Tribhuvan University
Faculty of Management
Office of the Dean

Course detail of
BIM (Bachelor of Information Management) 5th Semester

MKT 201: Fundamentals of Marketing	3 Cr. hrs
ECO 202: Macro Economics	3 Cr. hrs
IT 221: Computer Graphics	3 Cr. hrs
IT 222: Java Programming – II	3 Cr. hrs
IT 223: Advance Internetworking	3 Cr. hrs

2015

MKT 201: Fundamentals of Marketing

Credits: 3
Lecture Hours: 48

Course Objectives
This course aims to build students' understanding of the marketing process and principles and inculcate basic skills to analyze marketing decision situations.

Course Description
This foundation course on marketing deals on the operation of the marketing functions in a dynamic and competitive environment. It deals comprehensively on issues of emerging marketing practices and challenges. The course includes topics that help students to understand marketing process and environment, information systems and buyer behavior, segmentation, targeting, and positioning strategies, and strategies related to marketing mix variables.

Course Details

Unit 1: Introduction   **LH 6**
Meaning of marketing. Evolution of the marketing philosophies - Basic principles of the production, product, selling, marketing, and holistic marketing concepts. Meaning and tasks of marketing management. Marketing challenges of the 21st century and firms' responses to the challenges. Concept, relevance and practices of relationship marketing, green marketing, and e-marketing. Components of the marketing mix for products and services.

Unit 2: Marketing Environment   **LH 4**
Meaning and scope of marketing environment; Micro environment variables, and Macro environment variables; Reactive and proactive marketing. Marketing environment in Nepal.

Unit 3: Marketing Information System and Buyer Behavior   **LH 4**
Concept and relevance of information in marketing decisions. Components of the marketing information system. Marketing research areas and process.

Unit 4: Buyer Behavior   **LH 6**
Organizational buyer behavior – Buying process and influencing factors. Consumer behavior – buying process and influencing factors. Global consumer movements and consumer protection.

Unit 5: Segmentation, Targeting and Positioning Strategies   **LH 4**
Concept, process, requirements, and levels of market segmentation. Bases for segmenting consumer and organizational markets. Segment evaluation, analysis and selection. Concept and types of positioning; product positioning process.

Unit 6: Product Decisions   **LH 8**
Concept and levels of the product. Product classifications and marketing considerations. Product life cycle stages and strategies. New product development process. Branding strategies – branding objectives, types of brand, and concept of brand equity. Packaging: functions and levels of packaging; essentials of a good package. Product line and mix strategies. Service product strategies - service marketing concept, characteristics of services and marketing strategies; management of people, physical evidences, and process.

Unit 7: Pricing Decisions   **LH 6**
Concept of price and pricing. Importance of pricing for the fir and the economy. Internal and external price factors. Pricing approaches-cost-based, demand-based, value-based and competition-based approaches. New product pricing decisions. Price lining and price adjustment decisions. Initiating and responding to price changes.

Unit 8: Distribution Decisions   **LH 4**

    Concept and objectives of distribution. Channel functions and flows. Channel designs for consumer and industrial products. Channel selection factors. Channel conflicts and their resolution. Concept, nature and objectives of marketing logistics. Major logistics functions -transportation, warehousing, inventory management, order processing, and customer services decisions.

Unit 9: Promotion Decisions   **LH 6**

    Concept and objectives of promotion. Marketing communication process and systems. Promotion mix components. Promotion mix determination factors. Advertising: Nature and objectives. Nature and relevance of personal selling. Nature and objectives of sales promotions. Sales promotion tools and techniques. Nature, objectives and tools of public relations. Concept , relevance and methods of direct marketing.

Basic Texts

Kotler, Philip, Gary Armstrong, Prafulla Agnihotri and Ehsan ul Haque. *Principles of Marketing: South Asian Perspective.* Prentice Hall of India, New Delhi, India.
Baines, Paul, Chris Fill and Kelly Page. *Essentials of Marketing.* Oxford University Press, New Delhi,India.

References

Koirala, K.D. *Fundamentals of Marketing,* M.K. Publishers and Distributors, Kathmandu, Nepal.
Kamarulzaman, Yusniza and Nor Khalidah Abu. **Principles of Marketing,** Oxford University Press, New Delhi, India.

ECO 202: Macro Economics

Course Objectives
This module aims to develop students' understanding of the macroeconomic concepts to enhance their skills in analyzing business environment for decision-making.

Course Description
Macroeconomics: concepts and importance. National income accounting: concepts, measurement approaches and measurement difficulties of national income. Consumption, saving and investment functions, paradox of thrift, acceleration coefficient. Income determination models: classical and Keynesian theories, IS – LM model, concept of multipliers. Business cycles: phases and economic stabilization policy. Inflation: theories of inflation, computation of rate of inflation, Unemployment, macroeconomic policies: monetary policy, fiscal policy. Macroeconomic issues: Nepalese perspective.

Course Details

Unit 1: Introduction to Macroeconomics   **LH 2**
Meaning and scope of macroeconomics, Static and dynamic analysis of Macroeconomics, Macroeconomics and business environment.
Case Studies

Unit 2: National Income Accounting   **LH 7**
Circular flow of income and expenditure (two, three and four sector economy), Meaning of national income: Various concepts of NI: GDP, NDP, GNP and NNP (both in – market price and factor cost terms), Nominal GDP, Real GDP and GDP deflator, **Potential and actual GDP**, Personal income, Disposable income and **Saving**, Per capital income. Three approaches of measurement of NI (Product, Income and
Expenditure), Measurement Difficulties of NI.
Numerical assignments and Case studies

Unit 3: Consumption, Saving and Investment   **LH 8**
Meaning, technical attributes and determinants of consumption
function Psychological law of consumption function
Meaning, Technical attributes and determinants of saving
function Paradox of thrift
Meaning and types of investment
Concept of MECnda investment demand curve
Determinants of induced investment
Principle of acceleration coefficient (Tabular explanation)
Numerical assignments and case studies

Unit 4: Theories of National Income Determination   **LH 12**
Classical Theory of output and Employment
Keynesian Model of Income Determination
Income determination in a Two sector economy, change in aggregate demand and investment
    multiplier
Income determination in a Threesector economy, fiscal multipliers (tax multiplier, government
    expenditure multiplier and balanced budget multiplier)
Income determination in a Four sector Economy, foreign trade multiplier IS–LM Model of
    Income Determination

Derivation of IS curveand product market equilibrium
Derivation of LM curve and money market
equilibrium Determination of equilibrium income
Shift in IS curve and effect on equilibrium income
Shift in LM curve and effect on equilibrium income
Shift in IS and LM curvesand simultaneous effect on equilibrium income
Monetary policy and effect on equilibrium income
Fiscal Policy and effect on equilibrium income
Monetary–Fiscal Policies mix and effect on equilibrium income

Numerical assignments and Case studies

Unit 5: Inflation, Unemployment and Business cycles   LH 7

Inflation: Meaning, types (on the basis of rate and control), Theories of inflation – Demand-pull and costpush, Effects (production and distribution of income and wealth), Computation of rate of inflation (Using PPI, CPI and GDP inflator only), Meaning of Deflation and stagflation

Unemployment: Meaning and types, costs of unemployment, Inflation and unemployment

Business cycles: Meaning and characteristics, Phases of business cycles, Economic stabilization policy.

Numerical assignments and Case studies

Unit 6: Macroeconomics Policies   LH 5

Macroeconomic Policy: Meaning and Objectives
Money Supply: Meaning and sources
Monetary policy: Meaning, types, instruments, indicators, targets, goals.
Fiscal Policy: Meaning, methods, instruments, goals
Deficit Financing: Meaning and significance
Budget: Meaning and components
Case studies

Unit 7: Macroeconomics Issues: Nepalese Perspective   LH 7

Balance of Payments : Meaning and components
Exchange rate: Meaning and types, exchange rate determination (demand supply approach) Economic growth and development, Sources of economic growth, Privatisation, economic liberalisation and globalization, market failure, Foreign direct investment Foreign employment: current status and role.
Case studies

References

Bernake and Abel , *Macroeconomics,* Singapore, Pearson Education latest edition Froyen, R.T. Macroeconomics and Policies (8th edition)

Lipsey, R.S. and C. Harbury, *Elementary Macroeconomics,* New York, Oxford University Press latest edition

Mankiew, NG (1998), *Principles of Macroeconomics,* Orlando, The Dryden Press, Harcourt Brace College Publishers

McConnell and Brue, *Economics : Principles, Problems and Policies,* New York, McGraw Hill. Latest edition

Shrestha, R.G. and Adhikari, G.M. *Macroeconomics,* fifth edition

Todaro, M.P *Economics in the Third World,* Hyderabad, Orient Longman, Ltd. Latest edition

Other suggested readings: Various Publications and Journals of Nepal Rastra Bank, Ministry of Finance, National Planning Commission, Central Bureau of Statistics, World bank, Central Department of Economics (TU) and So on.

IT 221: Computer Graphics

Credits: 3
Lecture Hours: 48

Course Objective

This module aims to develop students' skill in computer graphics. This module should be supported by laboratory experiments to augment the concepts taught in the class.

Course Description

Introduction of Computer Graphics, Hardware and Software Concept, Two Dimensional Algorithm, Three Dimensional Graph, Visible surface detection method, Illumination models and surface rendering methods, and Trends in Computer Graphics, Areas, Text and Colors

Course Details

Unit 1: Introduction of Computer Graphics   **LH 2**
- 1.1 Early History
- 1.2 Application of Computer Graphics

Unit 2: Hardware and Software Concept   **LH 9**
- 1.3 Input Devices
  - Mouse, Touch Screen, Light Pen, Data Glove, Tablet (Digitizer), Bar Code Reader
- 1.4 Output Devices
  - 1.4.1   Monochromatic & Color CRT
  - 1.4.2   Raster and Random Scan Display
  - 1.4.3   Flat Panel Display
    - 1.4.3.1 LED
    - 1.4.3.2 LCD
  - 1.4.4   Simple Architecture on Raster, Random Scan System
  - 1.4.5   Concept of Three Dimension viewing devices
- 1.5 Graphics Software
  - 1.5.1   Software standards
  - 1.5.2   Need of machine independent graphics language
- 1.6 Color Models
  - 1.6.1   RGB
  - 1.6.2   HSV
  - 1.6.3   Conversion between HSV and RGB color models

Unit 3: Two Dimensional Algorithm   **LH 16**
- 1.7 Line Drawing Algorithm

Unit 7: Trends in Computer Graphics   **LH 2**

    1.21   Concept of Virtual reality & simulation

    1.22   Computer animation

       1.22.1 Design of animation sequences

       1.22.2 Computer animation languages

       1.22.3 Morphing and simulating accelerations.

       1.22.4 Animation in Java 3D

                Projections in Java 3D

Unit 8: Areas, Text and Colors

    1.23   Filling Areas

    1.24   Buffered Images in Java 2D

       1.24.1 Double Buffering in Java 2d

       1.24.2 Loading and Saving of Images with Java 2D

       1.24.3 Textures in Java 2D

    1.25   Displaying Text

    1.26   Text in Java 2D

    1.27   Grey Images and Intensities

    1.28   Color models

       1.28.1 Colors in Java 2D

       1.28.2 Color interpolation

       1.28.3 Color interpolation with Java 2D

Laboratory Work

              Lab1: DDA

              Lab2: Bresenhams line drawing algorithm

              Lab3: Circle

              Lab4: Basic transformation on 2D

                   ✓ Translation

                   ✓ Rotation

                         o   About origin

                         o   About pivot point

                   ✓ Scaling

                         o   About origin

                         o   About fixed point

              Lab5: Simple 3D Object

              Lab6: Basic Transformation on 3D object

                   ✓ Translation

                   ✓ Rotation

                   ✓ Scaling

Laboratory work will be carried out using visual or non visual high level languages.

References

- *Computer Graphics*, C Versions (Prentice Hall) : Hearne and Baker

- *Computer Graphics – Principles and Practices*: J.D. Foley, S.K. Feiner and J.F. Hughes

- Computer Graphics: Principles and Practice, 2nd Edition (3rd would be released around mid 2013) - the book you've mentioned is also called *The Bible of CG*
- Fundamentals of Computer Graphics, 3rd Edition
- Computer Graphics using OpenGL, 2nd or 3rd Edition*
- Interactive Computer Graphics: A Top-Down Approach with Shader-Based OpenGL, 6th Edition*
- 3D Computer Graphics: A Mathematical Introduction with OpenGL*
- Introduction of Computer Graphics: Using Java 2D and 3D, Frank Klawonn, Second Edition, Springer

- Digital Image Processing: An algorithmic Introduction using Java, Wilhelm Burger, Mark, J. Burge, First edition, Springer

- Fundamentals of Computer Graphics, Peter Shirley, Michael Ashikhmin, Steve Marschner, Third edition, A K Peters/CRC Press

IT 222: Java Programming – II

Course Objectives:

This course aims to develop students with knowledge with advanced features of java. Basic knowledge of programming in Java is expected from students. This course should be associated with laboratory experiments to augment the concepts taught in the class.

Course Description

The Applet Class, Even handling, Introducing the AWT, Using AWT controls, Layout Managers, and Menus, Introducing Swing, Enterprise Application Architectures, JDBC, XML and Java, Servlet Programming, JSP Programming

Course Details

Unit 1: The Applet Class   LH 3

- o Two types of applets
- o Applet basics
- o An applet skeleton
- o The HTML applet tag
- o Passing parameters to applets

Unit 2: Even handling   LH 6

- o Two event handling mechanisms
- o The delegation event model: events, event sources, event listeners
- o The KeyEvent class: MouseEvent Class, TextEvent class, WindowEvent class
- o Sources of Events
- o Event Listener Interfaces
  - ▪ ActionListener, KeyListener, MouseListener, WindowListener, ContainerListenenr
- o Using Delegation event model
  - ▪ Handling mouse events, handling keyboard events
- o Adapter classes, inner classes

Unit 3: Introducing the AWT: LH 3

- o AWT classes
- o Window fundamentals: component, container, panel, window, frame, console
- o Working with frame windows: setting windows dimensions, hiding and showing and closing windows
- o Creating a frame window in an applet

Unit 4: Using AWT controls, Layout Managers, and Menus   **LH 6**

- Control Fundaments: adding and removing controls, responding to controls,
- Labels, buttons, checkboxes, choice, lists, scroll bars, textfield, textarea,
- Understanding Layout managers: FlowLayout, BorderLayout, GridLayout, CardLayout, GridBadLayout
- Menus Bars and Menus, Dialog boxes, FileDialog boxes

Unit 5: Introducing Swing   **LH 5**

- The origins of swing, swing is built on the AWT
- Two Key Swing Features
- The MVC connection
- Components and containers

Unit 6: Exploring Swing: **LH 2**

- JLabel and ImageIcon, JTextField, JButtons, JToggleButton, checkboxes, radio buttons, JTabbedPane, JList, JComboBox, JTable,

After completion of above two units program with following should be developed:

- ✓ User Interface with form validation feature,
- ✓ User interface with different look and feel

Unit 7: Enterprise Application Architectures   **LH 2**

- 2-Tier Architecture, 3- Tier
- Enterprise Archiecture
    - J2EE Application Servers

Unit 8: JDBC   **LH 7**

- Introduction
- Database Basics
    - Structured Query Langauge
        - Creating a Table – Inserting, Updating, Deleting records
        - JDBC-ODBC bridge
        - Reading Data
        - PreparedStatement, connection pooling

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

- ✓ Program with User Interface and backend to store data, retrieve required data, manipulate/delete mentioned data
- ✓ Simple programs like record keeping system (employee records, student records etc) with manipulation and search facilities should be developed

Unit 9: XML and Java   LH 2

- o What is XML? What is an XML Document? Why XML?
- o Document Type Definition
- o XML Schema
- o XML parsing – SAX and DOM

Unit 10: Servlet Programming   LH 6

- o HTTP
  - ▪ GET, POST Request
  - ▪ Server Side of the Web Application
    - • Web Container, Structure of a web application
    - • Servlet Technology- Servlet
    - • Deployment Descriptor
    - • Steps for writing a servlet, servlet initialization, reading HTML form data,
    - • Session Management - Creating session, Storing data in session, reading the data from session
    - • Request dispatching – The forward() method, the include() method

Unit 11: JSP programming   LH 6

- o JSP Basics, JSP Directives Declarations
- o Implicit Objects
- o Java Beans in JSP – jsp:useBEan, jsp:setProperty, jsp:getProperty

After completion of above two units

- ✓ **Web based applications should be developed**
- ✓ **Programs like online data entry form, with search and manipulation capability**

References:

Kosuri Phani, Java & J2EE Made Easy, Lulu Publications; 1 edition (September 25, 2012)

IT 223: Advance Internetworking

Course Objectives

This course aims is to focus on network communication protocol.It alsoexplains the motivation of networks and provides in-depth discussion on the challenges in designing such networks from transmission system and network point of views. Further to illustrate these principles and get hands- on experience the course contains a set of lab assignments and a project.

Course Description

This course contains overview of internet network, networking layer, dynamic routing, Multicast and Multicast routing, Multimedia networking, Peer to Peer network and New Transport Layer protocols

Course Details

Unit 1: Overview of Internet and network   LH 2
        Networking, Types of networking, Internet
        Seven Layers Function of OSI Model
        Overview of TCP/IP model

Unit 2: Network layer   LH 4
     Network layer service
        Connection oriented services,
        Connection less services
    Connection oriented protocols
        Virtual Circuits (VC), VC forwarding table, VC signaling protocols
    Connection less protocols
        Issues in IP, Next hop Routing, Internet Routing tables, Longest prefix matching,
        IP router model, IP Forwarding, IP header in detail, Fragmentation-MTU, ICMP,
        ICMP error reporting, ICMP error restrictions
    Router Architecture Overview
        Input port functions, Type of switching fabrics (memory, bus, crossbar) in detail
        Output ports, Output port queuing, Input port queuing

Unit 3: Dynamic Routing   LH 8
        Basic routing
        Levels of abstraction
        Partitioning: AS and areas
        Autonomous systems- RFC1930
        Simple internet architecture
        Reachability and metrics
        IP aggregation
        Redistribution of routing information
        Load balancing
        Popular routing protocols
            Distance vector

RIP(Routing Information Protocol),
RIP problem (count to infinity),
Solution (Triggered Update, split horizon, poison reserve, and hold
down))
Disadvantage with RIP.
Link State Protocols
Dijkstra algorithm (shortest path
first) Overview of OSPF
OSPF Network Topology
OSPF protocols (hello, exchange, flooding)
Distribution of link state advertisement IS-
IS
Path vector
Overview of path vector
BGP (overview and architecture)
BGP router model

Unit 4: Multicast and Multicast routing   LH5
IP multicast application
IP multicast: abstraction of hardware multicast
IP multicast service model
IP multicast addresses
Link-level/hardware multicast
Mapping IP multicast to Ethernet
IGMP
Position of IGMP in TCP\IP
IGMP V2 message
Dynamics of IGMP message
IGMP V3 overview
Multicast router
Multicast routing overview
Multicast VS multiple unicast
Delivery tree
Multicast routing protocol
Source-Based tree (DVMRP (overview, Reverse Path Multicasting, Reverse
Path forwarding), MOSPF, PIM-DM)
Group shared tree (PIM-SM, CBT)

Unit 5: IPv6   LH 7
Overview of IPv4 (Addressing schemes IPV4)
Issues with IPv4
Overview of IPv6
IPv6 Simplification
IPv6 Header
IPv6 Addresses (IPv6 format)
IPv6 Addresses abbreviations and
CIDR IPv6 Vs IPv4
Transition from IPv4 to IPv6
Transition strategies (Dual stack, tunneling, header Translation)

Unit 6: IPQOS   LH 6

Congestion control algorithm

General Principles of congestion control, Congestion prevention policies,Congestion control in virtual circuit subnet (TCP), Congestion control in datagram subnet (UDP).

QoS Concept

QoS parameters (Delay, Bandwidth, Jitter, and Reliability)

Techniques to achieve good QoS

Overprovisioning, Buffering, Traffic shaping, Leaky bucket algorithm, Token bucket algorithm,Admission control, Resource reservation (RSVP)

Functions of IPQOS(classification, policing, shaping, scheduling, admission control)

Integrated and differentiate service

Traffic conditioning (classifier,meter,marker, shaper/dropper)

Unit 7: Multimedia networking   LH 5

Multimedia applications

Multimedia service requirement

Classes of multimedia application

Streaming stored audio\video

Streaming live audio\video

Real-time interactive audio\video

Server for stored streaming audio\video

Multimedia for web server

Multimedia for streaming server

Real-time streaming protocol (RTSP)

RSTP client server interaction

Real-time traffic

Delay Jitter

Playback buffer

Real-time transfer protocol (RTP)

Content distribution networks (CDN)

Finding base server

Unit 8: Peer to Peer network   LH 4

Client/server architecture

Peer to peer architecture

Client/server VS peer to peer network

History and examples of P2P

File sharing:-FTP, IRC, Napster, Gnutella/KaZaa/direct connect, BitTorrent

Non file sharing: - Skype, DNS, USENET

P2P – peer discovering

Centralized, fully distributed, Hierarchical(Gossiping, Distributed Hash Tables, Super Peers)

P2P operation

P2P and Infrastructural

Unit 9: New Transport Layer protocols LH 4

      Process to process Communication
      Functions (addressing, ordered\unordered delivery, error control, flow control, congestion control, segment fragmentation/reassembly)
      Advances in transport layer
            DCCP (datagram congestion control protocol)
                  Congestion control in DCCP
                  UDP vs. DCCP
      SCTP (stream control transmission protocol)
            SCTP packet
            SCTP association and multi homing
            Implementation of Multi streaming in SCTP

LAB:-

1) Setting up Routers,
2) Dynamic IP Address assignment
3) Static and dynamic Routing
4) IPv6
5) Multicast routing
6) Multimedia networking

Project: - At the end of the semester students will work together in groups of 5 or 6 in a project to learn about and demonstrate how to setup an ISP(internet service provider). This project has to be examined by external examiner.

- ISP Requirements report: Each group should submit a report on services and functionality required to establish an ISP. The group should also comment upon the requirements report submitted by another group.
- Final report and demonstration: A final report should be written to describe some of the most desirable services an ISP should provide, including descriptions of how to this could be implemented. Some of the services should also be implemented and demonstrated by the group.

Course Book:
- J.F. Kurose, K.W. Ross: Computer Networking: A Top Down Approach

References
- B. A. Forouzan: Data Communication and Networks
- A.S Tanenbaum: Computer Networks. 4th Edition. PHI.
- D.E. Corner: Internetworking with TCP/IP. Vol.1. 3rd ed. PHI.
- S. Keshav: An Engineering Approach to Computer Networking Addison Wesley, Longman.
- W. Stalling: Data and Computer Communications. 8th Edition. PHI.
- W.R. Stevens: TCP/IP Illustrated Volume I, II and III, Addision Wesley Longman