

TEXT BOOK

TRIBHUVAN UNIVERSITY
Faculty of Management



Bachelor of Information Management (BIM)
Program and Curriculum

Curriculum Development Centre
Tribhuvan University
Kirtipur, Kathmandu
Nepal

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TRIBHUVAN UNIVERSITY

Faculty of Management

INTRODUCTION TO FACULTY OF MANAGEMENT

The Faculty of Management (FOM), Tribhuvan University has its ultimate objective of educating students for professional pursuits in business, industry and government. It is further dedicated to contributing to an increase in the knowledge and understanding of business and public administration. FOM aims to develop a networking with management institutes in the country and abroad to exchange new knowledge, technology, and methods of achieving higher level efficiency in management of business and public entities. It also aims to continuously innovate and promote cost-effective, socially relevant, modern technology based educational programs in Nepal.

The FOM offers instructions leading to Bachelor of Business Studies (BBS), Bachelor of Travel and Tourism Management (BTTM), Bachelor of Hotel Management (BHM), Bachelor of Information Management (BIM), Bachelor of Business Administration (BBA), Post Graduate Diploma in Police Sciences (PGDPS), Master of Business Studies (MBS), Master of Public Administration (MPA), Master of Travel and Tourism Management (MTTM), and Master of Hospitality Management (MHM). The FOM also offers Master of Philosophy in Management (M Phil) and doctoral program in management leading to a Degree of Doctor of Philosophy (Ph D).

FOM's GOALS

- Prepare professional managers capable of handling business in a dynamic global environment.
- Produce socially responsible and creative entrepreneurs capable of promoting business and industry for the socio-economic development of Nepal.
- Conduct research and management development programs for updating the knowledge and skill base of academics and practicing managers.
- Innovate and promote management programs catering to the various social and economic sectors of Nepal.
- Establish linkages with leading universities and management institutes abroad and collaborate with them in program development and implementation.

BIM PROGRAM'S MISSION AND OBJECTIVES

The mission of FOM's Bachelor of Information Management (BIM) program is to develop socially responsive, creative, and result oriented information technology (IT) professionals. The BIM program is designed to equip graduates with the skills and attributes required to be effective and efficient information technology professionals.

The specific objectives of the program

- Prepare IT professionals proficient in the use of computers and computational techniques in order to develop effective information systems to solve real life problems in the organizational milieu.
- Develop students' skill in object-oriented software design methods and data management systems.
- Provide professional training to students by combining information technology with managerial skills.
- Prepare students to proceed on to postgraduate level study in information management within and outside the country.

ELIGIBILITY CONDITION FOR ADMISSION

The candidate applying for admission to the BIM program must have

- successfully completed a twelve-year schooling or its equivalent from any university, board or institution recognized by Tribhuvan University,
- secured at least second division in the 10+2, PCL or equivalent program; and
- complied with all the application procedure.

ADMISSION CRITERIA

Written Test

Eligible applicants are required to appear in the entrance test commonly known as Central Management Admission Test (CMAT) conducted by the Faculty of Management. The test will follow the international testing pattern and standards. It includes the areas like:

- Verbal ability
- Quantitative ability
- Logical reasoning
- General awareness

There shall be altogether one hundred (100) objective questions in the CMAT containing twenty five (25) questions in each section with a total weight of 100 marks. Student must secure a minimum of 40% in the CMAT in order to qualify for the interview.

Interview

Applicants securing above cut off point marks in the CMAT will be short-listed. Only short listed candidates will be interviewed and selected for admission.

TEACHING PEDAGOGY

The general teaching pedagogy includes class lectures, group discussions, case studies, guest lectures, role play, research work, project work (individual and group), assignments (theoretical and practical), and term papers. The teaching faculty will determine the choice of teaching pedagogy as per the need of the course.

The concerned faculty shall develop a detailed course outline and work plan at the beginning of each semester and also recommend the basic text and other reference materials for effective teaching-learning of the course modules.

INTERNSHIP: INDUSTRIAL ATTACHMENT PROJECT

In the final semester, students shall be attached to organizations where they have to work for a period of eight weeks. Each student shall prepare an individual project report in the prescribed format based on his / her work in the respective organization assigned to him / her. Evaluation of the internship shall be based on the confidential report by the organization, project report and presentation of the report. The report must be submitted by the end of the eighth semester. Students must secure a minimum grade of "C" in the internship. The internship carries a weight equivalent to 6 credit hours.

EXAMINATION, EVALUATION AND GRADING SYSTEM

The BIM program will be executed through the semester system. The regular program shall be completed in eight semesters. The internal (ongoing) evaluation and the external (end of semester) examination shall carry 40 percent and 60 percent weightage respectively. The semester examinations shall be conducted by FOM. The final grade of the student shall be determined on the overall performance in the internal and external examinations.

Passing Grade and Grading System

The final evaluation of students is done through the examination conducted by Tribhuvan University. Students must secure a minimum of grade 'C' or Grade Point Average (GPA) of 2.0 in the internal evaluation in order to qualify to appear in the semester examination. In order to pass the semester examination the student must secure a minimum of grade 'C' or the Cumulative Grade Point Average (CGPA) of 2.00. The grading system shall be as follows:

Letter Grade	Cumulative Grade Point Average (CGPA)	Divisions/Remarks
A	3.50 to 4.00	First Division with Distinction
B	2.50 to 3.49	First Division
C	2.00 to 2.49	Second Division
D	1.50 to 1.99	Pass in Individual Paper
F	Below 1.50	Fail

Make-up Examination and Re-registration

In case of failure in one or more courses at the end of semester examinations students can appear in make-up examination in the subsequent semester. A student can appear only on two courses (6 credit hours) in the make-up examination. If the student fails in the make-up examination he / she shall have to re-register and repeat the course as per the course cycle. A student can re-register only two courses (6 credit hours) in a semester. The examination of the re-registered course shall be held as per the course cycle.

Attendance

Students are required to attend regularly all theory and practical classes, assignments, study tour, field trip, seminars and presentations as required by the course. A student is required to attend at least 80 percent of such activities in order to qualify for the semester examination.

CREDIT TRANSFERS AND WITHDRAWAL

The program allows students to transfer the credits earned by them in similar program of other universities recognized by Tribhuvan University.

A student who has partially completed the BIM program and would like to discontinue his / her studies shall also be allowed to withdraw from the program. In such cases, a certificate specifying the credit earned by the student in the program shall be provided.

GRADUATION REQUIREMENTS

The BIM program extends over eight semesters (four academic years). The BIM degree is awarded upon its successful completion of all the following requirements specified by the curriculum.

- The successful completion of 126 credit hours as prescribed with a minimum of passing grade in all courses with an aggregate CGPA of 2.00.
- A minimum of grade 'C' obtained in the Industrial Attachment Project.
- Completion of courses for the fulfillment of the requirements of the BIM program must occur within seven years from the time of registration.

CURRICULAR STRUCTURE

The BIM program requires the students to study a total of 126 credit hours. The curricular structure of the program comprises of the following five separate course components.

I.	Management Courses	27 Credit Hours
II.	Analytical and Support Courses	27 Credit Hours
III.	Information Technology and Computing Courses	60 Credit Hours
IV.	Elective Courses	06 Credit Hours
V.	Internship: Industrial Attachment Project	06 Credit Hours
	Total	126 Credit Hours

COURSE COMPOSITION

I. Management Courses

MGT 201: Principles of Management
MGT 202: Human Resource Management
MGT 203: Organizational Relations
MGT 204: Business Communication
MGT 205: Operations Management
ACC 201: Financial Accounting
ACC 202: Cost and Management Accounting
FIN 201: Business Finance
MKT 201: Principles of Marketing

II. Analytical and Support Courses

ENG 201: English Composition
MTH 201: Basic Mathematics
MTH 202: Discrete Mathematics
STT 201: Statistics
ECO 201: Micro Economics
ECO 202: Macro Economics
LOG 201: Critical Thinking and Decision Making
SOC 201: Sociology
PSY 201: Psychology

III. Information Technology and Computing Courses

ITC 211: Computer Information System
ITC 212: Digital Logic
ITC 213: Structured Programming
ITC 214: Data Communication and Computer Network
ITC 215: Data Structure and Algorithm
ITC 216: Object Oriented Programming
ITC 217: Microprocessor Programming
ITC 218: Database Management System
ITC 219: Web Technology

ITC 220: Computer Organization
ITC 221: Computer Graphics
ITC 222: JAVA Programming
ITC 223: Artificial Intelligence
ITC 224: Client Server Computing
ITC 225: Software Engineering
ITC 226: Management Information System
ITC 227: IT Entrepreneurship and Supply Chain Management
ITC 228: High Speed Network and Multimedia Networking
ITC 229: Computer Security and Cyber Law
ITC 230: Economics of Information and Communication

IV. Elective Courses

ITC 301: System Administration - Win NT
ITC 302: Graphics User Interface Programming Using C++
ITC 303: Computer Based Financial Engineering
ITC 304: Electronic Reporting and Auditing of Accounting Information
ITC 305: Object Oriented Analysis and Design
ITC 306: Object Oriented Database Management System
ITC 307: Software Project Management
ITC 308: Operating Systems
ITC 309: Data Mining and Data Warehousing

V. Internship

MGT 350: Internship: Industrial Attachment Project

COURSE CYCLE

First Semester

MGT 201: Principles of Management
ENG 201: English Composition
MTH 201: Basic Mathematics
ITC 211: Computer Information System
ITC 212: Digital Logic

Second Semester

SOC 201: Sociology

MTH 202: Discrete Mathematics

MGT 204: Business Communication

ITC 213: Structured Programming

ITC 214: Data Communication and Computer Network

Third Semester

STT 201: Statistics

PSY 201: Psychology

ITC 215: Data Structure and Algorithm

ITC 216: Object Oriented Programming

ITC 217: Microprocessor Programming

Fourth Semester

ACC 201: Financial Accounting

ECO 201: Micro Economics

ITC 218: Database Management System

ITC 219: Web Technology

ITC 220: Computer Organization

Fifth Semester

ACC 202: Cost and Management Accounting

ECO 202: Macro Economics

ITC 221: Computer Graphics

ITC 222: JAVA Programming

ITC 223: Artificial Intelligence

Sixth Semester

FIN 201: Business Finance

MGT 205: Operations Management

MKT 201: Principles of Marketing

ITC 224: Client Server Computing

ITC 225: Software Engineering

Seventh Semester

LOG 201: Critical Thinking and Decision Making

MGT 203: Organizational Relations

MGT 202: Human Resource Management

ITC 226: Management Information System

ITC 227: IT Entrepreneurship and Supply Chain Management

ITC 228: High Speed Network and Multimedia Networking

Eighth Semester

ITC 229: Computer Security and Cyber Law

ITC 230: Economics of Information and Communication

Elective I

Elective II

ITC 350: Internship: Industrial Attachment Project

EVALUATION SCHEME

Management Courses

Code No	Course Title	Internal %	Final			Total %
			Theory %	Practical %	Micro Project %	
MGT 201	Principles of Management	40	60	---	---	100
MGT 202	Human Resource Management	40	60	---	---	100
MGT 203	Organizational Relations	40	60	---	---	100
MGT 204	Business Communication	40	60	---	---	100
MGT 205	Operations Management	40	60	---	---	100
ACC 201	Financial Accounting	40	60	---	---	100
ACC 202	Cost and Management Accounting	40	60	---	---	100
FIN 201	Business Finance	40	60	---	---	100
MKT 201	Principles of Marketing	40	60	---	---	100

Analytical and Support Courses

Code No	Course Title	Internal %	Final			Total %
			Theory %	Practical %	Micro Project %	
ENG 201	English Composition	40	60	---	---	100
MTH 201	Basic Mathematics	40	60	---	---	100
MTH 202	Discrete Mathematics	40	60	---	---	100
STT 201	Statistics	40	60	---	---	100
ECO 201	Micro Economics	40	60	---	---	100
ECO 202	Macro Economics	40	60	---	---	100
LOG 201	Critical Thinking and Decision Making	40	60	---	---	100
SOC 201	Sociology	40	60	---	---	100
PSY 201	Psychology	40	60	---	---	100

Information Technology and Computing Courses

Code No	Course Title	Internal %	Final			Total %
			Theory %	Practical %	Micro Project %	
ITC 211	Computer Information System	40	40	20	---	100
ITC 212	Digital Logic	40	40	20	---	100
ITC 213	Structured Programming	40	40	20	---	100
ITC 214	Data Communication and Computer Network	40	40	20	---	100
ITC 215	Data Structure and Algorithm	40	40	20	---	100
ITC 216	Object Oriented Programming	40	40	20	---	100
ITC 217	Microprocessor Programming	40	40	20	---	100
ITC 218	Database Management System	40	40	20	---	100
ITC 219	Web Technology	40	40	20	---	100
ITC 220	Computer Organization	40	40	20	---	100
ITC 221	Computer Graphics	40	40	20	---	100
ITC 222	JAVA Programming	40	40	20	---	100

Code No	Course Title	Internal %	Final			Total %
			Theory %	Practical %	Micro Project %	
ITC 223	Artificial Intelligence	40	40	20	---	100
ITC 224	Client Server Computing	40	40	20	---	100
ITC 225	Software Engineering	40	40	---	20	100
ITC 226	Management Information System	40	40	---	20	100
ITC 227	IT Entrepreneurship and Multimedia Networking	40	60	---	---	100
ITC 228	High Speed Network and Multimedia Networking	40	60	---	---	100
ITC 229	Computer Security and Cyber Law	40	60	---	---	100
ITC 230	Economics of Information and Communication	40	60	---	---	100

Elective Courses

Code No	Course Title	Internal %	Final			Total %
			Theory %	Practical %	Micro Project %	
ITC 301	System Administration Wing - NT	40	40	20	---	100
ITC 302	Graphics User Interface Programming Using C++	40	40	20	---	100
ITC 303	Computer Based Financial Engineering	40	40	---	20	100
ITC 304	Electronic Reporting and Auditing of Accounting Information	40	40	---	20	100
ITC 305	Object Oriented Analysis and Design	40	40	20	---	100
ITC 306	Object Oriented Database Management System	40	40	20	---	100
ITC 307	Software Project Management	40	40	20	---	100
ITC 308	Operating Systems	40	40	20	---	100
ITC 309	Data Mining and Data Warehousing	40	40	20	---	100

MGT 201: Principles of Management

Module Objectives

This module aims to impart the basic management knowledge, and skills to the students so as to enhance their managerial capabilities and enable them to apply in the practical field.

Contents

Concepts and functions of management. Management perspective. Planning: meaning, classification, steps and tools. Planning premises. Decision making: meaning, types, conditions and process. Organizing: meaning, process, principles, and architecture. Authority and responsibility. Centralization, delegation and decentralization. Staffing. Emerging issues in organizing. Leading: meaning, qualities and styles. Individual differences and psychological contract. Introduction to groups. Concept of managerial ethics. Motivation: concept and techniques. Communication: meaning, process, types and barriers. Controlling: meaning, process and techniques. Quality. Total Quality Management. Issues in quality management. Organizational change and development.

MGT 202: Human Resource Management

Module Objectives

This module aims to develop students' understanding of the basic concepts, systems, and approaches of human resource management.

Contents

Concept, characteristics, objectives, and components of HRM. Emerging HR challenges. Human resource planning: assessing current HR, HRM inventory, HR information system, and succession planning. Job analysis: meaning, purpose, methods, and techniques. Job design: concept and approaches. HR training and development. Career development. HR motivation. Performance appraisal. Rewards management. Employee grievances and disciplines. Labor relations in Nepal.

MGT 203: Organizational Relations

Module Objectives

This module aims to develop students' understanding of the concepts of individual and group behavior with a focus on studying interpersonal and group relations in the context of organizations.

Contents

Concept and importance of organizational relations. Critical behavioral issues confronting the managers. Individual Behavior: needs, motives, goals, attitudes, beliefs and values. Formation of perception, personality and motivation. Social perception. Matching personality and jobs. Current issues in motivation and implications for managers. Interpersonal and group behavior: group development, group structure variables, group goals. Building effective work teams and issues in managing work teams. Leadership theories and their applications. Organizational communication processes. Inter group conflict management. Organizational relations and dynamics: organizational design and employee behavior. Technology and work design: theories of work design. Stress management. Organization change and development, and OD interventions.

MGT 204: Business Communication

Module Objectives

This module aims to develop students' skill in presenting effective oral and written communication in English language with a focus on presenting seminars, writing papers and reports, business correspondence and so on.

Contents

Communication in business: communication process and malfunctions. Essentials of business communication: shorter structured units, effective organization, unity, coherence, and standard grammatical forms. Written communication: business correspondence formats, term paper, project reports and research reports. Oral communication: formal and informal oral communication, group discussions, seminar presentations, gestures and body language.

MGT 205: Operations Management

Module Objectives

This module aims to develop students' understanding of the basic concepts and tools of operations management and use them to solve management problems.

Contents

Production systems and operations management. Development of operations management. Optimization models. Capacity planning and facility location. Process, design, and facility layout. Job design and work measurement, Waiting line theory (single channel only). Production planning and scheduling. Inventory control systems. Maintenance management. Total quality management. Emerging concepts in operations management.

ACC 201: Financial Accounting

Module Objectives

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

Contents

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, and managing receivables. Accounting for long-lived assets: types, determining the cost of plant, accounting for plant, and analyzing plant assets. Intangible assets: accounting for intangible assets, types, and 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.

ACC 202: Cost and Management Accounting

Module Objectives

This module aims to provide the students with the knowledge and skills of cost and management accounting tools and techniques required for decision-making, and control.

Contents

Concept of financial accounting, cost accounting, and management accounting. Cost accumulation, classifications, and segregation. Income recognition, measurement, and reporting: variable and absorption costing concept. Cost-volume-profit analysis. Budgeting and profit planning: revenue budget, purchase and production budget, direct labor and manufacturing overhead cost budget, cash collection and disbursement budget. Budgeted income statement and balance sheet. Standard cost. Flexible budgeting. Responsibility accounting. Decision regarding alternative choices: Make or Buy, Drop a Product Line, Accept and Reject a Special Offer, Replacement of a Joint Product and Replacement Decisions. Ratio and Cash Flow Analysis. Investment analysis: capital budgeting concept, cash flow and profit and loss accounts, and investment analysis techniques.

FIN 201: Business Finance

Module Objectives

This module aims to provide the students with an understanding of financial environment, valuation of financial securities, financing aspects of the firm and familiarize students with techniques of estimating short term financial requirement and methods of raising funds for the firm.

Contents

Nature and scope of business finance, Finance in the organization and finance function, Financial environment, Term structure of interest rates, Time value of money, Risk and rates of return, valuation of financial securities, Working capital policy and short term financing.

MKT 201: Principles of Marketing

Module Objectives

This module aims to develop students' knowledge and skill in analyzing marketing opportunities and designing appropriate marketing policies and strategies.

Contents

Concept and importance of marketing, business philosophies that drive marketing, marketing mix and environment. Market segmentation process and methods. Marketing information system. Buyer behavior analysis. Product, pricing, distribution and promotion decisions. Emerging concepts in marketing.

ENG 201: English Composition

Module Objectives

This module aims to develop students' skill in oral and written communication in English language.

Contents

Intensive practice to improve listening comprehension for both daily and academic needs: the focus shall be on development of active listening habit and utilizing oral information in a variety of contexts. Grammatical and structural review of English: use of common structure in the English language, review of standard grammatical forms and their application in a variety of writing formats. Reading comprehension: development of reading comprehension proficiency from Information Technology related subject areas.

MTH 201: Basic Mathematics

Module Objectives

This module aims to provide the students with the basic mathematical skills required to understand management, IT and computing courses.

Contents

Set theory, Numbers and their properties. Introduction to complex numbers. Function. Limits and Continuity. Differentiation and Integration. Concept of vectors and matrices. Differential equation of the 1st order and 1st degree.

MTH 202: Discrete Mathematics**Module Objectives**

This module aims to expose students to rigorous mathematical proof techniques of discrete mathematics.

Contents

Relations and order relations. Function (mapping). Counting and Combinatory. Basic Concepts of graph. Traversability. Trees, and Directed graph.

STT 201: Statistics**Module Objectives**

This module aims to introduce students to the tools and techniques of statistics that are used in managerial decision making.

Contents

Definition, scope and limitations of statistics, use of statistics in management. Data collection, classification and presentation (Tabular and Graphic). Measures of central tendency. Measures of dispersion, skewness, moment and kurtosis. Correlation and regression analysis. Analysis of time series. Index numbers. Probability: concepts, objective and subjective probability. Permutations and combinations. Marginal and joint probability. Addition rule, conditional probability, multiplication rules, and Bayes theorem.

ECO 201: Microeconomics

Module Objectives

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

Contents

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

ECO 202: Macro Economics

Module Objectives

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

Contents

Macroeconomics: concepts and importance. National income accounting: concepts, measurement approaches and measurement difficulties of national income. Employment theories: classical and Keynesian theories. Components of macroeconomics: consumption and saving functions, paradox of thrift, investment function, concept of multiplier and acceleration coefficient. Theory of income determination (IS-LM Model). Business cycles: phases and economic stabilization policy. Inflation: theories of inflation, and computation of rate of inflation. Monetary policy: objectives and

instruments, demand and supply of money. Fiscal policy: objectives and instruments. Macroeconomic issues: Nepalese perspective.

LOG 201: Critical Thinking and Decision Making

Module Objectives

This module aims to develop students' understanding of the decision-making techniques and tools based on probability, utility theory, and fuzzy theories in order to build their skills in designing knowledge-based systems to solve real-world problems.

Contents

Concept, importance, inquiry skills, and costs of fallacious reasoning. Relationship between critical thinking and decision making. Decision theory: types of decisions, decision making process, decision tree, decision theories, and group decision making. Decision making under uncertainty and risk. Concept of economic utility. Sensitivity analysis. Scenario analysis. Theory of games. Problem solving. Problem solving processes and methods of problem solving. Fuzzy logic. Judgmental biases. Creativity concepts and approaches. Evaluation of decision making based on quantitative and qualitative approaches.

SOC 201: Sociology

Module Objectives

This module aims to inculcate knowledge of basic sociological concepts and methods so that students are equipped with an adequate understanding of the sociological perspectives on management and business administration.

Contents

Introduction to Sociology. Basic concepts in Sociology. Social Institutions: Social Processes; Social Stratification; Social Disorder, Deviance and Social Control; Social Change; Theoretical Perspectives in Sociology; Research Methods in Sociology and; The Sociological perspectives on Management and Business Administration.

PSY 201: Psychology

Module Objectives

This module aims to enable the students to understand basic processes and structures underlying human behavior as a basis for managing people in an organizational setting.

Contents

Introduction - concepts, major perspectives, trends for New Millennium and applications. Research Methods. Perception and Social thought. Motivation and Emotion, and applications of emotion. Learning - concept, theories and applications. Memory and Forgetting. Thinking and Problem Solving. Human Intelligence, Emotional Intelligence and its applications. Personality.

ITC 211: Computer Information System

Module Objectives

This module aims to introduce students to the basics of computer and its use and application in real world situations. Students are expected to learn to use the MS Office for word processing, spreadsheet, graphic presentation, and Internet. Laboratory work is essential in this module.

Contents

Introduction to computer system, Programming Language, Computer System development, Multimedia, Network and Communication, Introduction to the Internet, Data Processing and Database, Artificial Intelligence, Computer crime and safety measures.

ITC 212: Digital Logic

Module Objectives

This module aims to acquaint students with the basics of Boolean algebra and familiarize them with the fundamental building blocks of the digital domain. Students will be able to design simple digital

devices and implement them. Laboratory work is essential in this module

Contents

Number system, introduction to analog and digital signals and systems, logic gates, Boolean algebra and simplification, truth tables and k-Maps, combinational logic circuits, sequential logic circuits, synchronous and asynchronous counters, shift registers and various operations on shift registers, sequential machine design, memories, programmable devices, logic families, and digital displays.

ITC 213: Structured Programming

Module Objectives

This module aims to introduce students to the discipline of computing with a focus on good program design, programming styles, and structured program development using a high-level programming language. The students shall also be introduced to the basic concepts in procedural abstraction, structured programming and top-down design with stepwise refinement. Laboratory work is essential in this module.

Contents

Introduction to the C Programming Language, The components of a C Program: Code and Data Fundamental of Input and output, Statements, Expression and Operators, Basic Program Control, Functions: the basic, Arrays, Pointers, Characters and Strings, Structures, Understanding variable scope, Using Disk files, Manipulating strings, working with memory, Advanced C- language constructs.

ITC 214: Data Communication and Computer Networks

Module Objectives

The core objective of this module is to provide a fundamental concept of the electrical characteristics of digital signals and the basic methods of data transmission, underlying principles in the

design of a layered network architecture, identify the general characteristics of local area networks (LANs) and wide area networks (WANs), and to be exposed to the TCP/IP protocol stack as an example of a layered network architecture.

Contents

Basic Communication model, Data Communication Networking: WAN, MAN, LAN. Data Communication principles: Signal, Frequency, Amplitude, Bandwidth, Digital signal, Analog signals, Digital data and analog data, Transmission Impairments, Channel capacity, Overview of analog and digital transmission, Synchronous and asynchronous transmission. Data Encoding techniques: NRZ-L, NRZI, Manchester, ASK, FSK, PSK, QPSK, Multiplexing Techniques (FDM, TDM, WDM). OSI Reference Model, TCP/IP (Transmission Control Protocol/Internet Protocol). Protocol Suite. Data link layer: Error Detection methods: Parity, Checksum, and CRC. Data Link Protocols: A simplex stop and wait protocol, sliding window protocols A One Bit Sliding Window Protocol, Go Back N, Selective Repeat. Multiple Access Protocols: ALOHA, CSMA/CD, CSMA/CA. Overview of IEEE 802 Standards, Introduction to Wireless Communication, Bridge, Switch and Router. Packet Switching: Datagram Approach, Virtual Circuit Approach. Routing Algorithms: Fixed Path, Shortest Path, Flooding, Distance Vector, and Link State Routing, IP Protocol IP V4, IP Addressee, Subletting, Internet Control Protocols, ICMP, ARP and RARP, DHCP. Interior Routing Protocol: OSPF, Exterior Routing Protocol: BGP, IPv6. Transport Services, Internet Transport Protocols TCP and UDP, BSD Socket API. Application layer: DNS, WWW, E-mail.

ITC 215: Data Structure and Algorithm

Module Objectives

The module objectives of the course is to provide a systematic introduction to data structures and algorithms for constructing efficient computer programs. The module enables the student to

- Understand and use the process of abstraction using a programming language such as 'C'.

- Analyze step by step and develop algorithms to solve real world problems. Implementing various data structures viz, Stacks, Queues, Linked Lists, and Trees
- Understand various searching and sorting techniques with their time and space complexities.

Contents

Fundamentals of data representation. Arrays, Recursion, Stacks and Queues using Arrays, Stacks and Queues using Linear Data Structures, and their linked representations. Linear Data Structures and their linked representations, Non linear data structures: Trees, Graphs, sorting and searching techniques.

ITC 216: Object Oriented Programming

Module Objectives

This module aims to introduce students to the programming methodology using the C++ language. This should be associated with laboratory experiments to augment the concepts taught in the class.

Contents

Introduction to Object Oriented Programming, Basic C++ Programming, Functions in C++, Classes and Objects, Operator Overloading, Inheritance, Virtual Functions and Polymorphism, File I/O, Templates, Name Spaces, and Analysis and design using object oriented techniques.

ITC 217: Microprocessor Programming

Module Objectives

This module aims to provide students an insight into the basics of microprocessor hardware, programming and peripheral interfacing. This module is based on Intel 8086 microprocessor architecture and is accompanied by suitable laboratory experiments to augment the concepts taught in the class.

Contents

Introduction to microprocessor, micro computer, Application of microprocessor, micro computer Architecture, 8086 & 8088 microprocessor Internal Architecture, Instruction Set, Assembly language programming, 8086 & 8088 H/W Architecture, Mode of operation, 8086 Interrupt, I/O Interfacing Simple System design using 8086 & 8088.

ITC218: Database Management System**Module Objectives**

This module aims to provide students a strong theoretical and practical knowledge of the database management system.

Contents

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

ITC 219: Web Technology**Module Objectives**

This module aims to introduce the students to the techniques for the representation, storage, interaction, encoding, processing and access of digital multimedia information in the web form. This course focuses on the design and development related to the design and creation of a web. This module should be associated with laboratory experiments to augment concepts taught in the class.

Contents

Introduction of Web Technology, Basic web page construction, Client side programming. Developing static and dynamic web pages,

embedding multimedia content in web pages. Introduction to Document object model. Developing dynamic web phase using PHP. Interacting with database for retrieving, modifying, storing data taken from users. Managing sessions, and Knowledge of web hosting.

ITC 220: Computer Organization

Module Objectives

This module aims to provide systematic introduction to design techniques involving the use of parallelism to improve the performance of computer systems. Laboratory work is essential in this module.

Contents

Design principle of computer system: single processor system, instruction set architecture. Memory management and memory hierarchy. Input output organization. Pipeline design techniques and instruction pipeline. Vector computing and RISC Processors. Operating system supports. Multiprocessor system, Synchronization, IPC, distributed and non-distributed Systems.

ITC 221: Computer Graphics

Module Objectives

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

Contents

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.

ITC 222: JAVA Programming

Module Objectives

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

Contents

Java Language fundamentals, Class and Objects, Inheritance, Package and Interfaces, Exception Handling, Multithreading, GUI Design , Java I/O, Java Networking Programming, Java Database Programming, Java Sevlets, Remote Method Invocation, and Java Beans.

ITC 223: Artificial Intelligence

Module Objectives

This module aims to provide the students with the basic foundation on concepts of searching and knowledge representation in AI systems. The key objective is to make students more pragmatic in knowledge of AI by giving its applications like designing and training Artificial Neural Networks along with additional laboratory works.

Contents

Turing test, agents and environments, blind search, heuristic search, game playing (planning), min-max and min-max with alpha-beta, general problem solving, cryptarithmic, propositional logic, predicates, first-order logic, clausal normal form, resolution, semantic nets, supervised and unsupervised learning, genetic algorithm, artificial neural network, natural language processing, machine translation, expert systems, machine vision, business application of AI, and ProLog / LISP.

ITC 224: Client Server Computing

Module Objectives

This module aims to revisit and reinforce the knowledge in the networking system with special emphasis to Internet protocols, and

client server based architecture. Laboratory work is essential in this course.

Contents

Introduction to Client / Server, Client / Server Components, Networking and Communication, Transport Layer Protocols, Introduction to Operating System, Understanding Middleware ,Business Process Re-engineering, Data Mining and Warehousing ,Performance Tuning and Optimization, and Securing a Client / Server System. The Recent trends in Client/Server Computing, and Distributed System Architecture.

ITC: 225 Software Engineering

Module Objectives

This module aims to introduce students with problems in large-scale software production. It should be associated with laboratory experiments to augment the concepts taught in the class.

Contents

Introduction to Software engineering, System Engineering, software process, Project Management, Requirement & Specification, Requirement Engineering, Architectural Design, Verification and Validation, Software Testing, Software cost estimation, Quality management, and Agile software development methods.

ITC 226: Management Information System

Module Objectives

This module aims to provide students with a background on the use and advantages of information systems in organizations with a focus on managerial aspects of MIS to promote an awareness of the economic, social, and ethical implications of such systems on society and IT professionals.

Contents

Managing digital firm, Management information system, Organizations and information systems, Electronic business, electronic commerce and the emerging digital firms, Redesigning the organization with information systems, Ethical and social issues in the digital firms, Security and control, Understanding the business value of systems and managing change.

ITC 227: IT Entrepreneurship and Supply Chain Management

Module Objectives

This module aims to impart entrepreneurial skills in student to effectively run business and efficiently manage the supply chain. Students are required to undertake project work in this module.

Contents

Overview of Entrepreneurship, Business Plan for a new venture-introduction, Overview of Supply Chain Management, Co-ordination in a Supply Chain, Supply Chain performance: Achieving Strategic fit and scope, Supply chain Drivers and Matrices, Designing the supply chain Network, IT in a Supply Chain, E-Business and the Supply Chain, Planning demand and supply in supply chain.

ITC 228: High Speed Network and Multimedia Networking

Module Objectives

This module aims to explain the motivation of high-speed networks and provide in-depth discussions on the challenges in designing such networks from transmission system and network point of views.

Contents

Overview of Digital Communication; Multimedia system, data representation and compression techniques; Multimedia communication standards, design and communications across

networks; Operating system supports and storage components in multimedia system; Multimedia Management, Quality of Service; Distributed multimedia system; High speed LANS and ATM and overview of other emerging new technologies.

ITC 229: Computer Security and Cyber Law

Module Objectives

This module aims to introduce the fundamental knowledge of computer security and the recent development in the enactment of cyber laws.

Contents

Introduction to Computer Security, Network Security, Cryptographic Algorithms, Web and Internet Security, Digital Signatures and Authentication Protocols, Malicious Logic, Intrusion Detection System(IDS), Unix systems Security and Security Evaluation Criteria, E-mail Security, and Cyber Laws.

ITC: 230 Economics of Information and Communications

Module Objectives

This module aims to examine information as an economic commodity and a public goods especially in relation to pricing, provision and regulation.

Contents

Managerial Economics Basic, Markets for Information Goods, The Role of Information in an Economy, Strategies for Pricing Information, Rights Management, Market Strategies: Switching costs and Lock-in, Networks and Positive Feedback, Strategies for Information Industries, Antitrust and Information Policy, Thriving in a new economy, and The knowledge-based new Economy.

ELECTIVE COURSE MODULES

ITC 301: System Administration - Win NT

Module Objectives

This module aims to provide students with the necessary skills to perform administrative tasks in Win NT.

Contents

Windows NT environment with Server and Work Station. File server. Services, Domain. Clients. Management. User defining and user rights. Directories, printing resources, and remote access. Trouble shooting, configuration and installation. Managing accounts. Auditing, security directory and file resources. Securing the system. Networking environment and communication. Networking browsing and booting Windows NT. Supporting applications.

ITC 302: Graphics User Interface Programming Using Visual C++

Module Objectives

This module aims to develop students' skills in programming with Visual C++ with the objective of enhancing skills in programming language.

Contents

Scable multi-tier applications for Windows and the Web. Optimized support for Internet. SQL and COM development, coding, compiling, debugging, multitasking, transaction support, message queuing, object pooling, security, and integrated component management services.

ITC 303: Computer Based Financial Engineering

Module Objectives

This module aims to develop students' skills in using computers, analyzing the financial operations of a business and the decision making process.

Contents

Design and implementation of the computerized financial models. Performance evaluations of commercial financial modeling software. Designing, coding, testing, and presenting financial decision models with the help of available software tools.

ITC 304: Electronic Reporting and Auditing of Accounting Information

Module Objectives

This module aims to develop students' skills in using software programs in accounting information system and electronic auditing.

Contents

Computer accounting system. Spreadsheet function (Excel). Application of Database function and commands in manipulating data. Coding of data. Use of MS Access and FoxPro in account reporting system. Concept of field and records of a database file. Import and export of database file. Simple programming in FoxPro to manipulate data. Use of Macro in MS Access. Sorting, indexing and queuing of the records. Preparation of report, chart and diagrams. Electronic auditing concept and use.

ITC 305: Object Oriented Analysis and Design

Module Objectives

This module aims to provide the knowledge of Object Technology and its approaches in solving the real life business problems.

Contents

Overview of System: System diagram; Complexity; The Object Model; Class: Nature of class, Relationship among classes and Identifying classes; Unified Modeling Language: Introduction, use case, class, object, sequence, collaboration and state chart of diagram; The process; and Introduction to CORBA.

ITC 306: Object Oriented Database Management System

Module Objectives

This module aims to provide the students the knowledge of Object Oriented Database Management System.

Contents

Introduction. Object Oriented Database Management System: Architectural Approach. Semantic Database Models and Systems. Object Oriented Database Systems: The object oriented database paradigm manifesto, OODBMS Architecture - An introduction. Performance Issues in OODBMS, Application Selection for OODBMS. Object / Relational Systems (ORDBMS): Open ODB / Odaptor.

ITC 307: Software Project Management

Module Objectives

This module aims to provide an overview of the roles, responsibilities and management methods of the software project manager. The module intends to impart the skills to develop approaches and styles of management for software projects.

Contents

Introduction to software project management, Software development model and formal methods, Software size and Cost Estimation, Software Project Planning, Software Project Risk Management, Software Process Resource Management, Software Project Performance Tracking and Monitoring, Software Project Configuration Management, Project Team Management and Organization, and Software Quality.

ITC 308: Operating Systems

Module Objectives

This module aims to provide the concepts of Operating Systems and Implementation of Systems Utilities for Inter-process communication in a multiprocessor environment.

Contents

Operating Systems - Principles: Introduction and history of operating systems, Operating systems as an extended machinery and resource manager, Operating systems structures. Process Management: Introduction, Inter process communication and Process scheduling. Input / Output. Memory Management. File System.

ITC 309: Data Mining and Data Warehousing

Module Objective

This module aims to develop the students with a basic understanding of fundamental principles and techniques of data mining and data warehousing and their use in the business organizations.

Contents

Introduction to Data Mining. Business application of Data Mining. Multidimensional Data Model. On- Line Analytical Processing models. On- Line Analytical Processing operations. Data Warehouse. Relationships between Data Warehouse, On- Line Analytical Processing and Data Mining technology. Data Warehouse processes and system architecture. Association Analysis: Single dimensional, Multilevel and Multidimensional association rules. Algorithms for Association rules. Cluster Analysis. Major clustering methods. Classification and Prediction. Decision trees. Data Mining using Neural Net, Genetic Algorithm and Bayesian Classifier. Mining Complex types of data: Multimedia Data Mining, Web data mining, Text mining and Mining heterogeneous database.

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