

ACC 201: Financial Accounting

Credit Hours: 3
Lecture Hours: 48

Module Objectives:

This module aims to familiarize students with the function and process of financial reporting system from a user and system designer perspective.

Course Description:

Introduction to financial accounting: concept, objectives, and accounting principles. The accounting process: double entry book-keeping, accounting equation, accounting cycle, rules of debit and credit, journalizing the transactions, posting and closing the ledgers, subdivision of journals, cash and banking transactions, bank reconciliation, preparation of trial balance and adjustment entries. Accounting for receivables: concept, types of account receivables, and financial statement presentation of receivables, managing receivables. Accounting for long-lived assets: types, determining the cost of plant, accounting for plant, analyzing plant assets. Intangible assets: accounting for intangible assets, types, financial statement presentation of long-lived assets. Reserve and provisions: concept, types, capital profit and revenue profit. Financial statement and closing entries: preparation of income and retained earnings statements, closing entries, preparation of balance sheet with adjustments and cash flow statement.

Course Details

Unit 1: Introduction

LH6

- Meaning of accounting
- Objective, importance and functions of accounting
- Accounting information and economic decisions
- Users of accounting information
- Basic terminologies: Capital, Liabilities: long term and short term, assets: fixed assets, intangible assets, and current assets, purchases, sales, debtors, creditors, inventories, revenues and expenses.

Unit 2: General Accepted Accounting Principles (GAAP)

LH2

- Business entity concept
- Money measurement concept
- Going concern concept
- Cost concept
- Accounting period concept
- Realization concept
- Matching concept

Unit 3: Double Entry System

LH3

- Concept, Features, Advantages of Double entry book-keeping system
- Accounting Equation
- Accounting Cycle/Process

Unit 4: Recording of Business Transactions **LH5**

- Types of Accounts, Rules for Debit and Credit
- Meaning and objectives of Journal, Journalizing based on types of account and on
- Ledger: Meaning, Objectives, Account formats (T format and balancing format). Posting accounting equation: Simple and Compound entries including bills of exchange into ledger, Balancing and closing of ledger accounts

Unit 5: Sub-division of Journal **LH5**

- Sales Book: Concept, Trade discount and cash discount application and treatment,
- Purchase Book: Concept, Preparation and Posting from Purchase Book
- Sales Return Book: Concept, Credit Note, Preparation and Posting from Sales Return
- Preparation and Posting from Sales Book
- Purchase Return Book: Concept, Debit Note, Preparation and Posting from Purchase
- Bills Payable Book: Concept, Preparation and Posting from Bills Payable Book
- Bills Receivable Book: Concept, Preparation and Posting from Bills Receivable Book

Unit 6: Accounting for Cash and Banking Transactions **LH8**

- Cash and Banking Transactions: Objectives, importance. Bank account: Current account,
- Cheques: Meaning, Parties to a cheque, Types, Rules for drawing a cheque, Issue,
- Pass Book: Concept and importance
- Cash Book: Concept and importance. Types of Cash Book: Single, Double and Triple
- Bank Reconciliation Statement: Concept, Importance, Reasons for disagreement between cash book and pass book .
- Saving account. Fixed deposit account Deposit, Endorsement and Dishonor of Cheque Column Cash Book, Petty Cash Book: Meaning, Importance, Types cash book and pass book balances, and preparation of Bank Reconciliation Statement

Unit 7: Trial Balance **LH4**

- Meaning and Objectives, Preparation of Trial Balance, Adjusted trial balance
- Journal Proper: Concept, Opening entry. Closing entries, Transfer entries. Adjusting
- Errors: Meaning, Causes of accounting errors, Types of errors, Errors disclosed and not
- Rectification of errors before and after preparation of Trial Balance, Suspense account:

Unit 8: Reserve and Provision **LH2**

- Concept and Objectives of Reserve and Provision
- Maintaining General reserve, Provision for bad debt. Provision for discount on debtors

Unit 9: Capital and Revenue concept and creditors **LH2**

- Concept, Types and Difference between Capital and Revenue: Receipts, Expenditures,

Unit 10: Financial Statements **LH11**

- Concept and Types of financial statements
- Preparation of Income Statements and Balance Sheet with and without adjustment by
- Cash flow statement: Meaning, Importance, Preparation of cash flow statement based on Losses and Profits using Work Sheet showing cost of goods sold direct method.

References:

- Madhav R. Koirala, and et al. *Principles of Accounting - I*, Buddha Academic Enterprises Pvt. Ltd., Kathmandu.
- Paul D. Kimmel, Jerry J. Weygandt, and Donald E. Kieso., *Financial Accounting*, John Wiley & sons, INC; New York.
- Ramesh Pandey, and et al., *Principles of Accounting Part 1*, Bhundhipuran Prakashan, Kathmandu.
- Ratna M. Dangol and et al., *A Basic Course In Accountancy I*, Talaju Prakashan, Kathmandu.
- R. Narayanaswamy., *Financial Accounting, A Managerial Perspective*, Prentice Hall of India Private Limited, New Delhi.
- Robert L. Dansby, Burton S. Kaliski and Michael D. Lawrence, *College Accountancy*, A.I.T.B.S. Publishers & Distributors, Delhi.
- Shiva P. Munankarmi, *Principles of Accounting*, Educational Publishing House, Kathmandu.

IT 215 : Web Programming I

Credit Hours: 3
Lecture Hours: 48

Course Objective :

This course is designed to serve as an ideal beginners guide to writing web pages using XHTML, using CSS to make pages more appealing and add interactivity to pages using JavaScript.

Course description:

Structuring Documents for the Web, Links and Navigation, Images, Audio, and Video, Tables, Forms, Cascading Style Sheets, More Cascading Style Sheets, Page Layout, Design Issues, Learning JavaScript, Working with JavaScript

Course Details

Unit 1: HTML

LH16

- **Structuring Documents for the Web**

A Web of Structured Documents, Introducing HTML and XHTML, Tags and Elements, Separating Heads from Bodies, Attributes Tell Us About Elements, Learning from Others by Viewing Their Source Code, Elements for Marking Up Text , The <html> Element, The <head> Element, The <title> Element, The <body> Element

- **Basic Text Formatting , Presentational Elements, Phrase Elements**

White Space and Flow, Creating Headings Using <h> Elements, Creating Paragraphs Using the <p> Element, Creating Line Breaks Using the
 Element, Creating Preformatted Text Using the <pre> Element , The Element, The <i>Element, The <tt> Element, The <sup> Element, The <sub> Element, The <big> Element, The <small> Element, The <hr /> Element, The Element Adds Emphasis, The Element Adds Strong Emphasis, The <address> Element Is for Addresses, The <abbr> Element Is for Abbreviations, The <acronym> Element Is for Acronym Use, The <dfn> Element Is for Special Terms, The <blockquote> Element Is for Quoting Text, Using the cite Attribute with the <blockquote> Element, The <q> Element Is for Short Quotations, The <cite> Element Is for Citations, The <code> Element Is for Code , The <kbd> Element Is for Text Typed on a Keyboard, The <var> Element Is for Programming Variables, The <samp> Element Is for a Program Output

- **Lists**

Using the Element to Create Unordered Lists, Ordered Lists, Definition Lists, Nesting Lists, Comments, Understanding Block and Inline Elements, Grouping Elements with <div> and ,The XML Declaration, Document Type Declaration

- **Understanding Directories and Directory Structures**

Understanding URLs, Absolute and Relative URLs, The <base> Element

- **Creating Links with the <a> Element**

Basic Links, Linking to Other Web Pages, Linking to E-mail Addresses, Creating a Source Anchor with the href Attribute, Creating a Destination Anchor Using the name and id Attributes , (Linking to a Specific Part of a Page), The <a> Element's Other Attributes,

- **Images, Audio, and Video, Using Images as Links, Choosing the Right Image Format**

Adding Images Using the Element, The src Attribute, The alt Attribute , The height and width Attributes, The ismap and usemap Attributes, The longdesc Attribute, Image Maps, Client-Side Image Maps, Server-Side Image Maps, GIF Images, Animated GIFs, JPEG Images, PNG Images , Keeping File Sizes Small

- **Adding Flash, Video, and Audio to Your Web Pages**

Adding Flash Movies to Your Site, Adding Videos to Your Site, Adding Videos, Using Flash

Video

Audio to Your Site, Automatically Playing Audio and Video When a Page Loads, A Closer Look at the <object> and <param> Elements, The <param> Element

- **Tables**

Introducing Tables, Basic Table Elements and Attributes, The <table> Element Creates a Table, The <tr> Element Contains Table Rows, The <td> and <th> Elements Represent Table Cells, Adding a <caption> to a Table, Grouping Sections of a Table, Spanning Columns Using the colspan Attribute, Spanning Rows Using the rowspan Attribute, Splitting Up Tables Using a Head, Body, and Foot , Grouping Columns Using the <colgroup> Element , Columns Sharing Styles Using the <col> Element

- **Forms and Form Controls**

Introducing Forms, Creating a Form with the <form> Element

The action Attribute , The method Attribute, The id Attribute, The onsubmit Attribute, The onreset Attribute, The enctype Attribute, The accept-charset Attribute, The accept Attribute, The target Attribute, White Space and the <form> Element

Text Inputs, Buttons, Checkboxes, Radio Buttons, Select Boxes, File Select Boxes, Hidden Controls,

- **Creating Labels for Controls and the <label> Element**

Structuring Your Forms with <fieldset> and <legend> Elements

Focus, Tabbing Order, Access Keys, Disabled and Read-Only Controls, Sending Form Data to the Server, HT TP get , HT TP post, Cascading Style Sheets 243

After completion of this section following web-pages have to be developed:

- ✓ Web page with list and menus
- ✓ Different look and feel web pages using divisions
- ✓ Photo gallery
- ✓ Page with internal and external links
- ✓ Web page with videos
- ✓ User interface with different controls to take user data should be developed

Unit 2 : Introducing CSS

LH16

A Basic Example, Inheritance,, Where You Can Add CSS Rules, The <link> Element, The <style> Element, Advantages of External CSS Style Sheets, CSS Properties

- **Controlling Text**

The font-family Property, The font-size Property, The font-weight Property, The font-style Property,

The font-variant Property, The font-stretch Property, The font-size-adjust Property,

- **Text Formatting**

The color Property, The text-align Property, The vertical-align Property, The text-decoration Property,

The text-indent Property, The text-shadow Property, The text-transform Property, The letter-spacing Property, The word-spacing Property, The white-space Property, The direction Property

- **Selectors**

Universal Selector, The Type Selector, The Class Selector, The ID Selector, The Child Selector, The Descendant Selector, The Adjacent Sibling Selector

- **The General Sibling Selector**

Using Child and Sibling Selectors To Reduce Dependence on Classes in Markup, Attribute Selectors,

- **Lengths**

Relative Units, Absolute Units, Percentages

- **Introducing the Box Model**

An Example Illustrating the Box Model, The Border Properties, The padding Property, The margin Property, Dimensions of a Box, Internet Explorer Box Model Bug

- **More Cascading Style Sheets**
Links, Backgrounds: The background-color Property, The background-image Property, The background-repeat Property, The background-position Property (for Fixing Position of Backgrounds), The background-attachment Property (for Watermarks), The background Property (the Shorthand)
- **Lists**
The list-style-type Property, The list-style-position Property, The list-style-image Property, The list-style Property (the Shorthand)
- **Tables**
Table-Specific Properties, The border-collapse Property, The border-spacing Property, The empty-cells Property, The caption-side Property, The table-layout Property
- **Outlines**
The outline-width Property, The outline-style Property, The outline-color Property, The outline Property (the Shorthand)
- **The :focus and :active Pseudo-Classes**
Generated Content
The :before and :after Pseudo-Elements, The content Property, The cursor Property, The display Property, The visibility Property
- **Positioning and Layout with CSS**
Normal Flow, The position Property, Box Offset Properties, Relative Positioning, Absolute Positioning,
Fixed Positioning, The z-index Property, Floating Using the float Property, The clear Property
- **Page Layout**
Understanding the Site's Audience
Who Will Visit the Site? Why Have They Visited Your Site? What Does a Visitor Need to Achieve a Goal? How Often Will People Want to Visit? Things You Want the Site to Do, Prioritizing Information, Grouping and Categorization, Creating a Site Map, Identifying Key Elements for Each Page, Page Size (and Screen Resolution), Understanding Screen Sizes, Fixed-Width vs. Liquid Designs
After completing CSS,
Program with different kinds of styles should be developed

Unit 3 : Learning JavaScript

LH16

- What Is Programming About? How to Add a Script to Your Pages, Comments in JavaScript, The <noscript> Element, The Document Object Model, Accessing Values Using Dot Notation, The Document Object, The Forms Collection, Form Elements, Images Collection, Different Types of Objects, A Word About Data Types, Keywords,
- **Starting to Program with JavaScript**
Variables, Assigning a Value to a Variable, Lifetime of a Variable, Operators, Arithmetic Operators, Assignment Operators, Comparison Operators, Logical or Boolean Operators, String Operator (Using + with Strings)
 - **Functions**
How to Define a Function, How To Call a Function, The Return Statement
 - **Conditional Statements**
if Statements, if . . . else Statements, switch Statement
 - **Looping**
While, do . . . while, for, Infinite Loops and the break Statement
 - **Events**
Built-in Objects: String, Date, Array, Window

- **Form Validation**

When to Validate, What You Can Check For, How to Check a Form, Checking Text Fields, Select Box Options, Radio Buttons, Checkboxes

After completion of JavaScript:

- User interface with form validation capability should be developed, (validation: check for empty fields, specific length string, email validation etc)

After completion of this course, web site with data entry form with form validation functionality and attractive look and feel should be developed

Reference

Beginning HTML, XHTML, CSS, and JavaScript, Jon Duckett, Wiley, ISBN: 978-0-470-54070-1

IT 216: JAVA Programming – I

Credit Hours: 3
Lecture Hours: 48

Course Objective

This course aims to develop students' skill in JAVA programming. Students are expected to have the basic knowledge of programming with 'C' language. This course should be associated with laboratory experiments to augment the concepts taught in the class.

Course Description:

Java's Lineage, An overview of Java, Data types, Variables and Arrays, Operators, Control Statements, Introducing Classes, A Closer Look at Methods and classes, Inheritance, Packages and Interface, Exception handling, Multithreaded programming, Enumerations, autoboxing, and annotations, String handling, Input/output

Course Details

Unit 1 : Java's Lineage

2hrs

- The Creation of Java
- How Java Changed the Internet
- The Bytecode
- Servlets: Java on the Server Side
 - Simple
 - Object-oriented
 - Robust
 - Multithreaded
 - Architecture Neutra
 - Interpreted and High Performance
 - Distributed
 - Dynamic

Unit 2 : An overview of Java

2hrs

- Object-Oriented Programming
 - Two Paradigms
 - Abstraction
 - The Three OOP Principles
- Lexical Issues
 - Whitespace
 - Identifiers
 - Literals
 - Comments
 - Separators
 - The Java Keywords

Unit 3 : Data types, Variables and Arrays

LH4

- Java is a strongly Typed Language
- The Primitive Types
- Integers
 - Byte, short, int, long
- Floating point Types
 - Float, double
- Characters
- Booleans
- A closer Look at Literals
 - Integer Literals, Floating-Point literals, Boolean Literals, Character Literals, String Literals
 - Variables:
 - ✓ Declaring a Variable, Dynamic Initialization, The Scope and Lifetime of Variables
 - ✓ Type conversions and Casting, Casting Incompatible types
 - Automatic Type promotion Rules
 - Arrays
 - ✓ One Dimensional Arrays, Multidimensional arrays, Alternative Array Declaration syntax
 - Scanner Object

Unit 4 : Operators

LH4

- Arithmetic Operators: +,-,/,*,%,++,--
- The Bitwise operators:
 - The bitwise logical operators
 - The left shift, right shift, Unsigned Right shift, bitwise operator compound assignments
- Relational operators
- Boolean logical operators
 - Short-circuit logical operators
 - The ? operator
 - Operator precedence
 - Using parenthesis

Unit 5 : Control Statements

LH5

- Java' Selection statements
 - If...., switch....,
 - Iteration statements: while, do-while, for, the for-each version of the for loop, nested loops
- Jump statements: using break, using continue

After the completion of above five units, programs like following should be developed:

- ✓ Multiple choice problems
- ✓ Working on sequence of values (calculating average, mean, mode etc.)

Unit 6 : Introducing Classes

LH4

- Class fundamentals
 - The general form of a class, a simple class
- Declaring objects
- Assigning Object Reference variables
- Introducing methods
 - Adding a method to the box class, returning a value, adding a method that takes parameters
- Constructors: Parameterized Constructors
- The this keyword: instance variable hiding
- Garbage collection
- The finalized() method
- A Stack class

Unit 7 : A Closer Look at Methods and classes

LH4

- Overloading methods; overloading constructors
- Using objects as parameters
- A closer look at arguments passing, returning objects, recursion, introducing access control, understanding static, introducing final, arrays revisited, introducing nested and inner classes, exploring the string class, using command-line arguments
- Varargs: variable-length arguments; overloading vararg methods, varargs and ambiguity

Unit 8 : Inheritance

LH3

- Inheritance Basics: Member access and inheritance,
- Using super: using super to call superclass constructors, a second use for super
- Creating a multilevel hierarchy
- When constructors are called
- Method overriding
- Dynamic method dispatch: why overridden method?
- Using abstract classes, using final with inheritance
- The object class

After completion of above three units following programs should be developed:

- ✓ Program that work on group of similar objects like, generating average age of employees, displaying maximum salary of employees, displaying names of persons with same address etc.

Unit 9 : Packages and Interface

3hrs

- Packages: defining a package, finding packages and CLASSPATH
- Access Protection
- Interfaces: defining an interface, implementing interfaces, nested interfaces, applying interfaces, variables in interfaces, interfaces can be extended

Unit 10 : Exception handling

LH3

- Exception-handling fundamentals, exception types, uncaught exceptions, using try..catch
- Multiple catch clauses
- Nested try statements
- Throw, throws, finally, Java's built –in exception
- Creating your own exception subclasses

Unit 11 : Multithreaded programming

LH4

- The Java Thread Model
- Thread priorities, synchronization, messaging, the thread class and the runnable interface
- The main thread
- Creating a thread: implementing runnable, extending thread
- Creating multiple threads: using isAlive() and join()
- Thread priorities
- Synchronization: using synchronized methods, the synchronized statement

Unit 12 : Enumerations, autoboxing, and annotations

LH 3

- Enumerations
 - Fundamentals, the values() and valueOf() methods, Java Enumerations Are class types, enumerations inherit Enum
 - Type Wrappers: character, Boolean, the numeric type wrappers
- Autoboxing
 - Autoboxing and methods, autoboxing/unboxing occurs in expressions, autoboxing/unboxing Boolean and character values, autoboxing/unboxing helps prevent errors
- Annotations
 - Annotation basics, specifying a retention policy, obtaining annotations at run time by use of reflection

Unit 13 : String handling

LH3

- The String constructors, string length,
- Special string operators: string literals, concatenation, conversion and toString()
- Character Extraction
 - charAt(), getChars(), getBytes(), toCharArray()
 - String comparison: equals() and equalsIgnoreCase(), regionMatches(), startsWith() and endsWith(), equals() versus ==, compareTo
- Modifying a String
 - Substring(), concat(), replace(), trim()

After completion of above two units programs like following should be developed:

- ✓ Efficient codes with minimum code redundancy
- ✓ Program capable of handling errors on own instead of terminating programs abnormally

Unit 14 : Input/output:

LH4

- File: directories, using filenameFilter, the listFiles(), creating directories
- The Autocloseable, Closeable, and Flushable Interfaces
- I/O Exceptions
- The stream classes
- The byte Streams: InputStream, OutputStream, FileInputStream, FileOutputStream, PrintStream, DataOutputStream and DataInputStream, RandomAccessFile
- The Character Streams:
- Reader, Writer, FileReader, FileWriter, PrintWriter
- The Console Class
- Serialization: Serializable, Externalizable, ObjectOutput, ObjectOutputStream ObjectInput, ObjectInputStream

After completion of this unit, program which record keeping capability with searching, manipulating features should be developed.

Textbooks:

1. ***Thinking in JAVA- Bruce Fikal***
2. ***Complete reference for JAVA 2***
3. ***Schaum's outline programming in C++- John Hubbard***

IT 217 : Computer Organization

Credit Hours: 3
Lecture Hours: 48

Course Objective:

This module aims to provide knowledge to understand the architecture of hardware components used in organization and design of digital computers and also design procedures of digital computers. Laboratory work is essential in this module.

Course Description:

Digital components used in the organization and design of digital computers, detailed steps that a designer must go through in order to design an elementary basic computer, the organization and architecture of CPU, I/O and Memory, Pipelining and Vector Processing, Concept of Multiprocessing.

Course Details

- 1. Data Representation** **LH 3**
 - 1.1 Data Types
 - 1.2 Complements
 - 1.3 Fixed Point Representation
 - 1.4 Floating Point Representation
 - 1.5 End of Chapter 1 Assignment:
 - 1.5.1 Computer Program: Write program to visualize the representation of complement numbers, integers, floating point numbers and character data, overflow detection while adding binary data.

- 2. Register Transfer and Microoperations** **LH 3**
 - 2.1 Register and Register Transfer Language
 - 2.2 Bus and Memory Transfers
 - 2.3 Arithmetic, Logic and Shift Micro-operations
 - 2.4 Arithmetic Logic Shift Unit

- 3. Basic Computer Organization and Design** **LH 7**
 - 3.1 Instruction Codes
 - 3.2 Computer Registers
 - 3.3 Computer Instructions
 - 3.4 Timing and Control
 - 3.5 Instruction Cycle
 - 3.6 Input Output and Interrupt
 - 3.7 End of Chapter 2 and 3 Assignment:
 - 3.7.1 Circuit Design: Design of Basic Computer

- 4. Programming the Basic Computer** **LH 5**
 - 4.1 Introduction
 - 4.2 Machine Language
 - 4.3 Assembly Language
 - 4.4 The Assembler
 - 4.5 Program Loops
 - 4.6 Programming Arithmetic and Logic Operations
 - 4.7 Subroutines

- 4.8 Input Output Programming
- 4.9 End of Chapter 3 and 4 Assignment:
 - 4.9.1 Computer Program: Develop assembler which can execute the program written for Basic Computer.

- 5. Microprogrammed Control LH 3**
 - 5.1 Control Memory
 - 5.2 Address Sequencing
 - 5.3 Microprogram Example
 - 5.3.1 Computer Configuration
 - 5.3.2 Microinstruction Format

- 6. Central Processing Unit LH 4**
 - 6.1 CPU Organizations
 - 6.2 Instruction Formats
 - 6.3 Addressing Modes
 - 6.4 RISC and CISC Characteristics
 - 6.5 End of Chapter 5 and 6 Assignment:
 - 6.5.1 Computer Program: Write program to illustrate the use of different addressing modes.

- 7. Pipeline and Vector Processing LH 6**
 - 7.1 Parallel Processing, Flynn's Classification of Computers
 - 7.2 Pipelining
 - 7.3 Arithmetic Pipeline
 - 7.4 Instruction Pipeline
 - 7.5 Pipeline Hazards and Their Solution
 - 7.6 Array and Vector Processing
 - 7.7 End of Chapter 7 Assignment:
 - 7.7.1 Case Study: Available array and vector processor; their application domain
 - 7.7.2 Computer Program: write program which simulates instruction pipeline and arithmetic pipeline. Program generates space time diagram considering pipeline hazards.

- 8. Computer Arithmetic LH 4**
 - 8.1 Addition and Subtraction of Signed Magnitude Data
 - 8.2 Addition and Subtraction of Signed 2's Complement Data
 - 8.3 Multiplication of Signed Magnitude Data
 - 8.4 Multiplication of Signed 2's Complement Data
 - 8.5 End of Chapter 8 Assignment:
 - 8.5.1 Computer Program: Implement all algorithms learned in this chapter.

- 9. Input and Output Organization LH 5**
 - 9.1 Peripheral Devices
 - 9.2 I/O Interface
 - 9.3 Asynchronous Data Transfer
 - 9.4 Modes of Transfer
 - 9.5 Priority Interrupt
 - 9.6 Direct Memory Access
 - 9.7 I/O Processor

9.8 End of chapter 9 Assignment:

9.8.1 Case Study: Device Independence I/O Software; USB (universal serial bus)

10. Memory Organization

LH 4

10.1 Memory Hierarchy

10.2 Main Memory

10.3 Associative Memory

10.4 Cache Memory

10.5 Virtual Memory

10.6 Memory Management Hardware

10.7 End of Chapter 10 Assignment:

10.7.1 Computer Program: write program to visualize the advantage of using memory hierarchy.

11. Multiprocessor

LH 4

11.1 Characteristics of Multiprocessor

11.2 Interconnection Structures

11.3 Inter Processor Arbitration

11.4 Inter Processor Communication and Synchronization

11.5 Cache Coherence

11.6 End of chapter 11 Assignment:

11.6.1 Case Study: ARM multicore processors and Intel multicore processors

11.6.2 Computer Program: Simulate cache coherence problem and simulate solution too.

Course Book

➤ M. Morris Mano, “*Computer System Architecture*”, 3rd edition, Pearson Education Asia

References

➤ Andrew S. Tanenbaum, “*Structured Computer Organization*”, 4th edition, Prentice Hall Inc

➤ David A Patterson and John L. Hennessy, “*Computer Organization and design*”

➤ Sajjan G. Shiva, “*Computer Design And Architecture*”, 3rd edition, Marcel Dekker Inc

➤ Daniel Page, “*A Practical Introduction to Computer Architecture*”, Springer

STT 201: Business Statistics

Credit Hours: 3
Lecture Hours: 48

Course Objectives:

This course introduces the students to statistical tools and techniques which are applied to in business decision-making. The course will cover the basic tools used to describe data for the purposes of transforming data into information. In addition, the course will present the fundamentals of statistical inference showing how it is possible to examine a small subset of data to reach conclusions about the larger set of data.

The statistical tools should be introduced from an applied perspective using business related examples. Students will use Microsoft Excel software to aid in their statistical analysis.

Course description:

This course comprises describing data using graphs and tables, describing data using numerical measures, probability, probability distributions, sampling distributions, estimation, introduction to hypothesis testing, correlation, linear regression

Nature of the course:

Theory and Practical with excel
(60% + 40%)

The student must succeed in Theory exam and Practical exam separately

course Details:

Unit 1 : Describing Data using Graphs and Tables

LH4

- Statistics in Business,
- Data Collection,
- Frequency distribution,
- Graphic presentation of Frequency distribution – Graphics, Bars, Histogram, Diagrams,
- Stem-and-leaf plots,
- Statistical Analysis Using Excel,
- Summarizing Groups of Data using Excel Descriptive Statistics

Unit 2 : Describing Data Using Numerical Measures

LH6

- Measures of Central Tendency (Mean, Median and Mode),
- Partition values (quartiles, deciles and percentiles),
- Measures of variation (Range, IQR, decile, percentile, quartile deviations),
- Variance and standard deviation, Skewness, Kurtosis,
- Computing Descriptive Statistics using Functions in Excel

Unit 3 : Probability

LH4

- Sample Space and Events,
- Probability, laws of probability,
- conditional probability, Baye's law

Unit 4 : Probability Distributions

LH5

- Random variable,
- Law of large numbers,
- Expectation values,
- Probability density distributions,
- Binomial Distribution,
- Poisson Distribution,

- Normal Distribution.

Unit 5 : Sampling Distributions

LH6

- Population and Sample,
- Sampling Methods,
- Statistical Relationships in Sampling for the Mean,
- Sampling for the Means from an Infinite Population,
- Sampling for the Means from a Finite Population,
- Central limit theorem, Sampling Distribution of Mean and Proportion.

Unit 6 : Estimation

LH4

- Estimation,
- Properties of Good Estimator: Consistency, unbiasedness, efficiency and sufficiency,
- Point and interval estimates,
- Margin of Error and Levels of Confidence,
- Confidence interval estimates for mean and proportion,
- Estimation with Excel.

Unit 7 : Introduction to Hypothesis Testing

LH12

- Concept of Hypothesis Testing,
- Steps of Hypothesis Testing,
- Hypothesis Testing for Mean,
- Hypothesis Testing for Proportions,
- Prob-Value in Testing Hypothesis,
- Risks in Hypothesis Testing, Goodness of Fit,
- Analysis of Variance: One-Way Analysis of Variance,
- two way Analysis of Variance.
- Hypothesis Testing with Excel,
- Analysis of Variance with Excel

Unit 8 : Correlation

LH3

- Scatter plot,
- Measures to describe correlation,
- Spearman's rank correlation coefficient,
- Pearson's product moment correlation coefficient,
- computing the Correlation Coefficients Using Excel.
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Unit 9 : Linear Regression

LH4

- Linear models,
- Evaluation of the linear model,
- linear regression model
- Obtaining the least-squares linear regression model,
- Standard error of estimate,
- Inferences about the dependent variable,
- Inferences about the gradient of the regression line,
- Linear Regression in Excel.

Reference books:

1. M. Fernandes, *Statistics for business and economics*, Bookboon.com
2. D. F. Groebner and et al, *Business statistics: A decision making approach*. Upper Saddle, NJ: Prentice Hall, Inc.
3. *Business Statistics: A Decision-Making Approach*, Groebner, Shannon, Fry, and Smith.
4. David M. Levine and et al, *Statistics for managers using MS excel Pearson*
5. M. E. Kabay, et al, *Statistics in Business, Finance, Management & Information Technology*, http://www.mekabay.com/courses/academic/norwich/qm213/statistics_text.pdf

6. Anderson, D. R., et al. *Contemporary business statistics*. Cincinnati, OH: South Western Publishing.
7. K. Black, *Business statistics: Contemporary business statistics*, Cincinnati, OH: South Western Publishing.
8. *Business Statistics A problem-solving approach*, RICHARD D. IRWIN, INC.
9. Keller, G. & Warrack, B. (2000). *Statistics for management and economics Abbreviated*, Pacific Grove, CA: Duxbury Press.