

BCIS 6th Semester - Syllabus

RCH 311 Business Research Methods

BCIS, 6th Semester

Course Objectives

The objective of this course is to provide students with the opportunity to learn the process of collecting, analyzing, and interpreting quantitative and qualitative data to aid managerial decision making. Students develop and practice the knowledge and skills necessary to review, apply and conduct organizational research.

Course Description

This course introduces students to a number of research methods useful for academic and professional investigations of information practices, texts and technologies. By examining the applications, strengths and major criticisms of methodologies drawn from both the qualitative and quantitative traditions, this course permits an understanding of the various decisions and steps involved in conducting research, as well as a critically informed assessment of published research. The emphasis of the course is therefore on problem definition, hypothesis formulation, research design, measurement, sampling, secondary data gathering, observation and interviews, and data analysis. Emphasis will also be placed on conducting and using research in an ethical manner.

Course Outcomes

At the conclusion of the course, students should be able to:

- describe the concept, process, significance, and value of scientific research;
- explain the nature of different types/methods used in management research;
- explain the research process in terms of problem statement, theoretical framework, research questions and hypothesis formulation;
- demonstrate understanding of research design: how research methodology is selected given a problem, how the data are analyzed and interpreted; how research is reported; and the implications of the findings to theory, research and practice;
- compare and contrast quantitative and qualitative research methods;
- demonstrate skill in using the library and internet resources to identify and synthesize research literature by writing a review of literature;
- demonstrate skill in describing and interpreting various statistical techniques using descriptive and inferential statistics;
- describe data collection and analysis techniques in qualitative research;

- prepare research proposals and communicate research results through writing acceptable reports which follow formatting requirements.

Course Contents

Unit I: Introduction to Research

8 hours

The meaning of research; the nature and types of research; application of scientific thinking in research, scientific research - scientific research process, characteristics of scientific research;

Emerging paradigms in research; quantitative and qualitative approaches to research; Business research – role, types and value for decision making; Ethical considerations in business research.

Unit II: Literature Review and Theoretical Framework

5 hours

Literature review - purpose and steps; searching, obtaining, and evaluating the literature, literature search through the Internet, format and guidelines for presenting the literature review; Theoretical framework – concept and format; Research and theory – deduction and induction.

Unit III: Problem Definition and Hypothesis Formulation

3 hours

Problem definition – concept and steps in problem formulation; Research questions; Hypothesis - functions and types; criteria of good hypothesis statement.

Unit IV: Research Design

10 hours

Definition; elements of a research design; Types of research design – exploratory; descriptive (developmental and case study); correlational; causal-comparative and experimental research designs; Qualitative research – concept, basic assumptions, features and design.

Unit V: Measurement, Scaling and Sampling

5 hours

Variables – concept and types; Measurement and scales, scale construction and attitude measurement; Scales and techniques commonly used in business research; Validity and reliability of measurement; Sampling – concept, probability and non-probability sampling; sampling and non-sampling errors.

Unit VI: Data Collection and Analysis

12 hours

Data and its types; sources of primary and secondary data; Questionnaire – principles, components and types – format and types; Research interviews – principles and types; Sources of qualitative data – observation, participant observation, focus groups; E-research using Internet and websites to collect data from individuals; web surveys, e-mail surveys; Getting data ready for analysis; Data processing; Presenting data in graphs and tables; Statistical analysis of data – descriptive and inferential statistics; Hypothesis testing; Methods of analyzing qualitative data.

Unit VII: Writing Proposals and Project Reports

5 hours

Project work – concept, purpose and methods; Research proposals – functions, types and components; features of research proposal; Research report – concept, process, types and procedure for writing research reports; conventions of academic writing; components of the project report; body of the project report; Documenting sources - APA style of citation and referencing; Essentials of good research report.

Basic Texts

1. Bryman, A., & Bell, E. *Business Research Methods*. New Delhi: Oxford University Press.
2. Zikmund, W. G. *Business Research Methods*. New Delhi: Thompson.

References

1. Cooper, D. R., & Schindler, P. S. *Business Research Methods*. New Delhi: Tata McGraw Hill.
2. Pant, P. R. *Business Research Methods*. Kathmandu: Buddha Academic Enterprises.
3. Flick, U. *An Introduction to Qualitative Research*. New Delhi: Sage South Asia Edition.
4. Sekaran, U. *Research Methods for Business: A Skill Building Approach*. New Delhi: Wiley India.

MGT 311 Fundamentals of Operations Management

BCIS, 6th Semester

Course Objectives

The objective of this course is to introduce students to the field of Operations Management (OM). It will give a survey of the main OM issues and the key concepts and tools for dealing with them.

Course Description

This course provides an introduction to the concepts, principles, problems, and practices of operations management. Emphasis is on managerial processes for effective operations in both goods-producing and service-rendering organization. Topics include operations and productivity, operations strategy, forecasting, product and process design, quality assurance, location and layout strategies, supply chain management, inventory management, operations scheduling, JIT and lean operations. The topics are integrated using a systems model of the operations of an organization.

Course Outcomes

By the end of this course, students should be able to:

- Understand and appreciate the production and operations management functions in any organization;
- Understand the importance of productivity and competitiveness to organizations;
- Understand the various production and operations design decisions;
- Explain the importance of product and service design decisions and how they relate to the overall strategies of organizations;
- Explain the importance of quality management practices to attain organizational effectiveness;
- Describe the roles of inventories and basics of managing inventories in various demand settings;
- Analyze the contemporary operations and manufacturing organizational approaches and supply-chain management activities.

Course Contents

Unit I: Introductions to Operations Management

Operations and Productivity

5 hours

Introduction, organizing for transformation process, objectives, heritage of operations management, operations in service sector, Trends in operations management, productivity challenges, Ethics and social responsibility.

Operations Strategy

5 hours

Global view of operations, developing missions and strategies, achieving competitive advantages through operations, strategy development and implementation.

Unit II: Designing Operations

Product and Process Design

7 hours

Product selection, Generating new products, product development, issues for product design, service design, Process strategies, process analysis and design, product process matrix, service process design, capacity planning, capacity considerations, demand and capacity management in services.

Quality Assurance

7 hours

Defining quality, International quality standards, Total quality management, Tools of TQM, TQM in services, statistical process control (Statistical Control Chart, X chart, R-chart, p-chart)

Unit III: Managing Operations

Supply Chain Management

7 hours

Strategic importance, supply chain strategies, vendor selection, logistics management, measuring supply chain performance, outsourcing, risks in outsourcing, ethical issues in outsourcing.

Inventory Management

7 hours

Functions of inventory, types of inventory, inventory models for independent demand (deterministic model), material requirement planning, enterprise resource planning.

Operations Scheduling

6 hours

Strategic importance, scheduling issues, loading jobs, sequencing jobs, scheduling services.

JIT and Lean Operations

4 hours

Just-in-Time, JIT layout, JIT inventory, JIT scheduling, JIT quality, lean operations, lean operations in services.

Basic Text

Heizer J., Render, B., & Rajashekhar J. *Operations Management*. New Delhi: Pearson Education Inc.

References

1. Krajewski, L. J., Ritzman, L. P., Malhotra, M. K., & Srivastava S. K. *Operations Management: Process and Supply Chain*. New Delhi: Pearson Education Inc.
2. Stevenson, W. *Operations Management*. New Delhi: Tata McGraw Hill Education.
3. Gaither, N., & Gaither, F. *Operations Management*. New Delhi: Cengage Learning.

CMP 365 Electronic Commerce (Programming)

BCIS, 6th Semester

Course Objectives

The objectives of the course are to introduce the concept of electronic commerce, and to understand how electronic commerce is affecting business enterprises, governments, consumers and people in general.

The course would help students to:

- acquaint students with the understanding of the content and framework of e-commerce, architecture, and major e-commerce activities and mechanisms;
- understand marketplaces and list of their components;
- understand the fundamentals of social commerce, its drivers and landscape;
- understand the factors that affect customer behavior online in e-commerce systems;
- understand the foundation of digital marketing;
- understand the legal, social, and ethical issues in e-commerce;
- understand the players and their roles in e-commerce payment systems; and
- understand the fundamentals of mobile commerce infrastructure that supports mobile commerce.

Course Description

The increased commercial use of Information and Communication Technologies by individuals,

business, and government makes it essential for students to understand the fundamental concept of electronic commerce (E-Commerce). There is a radical change in all kinds of organizations and the way they do business. Consumers have rapid access to better information increasing pricing and service pressure on competing firms. Workers are more production, further helping organizations to keep prices low.

The course would cover distinct areas including E-Commerce business models and concepts, E-Commerce infrastructure, building E-Commerce website, e-security and payment systems, marketing concepts and communications, ethical, social and political E-Commerce issues, online retailing, services, content and media, social networks, B2B E-Commerce.

Course Outcomes

At the end of course, students is expected to

- Explain the components, categories and role of E-Commerce environment;
- Explain different E-Commerce business models and their impact on businesses;
- Discuss the evolution of web 2.0 and its commercialization;
- Explain different technologies related to E-Commerce platform and explain client server platform;
- Describe E-Commerce payment systems;
- Explain different kind of security risks and their mitigations;
- Describe the approach of digital marketing, digital marketing techniques;
- Describe different legal, ethical, political issues related to E-Commerce; and
- Explain different real world cases of E-Commerce implementation.

Course Contents

Unit I: Overview of Electronic Commerce

3 hours

E-Business vs. E-Commerce; Growth of Internet and Web; E-Commerce and its various categories; unique features of e-commerce technologies; Web 2.0; origins and growth of E-Commerce

Unit II: E-Commerce Business Models and Concepts

3 hours

Key elements of business models; B2B business models; B2C business models; C2C and P2P business models; M-commerce business models; Internet and its impact on business strategy, structure and process.

Unit III: E-Commerce Technology Infrastructure

4 hours

Internet technology; Internet Today and Future infrastructure; The world wide web; Features of Internet and Web; Web 2.0 features and services

Unit IV: Building E-Commerce Systems

4 hours

Planning, analysis, design, building and implementing E-Commerce systems; E-Commerce software –web server, application server, merchant software components; Concept of self service web store; Tools for managing E-Commerce systems, CGI, ASP, JSP, Ajax, JavaScript

Unit V: E-Commerce Security and Fraud Protection

4 hours

Scope of security in E-Commerce systems; security threats in E-Commerce environment;

Technology solutions for implementing security in E-Commerce systems; management policies, business procedures and laws supporting security in E-Commerce systems; electronic transaction act (Nepal)

Unit VI: Payment Systems in E-Commerce systems **4 hours**

Concept of electronic fund transfer (EFT); online credit card, online wallet, stored value account, digital checking payment system; electronic bill presentment and payment; mobile technology for E-Commerce payment; cases on payment system in Nepal

Unit VII: E-Commerce and Digital marketing **4 hours**

Internet audience and consumer behavior; Internet marketing technologies and techniques; B2B and B2C marketing strategies using E-Commerce technologies; marketing communications; challenges with digital marketing strategies; SEO, affiliate site marketing, social media marketing, push/pull digital marketing

Unit VIII: B2B E-Commerce and supply chain management **6 hours**

Procurement process and supply chain management; supply chain management systems; Electronic Data Interchange (EDI), XML and XBRL for B2B exchanges; net market places; private industrial networks;

Unit IX: Ethical, Social, Political and Legal Issues with E-Commerce **4 hours**

Basic ethical concepts related to E-Commerce; Privacy and information rights; Intellectual property rights; governance

Project Activity **12 hours**

Students would take up an individual/group project to study the E-Commerce system related to one of the area that includes online content, online publishing; online entertainment; social networks and online communities; online auctions; online advertisement, B2B exchanges; e- government etc. The project activity would relate the theoretical aspects of this course with the practical implementation in the above mentioned project areas.

Basic Text

Laudon, K. C., & Traver, C. G. *E-Commerce: Business, Technology, Society*.
Pearson/Prentice Hall.

References

1. Turban, E., King, D., Lang, J. Linda (CON) Lai, Judy (CON) McKay, *Introduction to Electronic Commerce*, New Work: Prentice Hall.
2. Nicholas D. Evans, *Business Innovation and Disruptive Technology: Harnessing the Power of Breakthrough Technology for Competitive Advantage, 1/E*, New Work: Prentice Hall.

CMP 366 Computer Graphics and Image Processing

BCIS, 6th Semester

Course Objectives

The objective of this course is to provide the knowledge of image processing and pattern recognition and apply these concepts in image processing and recognition applications of having commercial values in industry and business management.

Course Description

The course content is mainly focused on developing the sound theoretical foundation of all of the digital image processing stages, ranging from creation to acquisition and pre-processing to restoration. The course also requires programming assignments for deeper understanding of the various stages of image processing and pattern recognition.

Course Outcomes

Upon completion of this course, students will be able to:

- Thorough understanding of theoretical foundation of fundamental Digital Image manipulation and processing steps like acquisition; preprocessing; segmentation; Fourier domain processing; and
- Skills on exploration and appropriate use of image processing methods / tools for business and management applications.

Course Contents

Unit I: Introduction : Digital Image Processing **4 hours** Digital image representation, Digital image processing: Problems and applications, Elements of visual perception, Sampling and quantization, Some basic relationships like Neighbors, Connectivity, Distance, Measures between pixels, Visual Perception

Unit II: Image Enhancement in Spatial Domain **4 hours**
Gray Level Transformations, Histogram Processing, Enhancement Using Arithmetic and Logic operations, Basics of Spatial Filters, Smoothing and Sharpening Spatial Filters, Combining Spatial Enhancement Methods

Unit III: Image Enhancement in the Frequency Domain **5 hours**
Introduction to Fourier Transform and the frequency Domain, Computing and Visualizing the 2D DFT, Smoothing and Sharpening using Frequency Domain Filters, Hadamard transform, Haar transform and Discrete Cosine transform, Fast Fourier Transform

Unit IV: Image Restoration **7 hours**

The Image Degradation / Restoration Process, Noise Model based Restoration, Spatial filtering, Periodic Noise Reduction by Frequency Domain Filtering, Inverse filtering, Wiener filtering, Geometric Mean Filter

Unit V : Color Processing

5 hours

Color Fundamentals, Color Models, Pseudocolor transformations, Smoothing and sharpening operations based Image Processing, Color

Coding, Interpixel and Psychovisual Redundancy, Image Compression models, Lossless and Lossy Compressions

Unit VII: Morphological Image Processing

5 hours

Logic Operations involving binary images, Dilation and Erosion, Opening and Closing, The Hit-or-Miss Transformation

Unit VIII: Image Segmentation

5 hours

Detection of Discontinuities, Edge linking and boundary detection, Thresholding, Region Based Segmentation

Unit IX: Pattern Recognition

8 hours

Descriptor concept, Chain codes, Signatures, Shape Numbers, Fourier Descriptors, Patterns and pattern classes, Overview of pattern recognition, Neural Network and Image Processing, NN based pattern recognition, Decision-Theoretic Pattern Recognition Methods.

Lab and Project Requirement

This course requires extensive exposure of practical examples with at least 8-12 lab exercises with programs consisting most of topics detailed in syllabus content. Semester end, image-processing project as a course project (either individual or group (at most 4 students) is a strict requirement for this course.

Basic Text

Gonzalez, R. C., & Woods, R. E. *Digital Image Processing*. New Delhi: Prentice Hall of India.

References

1. Jain, A. K. *Fundamental of Digital Image processing*. New Delhi: Prentice Hall of India.
2. Monique, P., & Dekker, M. *Fundamentals of Pattern recognition*. New York: MIT Press.
3. James, M. *Pattern recognition*. BSP Professional Books.

CMP 367 Data Structure and Algorithms

BCIS, 6th
Semester

Course Objectives

This course aims to provide fundamental knowledge on data structure designing and

implementation for storing information, and various algorithms used in computer sciences with an aim to give a feel for algorithms and data structures. They will be able to use and design linked data structures, appreciate how the inheritance mechanism of object-oriented languages enables them to write generalized code expressing an algorithm or data structure in a way that may be used in a variety of real-world situations.

Course Description

This course focuses on an arrangement of data in a computer's memory or even disk storage. It

incorporates examples of several common data structures including arrays, linked lists, queues, stacks, binary trees, and hash tables. The course also includes algorithms, on the other hand, that are used to manipulate the data contained in these data structures as in searching and sorting. Many algorithms apply directly to a specific data structures. When working with certain data structures students need to know how to insert new data, search for a specified item, and deleting a specific item. Commonly used algorithms include in the course are useful for:

- searching for a particular data item (or record)
- simple sorting and advanced sorting
- iterating through all the items in a data structure

Course Outcomes

On successful completion of this module, a student will:

- have a good working knowledge of the development framework and be able to use its various features, including UI, resources, storage, security, multimedia, location, etc;

- end it appreciating that understanding the algorithm and data structures used for some problem is much more important than knowing the exact code for it in some programming language; and
- be able to understand the developed applications and use this knowledge in developing systems.

Course

Contents

Unit I: Introduction

3 hours

What is the subject about? Mathematics review, Brief introduction to Recursion

Unit II: Algorithm Analysis

3 hours

Mathematical background, Model, What to analyze? Running time calculations

Unit III: Lists, Stacks, and Queues

5 hours

Abstract data types (ADTs), The list ADT, The stack ADT, The queue ADT

Unit IV: Trees

6 hours

Preliminaries, Binary trees, The search tree ADT – Binary search trees, AVL trees, Splay trees, Tree traversals (revisited), B-trees

Unit V: Hashing

6 hours

General idea, Hash function, Open hashing (separate chaining), Closed hashing (open addressing), Rehashing, Extendable hashing

Unit VI: Priority Queues

6 hours

Model, Simple implementation, Binary heap, Applications of priority queues, D-heaps, Leftist heaps, Skew heaps, Binomial queues

Unit VII: Sorting

7 hours

Preliminaries, Insertion sort, A lower bound for simple sorting algorithms, Shell-sort, Heap-sort, Merge-sort, Quick-sort, Sorting large objects, A general lower bound for sorting, Bucket sort, External sorting

Unit VIII: Graph Algorithm

6 hours

Definitions, Topological sort, Shortest-path algorithm, Network flow problems, Minimum spanning tree Applications of depth-first search, Introduction to NP-completeness

Unit IX: Algorithm Design Techniques

6 hours

Greedy algorithm, Divide and conquer, Dynamic programming, Randomized algorithms,

Backtracking algorithms

Laboratory

There shall be 10 lab exercises based on C or JAVA

- Implementation of stack
- Implementation of linear and circular queue
- Solution of TOH and Fibonacci recursion
- Implementation of Link list: Singly, and doubly linked
- Implementation of Tree: AVL tree, Balancing of AVL
- Implementation of merge sort
- Implementation of search: sequential, Tree and Binary
- Implementation of Graphs: Graph traversals
- Implementation of hashing
- Implementation of heap

Basic Texts

1. Langsam, Y., Augustin, M.J. and Tanenbaum, A. M. *Data Structure Using C and C++*. New Delhi: Prentice Hall of India.
2. Preiss Bruno R. *Data Structures and Algorithms: With Object-Oriented Design Patterns in Java*. John Wiley & Sons Canada, Ltd.
3. Rowe, G. W. *Introduction to Data Structure and Algorithms with C and C++*. New Delhi: Prentice Hall of India.
4. Buell, D. A. *Data Structure Using Java*, Jones and Bartlett Learning.