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

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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
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
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
Concept and relevance of information in marketing decisions. Components of the marketing information system. Marketing research areas and process.

Unit 4: Buyer Behavior

Unit 5: Segmentation, Targeting and Positioning Strategies
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
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
Unit 8: Distribution Decisions  
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  

Basic Texts  

References  
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

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 MEC and 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 Three sector 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 curve and 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 curves and 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
Inflation: Meaning, types (on the basis of rate and control), Theories of inflation – Demand-pull and cost-push, 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
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
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
Froyn, R.T. *Macroeconomics and Policies* (8th 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.
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

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
1.7.1 DDA (With positive and negative slope)
1.7.2 Bresenham’s Line Algorithm
  1.7.2.1 for positive slope (m<=1, m>1)
  1.7.2.2 for negative slope (m<=1, m>1)
1.8 Different Line Styles with Java 2D
1.9 Drawing Thick Lines with Java 2D
1.10 Circle Algorithm
  1.10.1 General circle equation
  1.10.2 Mid-Point circle equation
1.11 2D Geometric Transformation
  1.11.1 Basic Transformation
    1.11.1.1 Translation
    1.11.1.2 Rotation
    1.11.1.3 Scaling
  1.11.2 Homogenous Coordinate
  1.11.3 Composite Transformation
    1.11.3.1 Successive Translation
    1.11.3.2 Successive Rotation
    1.11.3.3 Successive Scaling
    1.11.3.4 Pivot point rotation
    1.11.3.5 Fixed point scaling
  1.11.4 Other Transformation
    1.11.4.1 Reflection
    1.11.4.2 Shear
1.12 Two Dimensional Viewing
  1.12.1 Viewing pipeline
  1.12.2 Window to viewport coordinate transformation
  1.12.3 Clipping
    1.12.3.1 Introduction and application of clipping
    1.12.3.2 Line Clipping
      1.12.3.2.1 Cohen Sutherland line clipping
    1.12.3.3 Polygon clipping
      1.12.3.3.1 Sutherland Hodgeman polygon clipping

Unit 4: Three Dimensional Graph

1.13 3D object representation
  1.13.1 Polygon surface
  1.13.2 Polygon tables
  1.13.3 Plane equations
  1.13.4 Polygon meshes
1.14 Projections
  1.14.1 Parallel Projections
    1.14.1.1 Isometric
1.14.1.2 Oblique
1.14.2 Perspectives Projections
1.14.3 Derivation of projections

1.15 3D Transformations
1.15.1 Translation
1.15.2 Rotation
   1.15.2.1 General 3D rotation
   1.15.2.2 Geometric transformations in Java 3D
1.15.3 Scaling
   1.15.3.1 Fixed point scaling
1.15.4 Reflection
1.15.5 Shear

Unit 5: Visible surface detection method

1.16 classification of algorithm
1.17 different types of algorithm
   1.17.1 depth buffer (z-buffer) method
   1.17.2 A-Buffer method
   1.17.3 Scan line method
   1.17.4 Depth sorting method (Painter’s Algorithm)
   1.17.5 Clipping in Java 3D

Unit 6: Illumination models and surface rendering methods

1.18 light source
1.19 basic illumination models
   1.19.1 Ambient light
   1.19.2 Diffuse reflection
   1.19.3 Specular reflection and Phong model
   1.19.4 Intensity attenuation
   1.19.5 Color consideration
   1.19.6 Transparency
   1.19.7 Transparency in Java 3D
   1.19.8 Shadows
1.20 Polygon rendering methods
   1.20.1 Constant intensity shading
   1.20.2 Light sources in Java 3D
   1.20.3 Gouraud shading
   1.20.4 Phong Shading
   1.20.5 Shading in Java 3D
   1.20.6 Constant and Gouraud Shading in Java 3D
Unit 7: Trends in Computer Graphics

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: Bresenham's 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 Practice, 2nd Edition (3rd would be released around mid 2013) - the book you've mentioned is also called *The Bible of CG*
- Computer Graphics using OpenGL, 2nd or 3rd Edition*
- 3D Computer Graphics: A Mathematical Introduction with OpenGL*


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

Unit 2: Even handling
- Two event handling mechanisms
- The delegation event model: events, event sources, event listeners
- The KeyEvent class: MouseEvent Class, TextEvent class, WindowEvent class
- Sources of Events
- Event Listener Interfaces
  - ActionListener, KeyListener, MouseListener, WindowListener, ContainerListener
- Using Delegation event model
  - Handling mouse events, handling keyboard events
- Adapter classes, inner classes

Unit 3: Introducing the AWT:
- AWT classes
- Window fundamentals: component, container, panel, window, frame, console
- Working with frame windows: setting windows dimensions, hiding and showing and closing windows
- Creating a frame window in an applet
Unit 4: Using AWT controls, Layout Managers, and Menus  

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

Unit 5: Introducing Swing  

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

Unit 6: Exploring Swing:  

- 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  

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

Unit 8: JDBC  

- Introduction
- Database Basics
  - Structured Query Language
    - 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

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

Unit 10: Servlet Programming

- 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

- JSP Basics, JSP Directives Declarations
- Implicit Objects
- 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 also explains 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
Networking, Types of networking, Internet
Seven Layers Function of OSI Model
Overview of TCP/IP model

Unit 2: Network layer
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
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
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
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

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

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

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

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:

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