database System Concepts,* McGraw Hill 4th ed.

Date, C.J.; *An Introduction to Database System,* Addison Wesley, 8th ed.

RAMEZ ELMASRI, B. NAVATHE, *Fundamentals of Database System,* Pearson Education Asia, Fifth Edition.