



**Bachelor of Computer Information Systems
(BCIS)**

Curriculum

Faculty of Management Studies

POKHARA UNIVERSITY

2005

**BACHELOR OF COMPUTER INFORMATION SYSTEMS (BCIS)
PROGRAM**

AN INTRODUCTION

Program objective

The Bachelor of Computer Information Systems (BCIS) program at the Faculty of Management Students (FNS) of pokhara University is designed with the following aims:

- To prepare students to take entry level managerial positions at the start of a professional career in computer and management
- To inculcate positive attitudes and practical skills essential for competent and responsible computer professional
- To develop a necessary foundation for higher studies in computer Information System.

Curricular Structure

The BCIS is a four-year program spread over eight semesters. A student needs to successful computer 126 credit hours of course work, project work and internship for graduation. The curriculum comprises of the following components:

- Computer Courses
- Management Courses
- Support Area Courses
- Elective Courses
- Project Work
- Internship

Program Feature

The Bachelor of Computer Information Systems (BCIS) program is the first of its kind in the county. It is an intensive program that strongly and adequately emphasizes both conceptual foundations and practical applications in the areas of information technology and management. As the BCIS program is comparable to similar programs elsewhere in the world, our students, upon graduation in the BCIS program, Will have an added advantage of being able to directly pursue Master's Degree in any University.

The medium of instruction and examination for BCIS program will be English. A student is expected to have good English language proficiency and an acceptable communication skill.

In the program, lectures are supported by case students, group discussions, project assignments, field visits, class presentations and other teaching methods. Students' participation in class, group-discussions and individual presentations is highly emphasized to develop their leadership and communication skills.

Entry Requirement for New Student

The entry requirement for a new student in BCIS will be intermediate or Higher secondary level (10+2) or proficiency certificate Level (PCL), or equivalent as recognized by pokhara University. In addition, the student must pass the entrance test conducted by University/colleges.

Admission procedure

A notice inviting application for admission is publicly announced. The application forms and information brochures are provided, on request, after the payment of the prescribed fee.

The concerned college scrutinizes the applications. The eligible candidates are informed to take the entrance test. The date and time for the entrance test are informed to the applicants by the concerned colleges. The college may also interview the candidates for final selection for admission.

The candidates, who are given provisional admission under special condition, are required to submit all necessary documents within a month of the beginning of regular classes. Otherwise, the admission will be canceled.

The Semester System

In the program, each course is assigned a certain number of credits depending on its lecture; tutorial and practical work hours in a week. One lecture/contact hour per week per semester is assigned one credit. That is, a three credit hours course has 48 class hours. A faculty member is designated as the coordinator for that course.

The prominent feature of the semester system are the process of continuous evaluation of a student's performance and flexibility to allow the students to progress at a pace suited to his/her individual ability, subject to the regulation of credit requirements.

Academic Schedule and Course Registration

The academic session consists of two semesters. The fall semester starts in September and the spring semester in March. Students are normally admitted to the program in the fall semester.

Students are required to register courses at the beginning of each semester. Since registration is a very important procedural part of the credit system, all students must present themselves at the college. Registration in absence may be allowed only in rare cases at the discretion of principal. A student's nominee cannot register for courses but will only be allowed to complete other formalities.

Addition and Withdrawal from the course

A student will have the option to add or drop from the course. This can, however, be done only during the first three weeks of the semester.

A student wishing to withdraw from a course should apply on the prescribed form within one month of the start of the semester. A full time student has to take a minimum of 12 credits.

Attendance Requirement

The students must attend every lecture, tutorial, seminar and practical classes. However, to accommodate for late registration, sickness and other contingencies, the attendance requirements will be a minimum of 80% of the classes actually held. If the student is absent from the college for more than four weeks without permission of the principal, his/her name will be removed from the college roll.

Normal and Maximum Duration of study

The normal duration and maximum duration for the completion of the requirements for the program is as follows:

- Normal duration: 4 Years (8 semesters)
- Maximum duration: 6 Years (12 semesters)

Repeating a course

A course may be taken only once for a grade, except when a student receives a 'D' or 'F' grade. Since passing of all courses individually is a degree requirement, the student must retake the failing course when offered and must successfully complete the course.

Retaking a course in which the student has earned a ‘D grade is optional. A student may be allowed to retake a course to achieve a minimum CGPA of 2.0. However, a student cannot retake a particular course more than two times. The grade earned on the retake will be substituted for the grade earned first time the course was taken. In no circumstances, a student can repeat a course more than twice.

Evaluation System

A student’s academic performance in a course is evaluated in two phases as;

1. Internally (Sessional work) by the concerned faculty member through quizzes, tutorials, lab works, home assignments, class tests, class participation, term papers etc.
2. Externally by the office of the controller of Examination through semester-end examinations.

A fifty percent weight is given to internal and fifty percent weight is given to external evaluation (semester-end examination). A student is required to pass the internal and external evaluation independently. The final grade awarded to a student in a course is based on his/ her consolidated performance in both internal and external evaluations.

Grading system

Grade	Honor Points (CGPA)	Description
A	4.0	Excellent
A-	3.7	
B+	3.3	
B	3.0	Good
B-	2.7	
C+	2.3	
C	2.0	Satisfactory
C-	1.7	
D+	1.3	
D	1.0	Minimum requirement
F	0	Failing

Only in very rare and unusual circumstances, if a student cannot finish all the required works for the course, he/ she may be awarded an incomplete of ‘I’. If all the required works are not completed within the following semester, the grade of ‘I’ will be automatically converted into ‘F’. The performance of a student is evaluated in terms of the following two indices:

1. The semester grade point average (SGPA) which is the grade point average for the semester and is given by:
2. $SGPA = \frac{\text{Total honor points earned in a semester}}{\text{total number of credit hours taken in a semester}}$
3. The cumulative grade point average (CGPA) which is the grade point average for all completed semester and is given by:
4. $CGPA = \frac{\text{Cumulative total honor point earned}}{\text{cumulative total number of credit hours taken}}$

Credit Transfer and Withdrawal

A maximum up to 25% of the total credit hours of course completed in an equivalent program of a recognized institution may be transferred/ waived for credit on the recommendation of the faculty. For transfer of credit, a student must have received a grade of B or better in respective course. Courses taken earlier than five years from the time of transfer may not be accepted for transfer of credit. However, a student transferring from one program to another program of Pokhara University may receive a credit of all the compatible courses completed with at least grade C.

Student may apply for withdrawal from the entire semester only on medical grounds. The principal will examine each application for semester withdrawal and depending on the merit of the case; he/she will make an appropriate decision. No partial withdrawal from courses registered in a semester will be considered.

Internship

The BCIS students are required to undertake an internship program approved by the Head of the program. A faculty supervises the student intern. The primary goal of internship is to provide a student with a real-life on-the-job exposure and an opportunity to apply theoretical concept in real life situation. Student's interest and intended area of concentration are taken into account while making internship placement decisions.

Grades will be awarded for the internship work. A student must obtain satisfactory grade in the internship. Failure to obtain passing will call for a retake of the internship program. Such retake may be allowed at most only once. The normal duration of the internship is 6 to 8 weeks, and it is undertaken during the summer after completing at least 48 credit hours of course works. The student must submit the internship report to the host institution and the University and give a seminar to the faculty and students.

Project Work

Students are required to undertake independent project assignment that involves fieldwork and empirical analysis of the information collected from the field. The students are also required to prepare a project on a prescribed format. The objective of the project work is to develop students' skills in research, particularly in areas of data collection, processing analysis, and report writing. The evaluation of the project work shall be external.

Unfair Means

Students are strictly forbidden from adopting unfair means in class assignments, tests, report-writing and final examination. The following would be considered of un fair means during examination:

- Communication with fellow students for obtaining help
- Copying from another student's script/paper
- Copying from disk, palm of hand or other incriminating documents
- Processing from any incriminating documents, Whether used or not

- Any approach in direct or indirect from to influence teacher concerning grade
- Unruly behavior with disrupts academic program.

If the instructor detects a student using unfair means, the student may be given an 'F' grade at the discretion of the Examination Board. Adoption of unfair means may result in the dismissal of the student from the program and expulsion of the students from the college and as such from pokhara University.

Unsatisfactory Results

Students may apply for retotalling or rechecking of their grades as per University rule, upon payment of prescribed fee.

Dismissal from the program

A student is normally expected to obtain a CGPA of 2.0 in the undergraduate level. A student, whose performance in the past semesters does not show the possibility of maintaining this CGPA, may be dismissed from the program.

Degree Requirements

For graduation a student should have:

- A 'D' or better grade in each of the courses as specified in the curricular structure section.
- Completed the internship
- Completed all the courses, project work and internship as specified in the curricular structure section within the maximum time period specified in the normal and maximum duration of study section
- A CGPA of 2 or better.

Distinction and Dean's List

A student who obtains a CGPA of 3.60 or better will receive the BCIS degree with distinction.

The Dean's list recognizes outstanding academics in the FMS. To qualify, a student must have a CGPA of 3.7 or better.

CURRICULUM STRUCTURE

FIRST YEAR

FIRST SEMESTER

Code	Description	Credit Hours	Per-requisite course	Core course
ENG 101.3	English I	3		
MTH 111.3	Mathematics I	3		
CMP 121.3	Programming Language	3		
MGT 101.3	Principles of Management	3		
ECO 101.3	Microeconomics	3		
	TOTAL	15		

SECOND SEMESTER

Code	Description	Credit hours	Pre- requisite course	Core course
ENG 102.3	English II	3		
MTH 112.3	Mathematics	3		
ELX 131.3	Digital Systems	3		
CMP 123.3	Object Oriented Programming	3		
ACC 101.3	Financial Accounting	3		
	TOTAL	15		

SECOND YEAR
THIRD SEMESTER

Code	Description	Credit Hours	pre-requisite course	core course
ENG 103.3	Business Communication	3		
ACC 102.3	Financial accounting II	3		
ECO 102.3	Macrocosmic	3		
EMP 224.3	Data Structure and Algorithms	3		
CMP 225.3	System Analysis and Design	3		
MTH 213.3	Mathematics III	3		
TOTAL		18		

FOURTH SEMESTER

Code	Description	Credit Hours	pre-requisite course	core course
STT 101.3	Business Statistics	3		
CMP 226.3	Database Management	3		
MGT 102.3	Organizational Relations	3		
ELX 232.3	Computer Architecture and Microprocessors	3		
MTH 214.3	Numerical Methods	3		
TOTAL		15		

THIRD YEAR
FIFTH SEMESTER

Code	Description	Credit Hours	pre-requisite course	core course
MKT 101.3	Principle of Marketing	3		
FIN 101.3	Finance I	3		
STT 102.3	Data Analysis and Modeling	3		
CMP 327.3	Networks and Data Communication	3		
CMP 328.3	Visual Programming Language	3		
TOTAL		15		

SIXTH SEMESTER

Code	Description	credit Hours	pre-requisite course	core course
ACC 103.3	Management	3		
CMP 329.3	Operations Systems	3		
MGT 104.3	Operations Management	3		
CMP 330.3	Computer Graphics	3		
CP 331.3	Web Technology I	3		
TOTAL		15		

FOURTH YEAR
SEVENTH SEMESTER

Cord	Description	credit hours	pre- requisite course	core course
MGT 103.3	Human Resource Management	3		
CMP 432.3	Web Technology II	3		
	Elective I	3		
CMP 433.3	Simulation and Modeling	3		
MGT 106.3	International Business	3		
INT 341.3	CIS Internship	3		
TOTAL		18		

EIGHTH SEMESTER

Cord	Description	credit Hours	pre-requisite course	core course
ECO 403.3	Digital Economy	3		
	Elective II	3		
	Elective III	3		
PRJ 442.6	Project Work	6		
TOTAL		15		

Electives

1. Image processing and Patten Recognition
2. Distributed Database Management System
3. Net Technologies
4. Financial Institutions and Markets
5. Internet, Intranet and Applications

BCIS
First Year
First Semester

ENG 101.3 (Credit hours 3)

English I

BCIS, First Year, First Semester

Course objectives:

This course contains informative reading to improve reading skills, exercises to help improve listening skills, effective writing exercises to develop useful techniques in writing and realistic writing to give an opportunity to express oneself. The course aims to develop the overall skills in the use of English language. Specially it aims to:

1. revise and consolidate on what the students have already learnt in the +2 or higher secondary course;
2. develop and extend their knowledge further;
3. develop their reading, listening and writing skills;
4. orient them towards creative writing;
5. polish students "problem areas" of English grammar;
6. develop their vocabulary skills; and
7. develop the knowledge and practice of functional language needed in different situations.

The method of teaching should be student-centered and activity oriented. Extensive use of audiovisuals and workbook should be made.

Course Contents:

- | | |
|---|-----------------|
| 1. Module I | 16 hours |
| Desert Island, Around the world, That's show business! Food and drink, Crossing the channel | |
| 2. Module II | 16 hours |
| Buildings and homes, put it in writing, The third age, It takes all sorts.....Communication | |
| 3. Module III | 16 hours |
| The English-speaking world, Travelers, Love Stories, On business, Here is the news | |

Text Book:

Jones, Leo: Cambridge Advanced English, Cambridge: CUP.

References:

Dictionary, Video and cassettes

MTH 111.3 (Credit hours 3)

Mathematics I

BCIS, First Year, First Semester

Course objectives:

This course aims to provide students with an opportunity to review basic mathematical tools necessary for computer information system core courses.

Course contents:

- 1. Sets** **6 hours**
Sets and set operations, finite and infinite sets, non-denumerable sets and denumerable sets, relations and functions, ordered sets, linear point sets, graphs of algebraic, and transcendental functions, inverse and composite functions.
- 2. Real Numbers** **7 hours**
Types of real numbers, absolute value of real numbers, open and close intervals, linear inequality and their graph, mathematical induction.
- 3. Functions and Limits** **8 hours**
Metric space, neighborhood and point accumulation, sequence, limit of sequence, Cauchy sequence, limit of function, continuity of function, necessary and sufficient conditions.
- 4. Differentiation** **7 hours**
Rate of change and the derivatives, rules of differentiation, differentials, logarithms, derivatives of algebraic and transcendental functions, the derivatives and slope of a curve, cost curves, demand curves, illustrations.
- 5. Functions of several variables** **7 hours**
Functions of two variables, partial derivatives, geometrical presentation of partial derivatives of algebraic and transcendental functions, the differentials, implicit functions, homogeneous function
- 6. Maxima and Minima Function** **6 hours**
Increasing and decreasing function, convexity of curves, maxima and minima of one variable or more variables, maxima and minima with subsidiary conditions-lagrange method, multiplier method, competitive equilibrium of firm, monopoly price and output, discriminating monopolist, illustrations.
- 7. Polynomials and Quadratic Equations** **7 hours**
Polynomials and polynomial equations (higher degree), factor and remainder theorem, fundamental theorem of algebra (without proof), roots of polynomial equation, nature of the roots of quadratic roots, relation between roots and coefficients, formation of quadratic equations.

Text Book:

1. Yamane, Taro: Mathematics for Economists, Prentice Hall of India.
2. Chiang, Alpha C: Fundamental Methods of Mathematical Economics, McGraw Hill International.

CMP 121.3 (Credit hours 3)

Programming Language

BCIS, First Year, First Semester

Course objectives:

This course aims to introduce students to the imperative programming principles and acquaint them with the C programming language.

Course Contents:

- 1. Historical Development** **4 hours**
History of computing and computers, Types of computers (analog and digital), Generations of computers
- 2. Introduction to Computers** **4 hours**
Fundamental concepts of computer, Memory, hardware, software and firmware, Block diagram of digital computer, Computer peripherals
- 3. Programming preliminaries** **10 hours**
Introduction to program and programming language, Types of programming language, Generations of programming languages, program design methodology, software development: stages of software development, Text editor; Assembler, Compiler, Interpreter, Algorithms, Flowcharts, pseudo codes, ASCII
- 4. Introduction C** **16 hours**
C Basics; variables and constants, The simple data types in C. Operators, Header files, input and output statement: Unformatted I/O, Type conversion, Loops and Decisions (for loop, while loop, Do while loop, Nested loop case-break and continue statements, If Else, Else-If and Switch statements), Functions (variables, Returning a value from a **function**, Sending a value to a function, Arguments, preprocessor directives, C libraries, Macros, Header files and proto typing), Recursion
- 5. Arrays and strings** **4 hours**
Initializing arrays, Multidimensional arrays, string; functions related to the string
- 6. Structures and Unions** **3 hours**
Initializing structures, Nested type structure, Arrays and structures, Unions
- 7. Pointers** **4 hours**
Pointer data type, pointers and Arrays, pointers and functions, pointers and structures
- 8. Files and file handling** **5 hours**
Opening and creating a file in different modes (Read, Write and Append)

Text Book:

1. V. Rajaraman: Computer programming in C, prentice-Hall of India, **New Delhi**

Reference Book:

1. Kelley A& pohl I: A Book on C, Addison Wesley Longman Singapore Pvt. Ltd

MGT 101.3 (Credit hours 3)

Principles of Management

BCIS, First Year, First Semester

Course Objectives:

This course aims to familiarize students with the fundamental principles of management with a view to their understanding of the functions of management, evolution of management theories, globalization of management and emerging concepts in management.

Course Contents:

- 1. Introduction** **4 hours**
Concepts of management, the management process and function, Types and roles of managers, managerial levels and skills, emerging challenges for management
- 2. Management Theories** **6 hours**
Scientific management school, Administrative management, Behavioral school, Management science school, systems approach, contingency approach
- 3. Environmental context** **5 hours**
Concept of environment, External environment and internal environment, Organization-environment relationships, Managerial ethics, social responsibility, emerging business environment in Nepal
- 4. Planning and Decision Making** **6 hours**
Planning and overview, Importance of planning, purpose and functions of organizational goals, Types of planning, concept of strategic planning, situational analysis, Managerial decision making: nature of decision making, styles and conditions of decision making, group decision making, tools of planning and decision making
- 5. Organizational Decision Making** **8 hours**
Meaning, principles and approaches to organizing, job design, Departmentation, Nature and types of organization design, situational influence on organizational design, informal organization, Authority, power and responsibility, Delegation and decentralization of authority, Emerging concepts in organizing
- 6. Leadership and Motivation** **5 hours**
Understanding individuals in organization, Nature, functions and style of leadership, Approaches to leadership, The motivational process, the need-hierarchy and motivation-hygiene theories, Motivation through employee participation
- 7. Communication and Team Work** **6 hours**
Concept, nature, and forms of organizational communication, Informal communication, Interpersonal communication, barriers to communication, Groups and teams: concept and characteristics, Interpersonal and inter-group conflicts, managing conflicts
- 8. Control and Quality Management** **4 hours**
Elements of control, Nature and types of control, Managing control in organization, Information for effective control, Multinational companies-meaning and types' effects and benefits
- 9. International Management** **4 hours**
Globalization-concept, nature and forms Methods of globalization, changing international management scenario Multinational companies- meaning and types, effects and benefits

Text Books:

1. Griffin, R: Management, ATTBS, Delhi.
2. Pant, P.R.: Principles of Management, Buddha Academic Enterprises.

Reference Books:

1. Robbins P. and Coulter, N.: Management, prentice Hall of India.
2. Stoner, J. A., R, E, Freeman and D. R. Gilbert: Management, prentice Hall of India.

ECO101.3 (Credit hours 3)

Microeconomics

BCIS, First Year, First Semester

Course Objectives:

Course Contents

- 1. Introduction** **3 hours**
Introduction to economic theory: problem of scarcity, Introduction to microeconomics and macroeconomics, Function of microeconomic theory, Comparative statics and dynamics, positive and normative economics
- 2. Demand, Supply and Equilibrium** **7 hours**
Meaning and concept of Demand, Individual demand (Law of demand and Demand curve), market demand curve, meaning and concept of supply Individual supply (Law of supply and curve), market supply curve, shifts in demand and supply curves and the changes in equilibrium
- 3. Measurement of Elasticities** **4 hours**
Price elasticities of demand, Arc and point elasticity, Total expenditure (revenue) and elasticity, Income elasticity, cross elasticity and price elasticity of supply
- 4. Consumer Demand theory** **10 hours**
Cardinal approach of utility, Consumer equilibrium, ordinal approach of utility, indifference curve, marginal rate of substitution, budget line consumer equilibrium, income consumption curve, price consumption curve, separation of substitution and income effect from price effect for normal, inferior and Giffen good
- 5. Theory of Production** **7 hours**
Production function, production with one variable input: average and marginal product, Law of diminishing marginal returns, production function with two variable inputs: Isoquants, marginal rate of technical substitution, Law of returns to scale, Isocost lines, optimum combination of inputs, Expansion path
- 6. Costs of Production** **4 hours**
Short-run total, average and marginal cost curves, Geometry (shape) of short-run cost curves with their relationships, Long-run average and marginal cost curves: derivations and their shapes
- 7. Concept of Revenue Curves** **2 hours**
Nature of revenue in various markets, Total, average and marginal revenue curves, Relationship between average and marginal revenue curves market structures
- 8. Product Pricing**
Perfect competition; pricing under perfect competition; equilibrium in short-run and long run, monopoly; pricing under monopoly, short and long period, monopolistic competition; pricing under monopolistic competition; short and long period, comparison among various market structures
- 9. Theory of Factor Pricing** **4 hours**
Factor pricing in perfectly competitive markets, factor pricing in imperfectly competitive markets, bilateral monopoly

Text Book:

1. Mankiw, N. Gregory: Principles of Microeconomics, The Dryden press, Harcourt Brace Collage publishers

Reference Book:

1. Dominick Salvatore: Theory and problems of microeconomics, 3/ed, Schism's Outline series McGraw-Hill, Inc, Singapore.

BCIS
First Year
Second Semester

ENG 102.3 (Credit hours 3)

English II

BCIS, First Year, Second Semester

Course objectives:

This course aims to develop writing skills in the students. It functions as a mini-rhetoric offering extensive advice on planning, writing and revising, including brainstorming, clustering, journal writing, and editing the course introduces students to the various modes of writing and with enough examples it purpose and audience, recognize the stylistic and modes and comprehend an essay's content, understand the writer's purpose and audience recognize the stylistic and structural techniques used to shape the essay, and their sensitivity to the nuances of word choice and figurative language, in addition, there are ample "Writing Assignments: and "Collaborative Writing Activity" for the students to apply what they have learnt.

Course Contents:

Module I

16 hours

1. Introduction

Reading to Write

2. The Writing Process

Invention, Arrangement, Drafting and Revision

3. Narration

Sandra Sisneros, Only Daughter; Donna Smith-Yokel, MY Mother Never Worked

4. Description

Mark Twain, Reading the River; N. Scott Momaday, The Way to Rainy Mountain

Module II

16 hours

5. Exemplification

Robert M. Linlinfeld and William L. Rahje, six Enviro-Myths

Richard Leaderer, English is a Crazy Language

6. Process

Alexander petrunkevitch, the spider and the wasp; wasp; Larry Brown, On fire

7. Cause and Effect

Norman Cousins, Who killed Benny paret?

Marie Winn, Television: the plug-In Drug

8. Comparison and Contrast

Bruce Catton, grant and Lee" A Study in Contrast

Deborah Tannen. Sex, Lies, and Conversation

9. Classification and Division

Allen pace Nilsen, sexism in English: A 1990s Update

Stephanie Ericsson, The Way WE Lie

Module III

16 hours

10. Definition

Judy Brady: I Want a Wife

Burno Bettelheim. The Holocaust

11. Argumentation

Structuring an Argumentative Eassay

Tomas Jefferson, the declaration of Independence

Debate Casebook: Nulticultural Education

12. Combining the patterns

Lars Eighner, On Dumpster Diving

13. Using and Documenting Sources

Paraphrasing, summarizing and Using Quotations, Avoiding plagiarism, Using APA to cite and Document sources

Text Book:

1. Kirszner, G. Laurie & Stephen R. Mandell: patterns for college writing: A Rhetorical Reader and Guide, 7th ed.
New York: St. Martin's press.

MTH 112.3 (Credit hours 3)

Mathematics II

BCIS, First Year Second Semester

Course Objectives:

This course aims to provide students with an opportunity to review basic mathematical tools necessary for computer information systems core courses.

Course contents:

- 1. Integration and its applications** **19 hours**
Riemann integral, fundamental theorem (Without proof), techniques of integration, evaluation and approximation of definite integrals, improper integrals, the Beta and Gamma functions, applications of definite integrals, quadrature, rectification, volume and surface integral.
- 2. Differential Equations** **12 hours**
Introduction, solution, first order: variable separable, homogeneous, linear, exact linear differential equation, linear differential equation of second order with constant coefficient, initial and boundary value problems
- 3. Series** **7 hours**
Series, Geometric series, Taylor's Theorem (Without proof) Taylor's series, Exponential series, Complex numbers
- 4. Vectors** **3 hours**
Vectors, types of vectors, product of two and three vectors, vector spaces, linear dependence, and basis
- 5. Matrices** **7 hours**
Matrices, elementary operation matrix algebra, determinants, inverse matrix, linear transformations, orthogonal transformations, rank of matrices

Text Book:

1. Yamane, Taro: Fundamental Methods of Mathematical Economist, Prentice-Hall of India.

Reference Books:

1. Chiahg, Alpha C.: Fundamental Methods of Mathematical Economics, McCrae-Hill International.
2. George B. Thomas, jr, and Ross, L. Finney: Calculus and Analytical Geometry, Narosa Publishing House.

ELX 131.3 (Credit hours 3)

Digital Systems

BCIS, First Year, Second Semester

Course objectives:

This course aims to develop methods of designing, constructing and building logic circuits and also to introduce the operation and application of microprocessor. Topics will include basic gates, number system, flip- flops, decoder, encoder and memory

Course Contents:

- 1. Number System 6 hours**
Decimal, Binary, Octal and Hexadecimal Number System; Basic arithmetic operation of above number systems (addition, subtraction, multiplication etc), I'S and 2' S compliment; Gray code and alphanumeric characters'; Binary coded decimal and uses
- 2. Boolean Algebra and Logic Gates 6 hours**
Definition of a digital system; Basic theorem and properties of Boolean Algebra; Boolean functions; Digital logic gates and truth tables; Fundamental relationship of basic gates
- 3. Simplification of Boolean Functions 6 hours**
The Karnaugh map; Two and three variable maps; four variable maps product of sums simplification; NAND and NOR implementation; Don't care conditions; practical design steps
- 4. Combinational Logic With MSI and LSI 8 hours**
Introduction; Design procedures; Half and Full adders; Subsectors; Code conversion; BCD to seven segment decoders; Encoder/ Decoder; Multiplexers and Demultiplexers
- 5. Sequential Logic 9 hours**
Introduction; Flip-Flops: RS,D-Type, Clocked D-Type, J-K, and T type flip-flop, Master slave, Triggering of flip flops (positive, negative and level trigger); Analysis of clocked sequential Circuits; State reduction and assignment; Flip-Flips excitation Tables and design procedures
- 6. Registers and Counters 6 hours**
Introduction; shift Registers (Serial in serial out, serial in parallel out, parallel in parallel out, parallel in serial out); Ripple counters; Design of divide by N counters; Synchronous Up/Down Counters; Timing sequences; Buffers
- 7. Central Processor Organization 7 hours**
Processor Bus Organization; Arithmetic Logic Unit (ALU); Stack organization and memory stack formats

Laboratory:

1. Verification of basic gates function (OR, AND, NAND, NOR, EX-OR, EX-NOR)
2. Multiplexers and demultiplexers (using the principle learned in K-Map).
3. Encoders and decoders (using the principle learned in K-Map).
4. Adder and decoders, in this laboratory students will construct a full adder and subtract or using basic design principle

- 5.RS, D-Type, clocked D and master slave. In this laboratory student will design and verify the concepts of different flip-flops based on basic logic gates.
- 6.Design of counters (decade counters and binary counters).Students will design decade and binary counters verify the concepts using the CAD tools.
- 7.Design of shift registers (serial in serial out and parallel in parallel out)

Text Books:

1. Malvino: Digital Computer Electronics
2. Morris Mano: Digital Logic and Computer Design
3. Frederic J. Mowle: A Systematic approach to digital logic design

CMP 123.3 (Credit hours 3)

Object Oriented Programming

BICS, First Year, Second Semester

Course Objective

Course Objectives:

This course aims to provide an introduction to windows programming using object oriented Language. Students learn the concepts needed to write programs using event-driven, object-oriented.

Course Contents:

- 1. Introduction to Oriented Programming** **4 hours**
Limitation of procedural Language, object oriented approach, features of object oriented language: Classes, Object, Inheritance Reusability, Polymorphism
- 2. Classes and Objects** **8 hours**
Components of class, scope of public, private and protected members, constructors and constructor overloading, Destructors, class object and memory, static Data and class member
- 3. Inheritance** **6 hours**
Derived class and base class, Derived class constructors, Overriding member function
- 4. Operator overloading and data type conversion** **6 hours**
Overloading unary operators, Overloading Binary Operators, Data type conversion
- 5. Pointers** **7 hours**
Address and pointers, pointer and Arrays, pointers and Functions, pointer and string, memory management using new and delete
- 6. Virtual function and polymorphism** **7 hours**
Virtual function and normal function, pure virtual function, polymorphism
- 7. Exception Handling** **4 hours**
Compile time exception handling, Run Time exception handling
- 8. Miscellaneous Topics** **6 hours**
Friend function, pointer, Templates

Reference Books:

1. R. Lafore: Object Oriented Programming in Turbo C+ +, Galgotia publications Ltd. India,1999
2. David parsons: Object Oriented Programming with C+ +

ACC 101.3 (Credit hours 3)

Financial Accounting I

BCIS, First Year, Second Semester

Course objectives:

This course aims to provide students with the basic concepts and practices of financial accounting with a view to develop their skills in preparing and presenting the financial statements of an organization as a part of the accounting information system.

Course Contents:

- 1. Introduction** **4 hours**
Concept of accounting, forms of business organization and nature of business activity; users of accounting information and their needs; fields of accounting; financial statements: the tools for communication; generally accepted accounting principles; qualitative characteristic of accounting information; objectives of financial statements; the accounting profession
- 2. Recording, Handling and Summarizing the Accounting Information** **9 hours**
Role of source documents, Recording of transaction and events, the accounting equation; the double entry system; analysis of transactions; rules of debits and credits for assets, expenses, liabilities, capital and income; cash accrual and hybrid system of accounting; journal- general and special including cash and bank books; role of vouchers, T-accounts; trial balance; concepts of the annual report and financial statements
- 3. Income Statement** **4 hours**
Concept of income statement; major components of income statements: revenues, cost of sales, gross margin, administrative expenses, selling and distribution expenses, gains and losses, net income and retained earnings; formats of income statements; retained earning statements, preparation of income statements (vertical multi-step format)
- 4. Balance Sheet** **4 hours**
Concepts of balance sheet; major components of balance sheet; assets, liabilities and stockholders' equity; preparation of balance sheet (vertical, classified format)
- 5. Work Sheet** **8 hours**
Accrual and adjusting entries; T-accounts, opening and closing entries, preparation of income statement and Balance sheet with adjustments using a work sheet
- 6. Statement of cash flows** **8 hours**
Cash flows and accrual accounting; purpose of the statement of cash flow; operating, investing and financing activities; formats of statement of cash flows; preparation of flow statement (vertical format)
- 7. Annual Repot** **2 hours**
Meaning and components of an annual report
- 8. Accounting Information System and the Use of computers in Accounting** **9 hours**
Accounting information system in modern business organizations; role of computer in accounting; recording transactions, extracting ledger, trial balance and presenting the financial statement received from the accounting package; using computerized account software; retrieving various reports from the system

Text Book;

1. Porter, Gary A. Norton, Curtis L., Financial Accounting: The Impact on Decision Makers, The Dryden press USA.

Reference Books:

1. R. Naryanswamy, Financial Accounting: A Managerial perspective Prentice Hall of India.
2. Accounting package
3. Sharma, Narendra, Acharya, C: Financial Accounting, Budha Academic Centre

BCIS
Second Year
Third Semester

ENG 103.3 (Credit hours 3)

Business Communication BCIS, Second Year, Third Semester

Course Objectives:

This course aims to impart to student the knowledge of effective written and oral communication skills for handling business operations.

Course Contents:

- 1. Communication in Workplace** **5 hours**
The role of communication in business, business communication model, perception and reality, communication malfunctions
- 2. Fundamentals Business Writing** **5 hours**
Adaptation and selection of words, construction of clear sentences and paragraphs, writing for effect
- 3. Quality of Effective Correspondence** **6 hours**
Objectives of business letter, primary goal, conversational style, you- viewpoint, positive language, courtesy, emphasis by position and sentence structure, coherence in letter, problems of cultural difference, ethics and public relations writing
- 4. Business Correspondence** **10 hours**
Direct inquiry, indirect situations, persuasive requests and collections, sales and applications, memorandums
- 5. Business Report Writing** **6 hours**
Basic of report writing and readability management, report structures, graphics and visual aspects of report writing
- 6. Public Speaking and Oral Reporting** **5 hours**
Making formal speeches: Selection of topic, presentation method, audience analysis, appearance and bodily action, use of voice and visual aids, Oral reporting: definition, differences between oral and written reports, planning the oral report, problems for speeches and oral reports
- 7. Additional Oral Communication Activities** **5 hours**
Conducting and participating in meetings, using the telephone, interview, listening
- 8. Nonverbal Communication** **3 hours**
Definition, classification of nonverbal communication
- 9. Selected Topics** **3 hours**
Technology-enabled communication, tools for presentation, cross-cultural communication

Text Books

1. Lesikar, Raymond V. and John D. Pettit jr.: Business Communication: Theory and practice, Irwin Inc: India.
2. Lesikar, Raymond V, John D. Pettit jr. and Marie E. Flatley: Business Communication, Irwin.

ACC 102.3 (Credit hours 3)

Financial Accounting II
BCIS, Second Year, Third Semester

Course objectives:

This course aims to equip students with the knowledge and skill in handling financial accounting system specifically it aims to acquaint students with the

- Recording, accounting, valuation and disclosure in the financial statements of the inventories and the cost of goods sold;
- Accounting and disclosure of cash, cash equivalents and receivables;
- Accounting and disclosure of non-current assets and liabilities;
- Accounting and disclosure of current liabilities; and
- Accounting and presentation of owners' equity and dividends.

Course Contents:

- 1. Accounting for Inventories and Cost of Goods Sold** **8 hours**
The nature of inventory; cost of goods sold model; inventory valuation and income measurement; inventory costing methods; choice of a method; methods of inventory estimation; effect of inventory valuation method on the cost of goods sold; disclosure in the financial statements
- 2. Accounting for Cash, cash Equivalent and Receivables** **8 hours**
Cash and cash equivalent: components of cash and cash equivalents; preparation of the bank reconciliation statement and the need for adjustments to accounting records; petty cash balance sheet presentation cash and cash equivalent and Accounts receivable: valuation of accounts receivables, methods to account for uncollectible amount, balance sheet presentation; Notes receivable: interest bearing notes, non-interest bearing notes, presentation of the notes receivable and related aspects in the financial statements
- 3. Accounting for Non-Current Assets** **11 hours**
Concepts of capital, revenue and deferred revenue expenditure; types of operating assets; acquisition of operating assets and the capitalization process; depreciation: concepts, methods, and accounting (straight line and diminishing balance method including accelerated depreciation method), disposal of assets and accounting for gains and lose disclosure in the financial statements
- 4. Accounting for Current Liabilities** **5 hours**
Accounting payable; not payable, tax payable, warranties and accrued liabilities; balance sheet presentation
- 5. Accounting for Non-Current Liabilities** **9 hours**
Bonds payable; issuance of bonds, characteristics of bonds, factors affecting bond price, premium or discount on issuance of bonds, bond amortization, redemption of bonds, disclosure in financial statements. Accounting for leases. Operating and financial lease; balance sheet of presentation
- 6. Accounting for Stockholders' Equity and Dividends** **7 hours**
Stockholders' Equity: components of the stockholders' equity section of the balance sheets; types of stock, issuance of stock, stock issued for cash and non-cash consideration and on a subscription basis, treasury stock retirement of a stock; presentation in the financial statements; Dividends: meaning and types of dividend-cash dividend, cash dividend for ordinary stock and preferred stock; stock dividend and stock split, disclosure in financial statements

Text Book:

1. Porter, Gray A. and Norton, Curtis L, Financial Accounting: The Inmpact on Decision Makers, The Dryden pres s , USA.

Reference Book:

1. Narayanswamy, R., Financial Accounting: A Managerial perspective, prentice Hall of India, New Delhi.

ECO 102.3 (Credit hours 3)

Macroeconomics

BICS, Second Year, Third Semester

Course objectives:

This course aims to familiarize students with the overall economic system and basic concepts of macroeconomics.

Course Contents:

- 1. Nature and Scope of Macroeconomics** **3 hours**
Meaning and concept of macroeconomics; Basic issues in macroeconomics: unemployment, inflation, business cycles, and economic growth; scope and importance of macroeconomics; Distinction and interdependence between microeconomics and microeconomics
- 2. Circular Flow of Income and Expenditure** **4 hours**
Circular flow with saving and investment, circular flow in a three- sector closed economy, Adding foreign sector: circular flow in a four-sector open economy, Importance of the circular flow
- 3. National Income: Concept and Measurement** **7 hours**
Meaning and definitions of National income, Various concepts of national income: Gross Domestic product/ output/ Income, Gross National product/ output/ Income, Net Domestic/ National product, GDP/GNP/NNP at market price, GDP/GNP/NNP at factor cost, Real and Nominal GDP/GNP/NNP, Methods of computing/measuring GDP/GNP/NNP: Income method, Expenditure method, Value added method, personal income, Disposable Income, and per capita income, Difficulties in the measurement of National income, Importance of National income analysis
- 4. Classical Theory of Employment** **2 hours**
Classical theory of employment and output, summary of the classical model (including say's law and Quantity theory of money), Keynes's criticism of classical theory
- 5. Principle of Effective Demand** **2 hours**
Aggregate demand price, Aggregate supply price, Determination of effective demand, Importance of effective demand, Repudiation of say's law and full Employment Theory
- 6. Consumption Function and Saving Function** **2 hours**
Meaning of consumption function, Keynes's psychological law of consumption, Meaning and significance of marginal propensity to consume (MPC) and Average propensity to consume (APC), Determinants of the consumption function, Measures to raise the propensity to consume, saving function
- 7. The Investment Functions** **3 hours**
Meaning of capital and investment, Types of investment: Induced vs. Autonomous Investment, Determinants of investment, marginal Efficiency of capital (MEC) marginal Efficiency of Investment (MEI); Relation between MEC and the MEI
- 8. Income Determination in Closed and Open Economy (Goods Market Equilibrium)** **3 hours**
Meaning and concepts goods market, Two-sector economy: Determination of the equilibrium level of income (Goods market equilibrium) with aggregate expenditure and

aggregate output, Equilibrium with saving and investment, Equilibrium level of income in three-sector and four-sector economy.

9. The Concept of Multiplier

2 hours

Concept of multiplier: investment multiplier, government expenditure multiplier, tax multiplier, export multiplier, and import multiplier, working principle of the multiplier in simple two sector economy, Determination of multiplier in two-three-and four-sector economy, Leakages of multiplier, Importance of multiplier.

10. Theories of interest Rate (Money Market Equilibrium)

4 hours

Concept of money market, Classical theory of interest and its criticism, Loadable funds theory of interest and its criticism, Keynes's liquidity preference theory of interest

11. IS and LM Function: General Equilibrium of product and Money Markets

4 hours

The product (goods) market, Deriving the IS curve, The money market, Deriving the LM curve, General equilibrium of product and money market with IS and LM curves, Shift in the IS and LM functions, changes in general equilibrium, simultaneous shift in the IS and LM function

12. Macroeconomic Equilibrium

2 hours

Derivation of aggregate demand curve (AD), Derivation of aggregate supply curve (AS) Equilibrium with AD-AS, change in macroeconomic equilibrium with shift in AD and AS

13. Theories of Inflation

5 hours

Meaning of inflation, measures of inflation: CPI, WPI, GDP Deflator, inflationary gap, causes of inflation: Demand-pull inflation, cost-push inflation, Mixed demand pull cost-push inflation, Effects of Inflation, The Philips curve: The short-run relationship between unemployment and inflation

14. Business Cycles

1 hours

Meaning of business cycles (economic fluctuations), phases of a typical business cycle: Recovery; prosperity; recession, and depression, counter cyclical measures.

15. Fiscal and Monetary Policies

4 hours

Objectives, tools and policy measures in developing countries

Text Book:

1. Manliw, N. Gregory: (1997). Macroeconomics (3rd ed.), New York: Worth publishers

Reference Book:

1. Donbush, Rudiger; Fisher, Stanley; and startz Richard: (2001); Macroeconomics (8th ed.), New Delhi: Tata McGraw Hill.

CMP 224.3 (Credit hours 3)

Data Structure and Algorithms

BCIS, Second Year, Third 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.

Course Contents:

- 1. Introduction** **3 hours**
What is the subject about? Mathematics review, Brief introduction to Recursion, C++ at a glance
- 2. Algorithm Analysis** **3 hours**
Mathematical background, Model What to analyze Running time calculations
- 3. Lists, Stacks, and Queues** **5 hours**
Abstract data types (ADTs), The list ADT, The stack ADT, The queue ADT
- 4. Trees** **6 hours**
Preliminaries, Binary trees, The search tree ADT-Binary search trees, AVL trees, splay trees, Tree traversals (revisited), hashing
- 5. Hashing** **6 hours**
General idea, Hash function, Open hashing (separate chaining), Closed hashing (open addressing), Rehashing, Extendable hashing
- 6. Priority Queues** **6 hours**
Model, Simple implementation, Binary heap, Applications of priority queues, D- heaps, skew heaps, Binomial queues
- 7. Sorting** **7 hours**
Preliminaries, Insertion sort, A lower bound for simple sorting algorithms, Shell-sort, Merge-sort, Quick-sort, Sorting large objects, A general lower bound for sorting, Bucket sort, External sorting
- 8. 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
- 9. 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 C ++

1. Implementation of stack
2. Implementation of linear and circular queue
3. Solution of TOH and Fibonacci recursion
4. Implementation of Link list: Singly, and doubly linked
5. Implementation of Tree: AVL tree, Balancing of AVL
6. Implementation of merge sort
7. Implementation of search: sequential, Tree and Binary
8. Implementation of Graphs: Graph traversals
9. Implementation of hashing
10. Implantation of heap

Text Book:

1. Langsam, y., Augustin, M. J. and Tanenbaum, A; M; Data Structure Using C and C ++, Prentice Hall of India
2. Rowe, G. W.: Introduction to Data Structure and Algorithms with C and C ++, Prentice Hall of India

3. Mark, Allen, Weiss Data Structure and Algorithms Analysis in C ++

Recommended: Any C++ book

CMP 225.3 (Credit hours 3)

System Analysis and Design

BCIS, Second Year, Third Semester

Course objectives:

This course aims to impart to the theory and practice of designing information systems to meet user needs, including problem investigation and the analysis, design and implementation of system. Topics include the system development cycle, system modeling techniques, interface to database management systems. Monitoring and control, review and maintenance, and project management includes class projects a CASE tool.

Course Contents:

- 1. The Context of System Analysis and Design** **4 hours**
Players in the system Game, Sound Stage Entertainment Club, How to Use the Demonstration case, Why study system Analysis and Design Methods? Information Workers: system Owners, system Users, System Designers, System Builders, System Analysis, Information Technology Vendors and Consultants; The Modern Systems Analyst: Why do Business Need Systems Analysts? What is a Systems Analyst? What does a System Analyst do? Where Do System Analyst Work? Modern Business Trends and Implications: Total Quality Management Business process Redesign, Continuous process Improvement, Globalization of the Economy, Information Technology Trends and Drivers; preparing for a career as a systems Analyst: Working Knowledge of Information Technology Computer programming Experience and Expertise, general Business Knowledge, problem-solving skills, Interpersonal Communication Skills, Interpersonal Relations Skills, Flexibility and Adaptability, Character and predictions; Where do you go from here?
- 2. Information System Building Blocks** **3 hours**
The product – Information system: Transaction processing systems, Management Information systems, Decision support systems, Expert systems, Office Automation systems, putting it All Together; A Framework for Information systems Architecture, Data Building Blocks, process building Blocks, Interface Building Blocks, Using the framework for Information systems Architecture, Where do you go from here?
- 3. Information Systems Development** **4 hours**
The process of systems Development: The Capability maturity model, system Life Cycle versus systems Development Methodologies, Underlying principles for systems Development; A Systems Development Methodology: project identification, project phases, Cross Life cycle Activates; Alternative Routes and Methods: Model-Driven Development Route rapid Application Development Route, Commercial Off-the shelf package software Route, Hybrid Approaches, The Maintenance and Reengineering Route; Automated Tools and Technology: CASE-Computer-Aided system Engineering, Application Development Environments, process and project Managers, Where do you go from here?
- 4. Project Management** **4 hours**
What is project Management? The Causes of failed, The project Management Body of knowledge; The project Management Life Cycle: Activity 1-Negotiate scope, Activity 2- identify Tasks, Activity 3- Estimate Tasks Durations, Activity 4-Specify Intertask Dependences, Activity 5-Assign Resources, Activity 6-Direct the Team Effort, Activity 7-Monitor and Control progress, Activity 8-Assess project Results and Experiences, Where do you go from here?
- 5. System Analysis Methods** **6 hours**
System Analysis: What is Systems Analysis? System Analysis Approaches, Model-Driven Analysis Approaches, Accelerated Analysis Approaches, Requirements Discovery Methods, Business Process Redesign Methods, Fast systems Analysis Strategies; The preliminary investigation phase: Task 1.1 –

List problems Opportunities, and Directives, Task 1.2 – Negotiate preliminary scope, Task 1.3 – Assess project Worth, Task 1.4 –Plan the project, Task 1.5 –Present the project and plan; The problems Analysis phase: Task 2.1- Study the problem Domain, Task 2.2- Analyze Problem and Opportunities, Task 2.3 – Analyze Business process, Task 2.4- Establish System Improvement Objectives, Task 2.5- Update the project plan, Task 2.6- present Findings and recommendations; The Requirements Analysis phases: Task 3.1- Define Requirements, Task 3.2-Analyze functional Requirements, Task 3.3-Trace and Complete Requirements, Task 3.4- prioritize Requirements, Task 3.5-Update the project plan, process and project Managers, where do you go from here?, Ongoing Requirements Management; The Decision Analysis phase: Task 4.1-Identify Candidate Solutions, Task 4.2- Analyze Candidate Solutions, Task 4.3 –Compare Candidate Solutions, Task 4.4- Update the project plan, Task 4.5 –Recommend a Solutions; the Next Generation of System Analyze, Where do you go from here?

- 6. Requirements Discovery** **6 hours**
 An Introduction to Requirements Discovery, The process of Requirements Discovery: problem Discovery and Analysis, Requirements Discovery, Documenting and analyzing Requirements, Requirements Management; Requirements Discovery Methods: sampling of Existing Documentation, forms and files, Research and sites visits, observation of the Work Environment, Questionnaires, Interviews, How to Conduct an Interview, Discovery prototyping, joint Requirements planning (JRP); A Fact Finding strategy, Documenting Requirements Methods: Use cases, How to Document a Use case, Decision Tables, Requirements Tables; Where do you go from here?
- 7. Data Modeling and Analysis** **6 hours**
 An introduction to systems Modeling: Entities, Attributes, Relationships; The process of Logical Data Modeling: Strategy Data Modeling; Data Modeling During systems Analysis, Looking ahead to systems Design, Automated Tools for Data Modeling; How to Construct Data Models: Entity Discovery, The Context Data Model, The Hey-Based Data Model, Generalized Hierarchies, The fully Attributed Data Model; Analyzing the Data Model: What is a God Data Model?, Data Analysis, Normalization Example; Mapping Data Requirements to Locations, Where do you go from here?
- 8. Process Modeling** **6 hours**
 An Introduction to systems Modeling, system Concepts for process Modeling: process Concepts, Data Flows, External Agents, Data Stores; The process of Logical process Modeling: strategic system planning, process Modeling for Business process Redesign, process Modeling during systems Analysis, Looking Ahead to systems Design, Fact- Finding and Information Gathering for process Modeling, Computer-Aided system Engineering (CASE) for process Modeling; How to Construct process Models: The context Data Flow Diagram, The Functional Decomposition Diagram, The Event –Response or Use Case List, Event Decomposition Diagrams, Event Diagrams, The system Diagram (s), Primitive Diagrams, Completion the specification; synchronizing of system models: Data and process Model synchronization, process Distribution, The Next Generation, Where do you go from here?
- 9. Feasibility Analysis and the system proposal** **4 hours**
 Feasibility Analysis and the system proposal: Feasibility Analysis-A Creeping commitment Approach, system Analysis preliminary Investigation checkpoint, system Analysis-problem Analysis checkpoint, system Design-Decision Analysis checkpoint; four Tests for feasibility: operational feasibility, Technical feasibility, schedule feasibility Economic feasibility, The Bottom Line; cost Benefit Analysis Techniques: How much will the system cost? What Benefits will the system provide? Is the proposed system cost Effective?; Feasibility Analysis of candidate systems: Candidate systems Matrix, Feasibility Analysis Matrix ; The system proposal: Written Report, Formal presentation
- 10. Systems Design Methods** **5 hours**
 Systems Design: What is Systems Design?, System Design Approaches, model-Driven Approaches, Rapid Application Development (RAD), Fast System Design Strategies; system Design for In-house Development The “Build” Solution: Task 5.1-Design the Application Architecture, Task 5.2 –Design the system Database (s), Task 5.3 – Design the system Interface, Task 5.4 –Package Design specifications, Task 5.5 –Update the project plan; System Design for integrating Commercial

software – The “Buy” solution: Task 4.1 –Research Technical Criteria and options, Task 4.2 – Solicit proposals (or Quotes) from vendors, Task 5a. 1-Validate Vendor Claims and performances,Task 5a. 2- Evaluate and Rank vendor proposals, Task 5a.3 –Award (or Let) Contract and Debrief vendors, Impact of Buy Decisions on Remaining Life Cycle phases, Where do you go from here?

Text Book:

1. Jeffery L. Whitten Lonnie D. Bently Kevin C. Dittman (5th Edition), Systems Analysis and Design Methods.

MTH 213.3 (Credit hours 3)

Mathematics III

BCIS, Second Year, Third Semester

Course Objectives:

This course aims to provide students with an opportunity to learn basic mathematical tools necessary for computer information system course.

Course contents:

- 1. Infinite Series** **10 hours**
Series, geometric, series, Taylor’s theorem (without proof), Taylor’s series, direct comparison test, limit comparison test, P- series test; De Almoner’s ration test, Cauchy root test, interval of convergence and radius of convergence
- 2. Laplace Transform** **10 hours**
Definition, Laplace transform of some elementary functions, properties of Laplace transform, transform of derivatives, definition inverse transform, properties of inverse transform, use of partial fractions, use of Laplace transforms in solving ordinary differential equations
- 3. Fourier series and Integrals** **9 hours**
Definitions and derivations, odd and even functions, half range series change of scale, Fourier transform
- 4. Functions of Complex Variable** **10 hours**
Basic definitions, functions of a complex variable, limits, continuity and differentiation, Cauchy-Riemann equations, analytical functions, harmonic functions, complex exponential, trigonometric and hyperbolic functions
- 5. Complex series, Residues and Poles** **9 hours**
Taylor’s theorem, Laurent theorem (Without proof), Zeroes, singularities and poles, residues

Text Books:

1. Thomas, George B. jr and Ross, Finney: Calculus and Analytical Geometry, Narosa publishing House.
2. Erwin kreyszig: Advanced Engineering Mathematics, john Wiley & sons Pvt. Ltd.

BCIS
Second Year
Fourth Semester

STT 101.3 (Credit hours 3)

Business Statistics

BCIS, Second Year, Fourth Semester

Course Objectives:

This course aims to provide students with a thorough understanding of descriptive and inferential statistical tools used in business decision making.

Course Contents:

- 1. Introduction** **3 hours**
Statistics and data, Quantitative and categorical variables, fundamental elements of a statistical analysis
- 2. Data Collection** **4 hours**
Sources of data, experimental research, survey research, questionnaire, data preparation-editing, coding, and transcribing
- 3. Tables and Charts** **3 hours**
Steam –and leaf display, frequency distribution, relative frequency distribution, cumulative polygon, timeslots
- 4. Summarizing and Describing Numerical Data** **6 hours**
Measure of central tendency: mean, median, mode and mid- hinge, Measures of variation: range, inter quartile range, standard deviations, and coefficient of variations. Shape, five-number summary and box-and – whisker plot
- 5. Probability** **7 hours**
Basic concepts, counting rules, objective and subjective probability, marginal and joint probability, addition rule, conditional probability, multiplication rules, Bayes' Theorem
- 6. Discrete Probability Distribution** **6 hours**
Random variables, mean and standard deviation of discrete random variables, mathematical expectation, binomial distribution, Poisson distribution
- 7. Continuous Probability Distribution** **5 hours**
Normal distribution and its applications, assessing normality, normal approximation of binomial and Poisson distribution
- 8. Estimation of Population Parameters** **6 hours**
Law of large numbers, central limit theorem, statistical confidence, confidence intervals, confidence for means and populations
- 9. Hypothesis Testing** **8 hours**
Testing of significance, p-value approach to hypothesis testing, connection between confidence intervals and hypothesis testing, comparing two means (two sample z and t-test procedures), comparing two proportions, power

Text Books:

1. Levin, Richard I. And David s. Rubin: Statistics for Management, prentice-Hall of India.
2. Berenson, Mark L. and David m. Levine: Business statistics: Concepts and Applications, prentice –Hall, Inc.

CMP 226.3 (Credit hours 3)

Database management systems

BCIS, Second Year, Fourth Semester

Course Objectives:

This course introduces the fundamental concepts and implementations of the relational database system in enterprises. Students will be exposed to file organization and secondary structures, relational model and relational database systems. These are followed by database design Entity-Relationship models, transactions, concurrency, recovery and SQL methodology.

Course contents:

- 1. Introduction to Database Management system** **3 hours**
Introduction to Database Management System, Brief History of database Management Systems, Application Development to without a Database, Advantages of the Database Management system Approach, Components of a Database Management system, Leading Commercial Databases
- 2. Designing a database** **5 hours**
Introduction, The feasibility study, Designing systems, Identifying User Requirements Designing systems with E-R Diagrams, UNL class Diagrams, classes and Entities, Associations and Relationships, class Diagram Using a model database, data Types (Domains): Text, Numbers, Dates and Times, Binary Objects, Computed Values; Events
- 3. Data Normalization** **6 hours**
Introduction, Tables, classes, and keys, first Normal form, second Normal form, Third Normal Form, Beyond Third Normal form, Data Rules and Integrity, Business Rules and its effects, Converting a class Diagram to Normalized Tables, Data Dictionary
- 4. Queries in Database** **3 hours**
Introduction, Creating a Query, Computations, Multiple Tables: joining Tables, Identifying, Columns in Different Tables, joining Many Tables, Hints on joining Tables, Table Alias, Creating a view
- 5. Advanced Queries in Database** **6 hours**
Introduction, sub queries, more features and Tricks with SQL SELECT: outer joins, UNION, INTERSECT, EXCEPT, Multiple join Columns, Reflexive join, CASE Function, Inequality joins, cross Tabulation, Questions with “Every” Need the EXISTS Clause, SQL SELECT summary; SQL Data Definition Commands, SQL Data Manipulation commands: INSERT and DELETE, UPDATE
- 6. Physical design** **5 hours**
Introduction, physical Data Storage, Data Storage Methods, Data Clustering and partitioning
- 7. Database Administration** **7 hours**
Introduction, Data Administration, Database Administration, Database Tasks by Development stages, Database Application Types: On-Line Transaction processing, ON-Line Application processing, Data Warehouses and Data mining; Backup and Recovery, security and privacy: Data privacy Threats, Physical security, Managerial control Logical security; Encryption
- 8. Distributed database System** **6 hours**
Introduction, Distributed Databases, Client/server Databases, Client/server versus File server, Brief Introduction data access API (ODBC, DB Library, DAO, ADO, JDBC, OLEDB),

Three-Tier Client/Server Model, The Back E Server Databases, The Web as a Client/server system

9. Object oriented database and integrated applications

7 hours

Introduction, Data Types and objects, object-oriented Databases and SQL 3, Integrated Applications, micros DCOM and CORBA, storing objects in the Database

Text Book:

1. Gerald V. post: Database Management systems, McGraw Hill International Edition

MGT 102.3 (Credit hours 3)

Organizational Relations

BBA, Third Year, Fifth Semester

Course Objectives:

This course aims to provide students with an understanding of the basic concepts of individual and group behavior and relationship in the context of organizations and systems.

Courses Contents:

- 1. Organizational Behavior** **8 hours**
Concept of OB. Contributing disciplines to OB, Challenges and opportunities in the field: Emerging trends in OB (improving quality and productivity, improving people's link, managing Workforce diversity)
- 2. Determinants Of Individual Behavior** **15 hours**
Attitudes: Beliefs, values, need of Goals, Perception: meaning and factors affecting perception, Personality: Personality traits, determinants of Personality and behavior, Motivation: Meaning Needs theories, reinforcement theories, equity theories and expectancy theories: Organizational Commitment.
- 3. Interpersonal and Group Behavior** **15 hours**
Groups: Definition, stages of group development, group structure, group task, groups norms, Understanding work. Teams, types of team, factors in managing teams, Leadership: concepts and theories (Trait; Behavioral: OHP state, Michigan, Managerial grid, Contingency Theories: Fielder Model, Hersey & Blanchard, Path goal theory), Current issues in leadership (Trust: emotional intelligences) Communication: function and types .communication and process, current issues in communication. Inter group conflict: nature and causes, managing such conflicts.
- 4. Organizational Relations and Dynamics** **10 hours**
Organizational design, technology work design and job autonomy: Work stress, managing stress. Organizational cultural, creating and sustaining culture; Organizational changes and development, OD process, OD intervention

Text books:

1. Robbins, Stephen P. Organizational Behavior: Concepts and Application, Prentice- Hall of India

References Books:

1. Arnold, H. j and D. C Feldman: Organizational Behavior, McGraw Hill
2. Davis, K and J. w Newstrom : Human Behavior at work: Organizational Behavior , McGraw_Hill
3. Dwivedi, R. S :Human relations and Organizational Behavior, Macmillan India
4. Agrawal, G. r: Organizational Relations in Nepal. M.K. Publishers, Kathmandu.

ELX 232.3 (Credit hours 3)

Computer Architecture and Microprocessors

BCIS, Second Year, Fourth Semester

Course Objectives:

This course aims to provide the fundamental knowledge to understand the basics, operation, programming and application of microprocessor with computer architecture.

Course Contents:

- 1. Introduction** **3 hours**
Introduction to Microprocessors, Review of processor Bus organization, Arithmetic Logic Unit (ALU)
- 2. Basic Computer Architecture** **10 hours**
SAP-1 Architecture: 8-bit “W” bus, 4- bit program counter only counts up (starts execution at 0), 4- bit memory Address Register (MAR), 16x8-bit B register, 8-bit adder-subtract or, 8-bit output register; SAP 1 Instructions, Fetch & Execution, micro program.: fetch cycle, execution cycle, micro program, controller implementation
SAP-2 Architecture: SAP 2 Architecture, architectural differences with SAP-1, bi-directional registers, instruction set, flags
- 3. Instruction Cycle** **3 hours**
Fetch operation and timing Diagram, Execute operation and Timing Diagram, Machine Cycle and states
- 4. Intel 8085** **10 hours**
Functional Block Diagram and pin configuration, Timing and control Unit, Registers, Data and Address Bus, Intel 8085 Instructions, operation Code and Operands, addressing Modes, Interrupts, Flags, Institutions and Data Flow inside 8085, Basic Assembly Language Programming Using 8085 Instruction sets
- 5. Basic I/O and Memory R/W Operations** **6 hours**
Memory Read, Memory Write, I/O Read, I/O Write, Introduction to Direct Memory Access
- 6. Parallel Interface** **6 hours**
Introduction PPI Device 8255 A, Internal Block Diagram, 8255 A Modes, Initialization and generation control words, Example of 8255 A interfacing to a micro-computer
- 7. Serial Interface** **6 hours**
Synchronous and Asynchronous Communication, parity and Baud rates, Sterilization, RS 232 Interface pin Description, Simplex Connection, Duplex Connection, full Duplex Connection between DTE to DTE, Connection to printers and Zero Modem

Laboratory:

Assembly language programming using 8085 trainer kit the programming should include: Arithmetic operation, base conversion, conditional branching etc.

Text Books:

1. Malvino: Digital Computer system Electronics (An introduction to Microcomputers)
2. Ramesh S. Gaonkar: Microprocessor Architecture, Programming, and Applications with 8085, printice Hall

Reference Books:

- 1.Morris Mano: Computer system Architecture, prantice Hall
- 2.Douglas V. Hall: Microprocessor and Interfacing programming and Hardware, McGraw Hill

MTH 214.3 (Credit hours 3)

Numerical Methods

BCIS, Second Year, Fourth semester

Course objectives:

This course aims to provide familiarity with the theory of numerical analysis for solving algebraic and transcendental equations, solution of ordinary and partial differential equations related to engineering problems, numerical differentiation and integration.

Course Contents:

- 1. Solution of Nonlinear Equations** **10 hours**
Review of calculus and Taylor's theorem, Errors in numerical calculations, Trial and error method, Bisection method, Newton's method, secant method and their convergence, fixed point iteration and its convergence
- 2. Solution of Linear Algebraic Equations** **10 hours**
Review of the existence of solution and properties of matrices, Gaussian elimination method, pivoting, ill-conditioning, Gauss-Jordan method, Inverse of matrix using Gauss elimination method, method of factorization, Do-little algorithm, Cholesky's factorization, iterative solutions, solving Eigen value problems using power method
- 3. Numerical Differentiation and Integration** **6 hours**
Newton's differentiation formulas, maxima and minima of tabulated function, Newton-Cotes's quadrature formulas, Gaussian integration algorithm, Romberg integration formulas
- 4. Interpolation and Approximation** **8 hours**
Lagrange's polynomials, Newton's interpolation using difference and divided differences. Cubic spline interpolation, Least squares method for linear and nonlinear data
- 5. Solution of ordinary Differential Equations** **8 hours**
Review of differential equations, initial value problem, Taylor series method, Picard's method, Euler's method and its accuracy, Runge-Kutta methods, solution of the higher order equations, Boundary value problems, shooting method and its algorithm
- 6. Solution of partial Differential Equations** **6 hours**
Review of partial differential equations, Deriving difference equations, Laplacian and Poisson's equation, engineering examples

Laboratory:

The laboratory experiments will consist of program development and testing of nonlinear equations Interpolation, Numerical integration and differentiation, Linear algebraic equations, ordinary and partial differential equations.

Text Book:

1. C. F. Gerald and P.O. Wheatly: Applied Numerical Analysis, 4th Edition, Addison Wesley publishing Company, New York.

Reference Books:

1. W. Cheney and D. Kincaid: Numerical Mathematics and Computing, 2nd Edition, Brooks Cole publishing Co, 1985
2. W.H. Press, B.P. Flannery et. Al: Numerical Recipes in C, 1st Edition, Cambridge press, 1988.
3. S. Yakwitz and F. Szidarovszky: An Introduction to numerical computations, 2nd Edition, Macmillan publishing

BCIS
Third Year
Fifth Semester

MKT 101.3 (Credit hours 3)

Principles of Marketing BCIS Third Year, Fifth Semester

Course objectives:

This course aims to provide concepts and principles of marketing with a view to develop students' skill in analyzing marketing opportunities and taking decisions in the key areas of the marketing mix.

Course Contents:

- 1. Introduction** **4 hours**
Meaning and core concepts of marketing: Marketing management concept; demand management and customer relationship. Marketing management cycle: analysis, planning, implementation and control. Marketing management philosophies: production product, selling marketing and societal marketing concepts. Marketing challenges in the new millennium.
- 2. Marketing Process and Environment** **4 hours**
Marketing process: targeting consumers and developing marketing mix. Marketing environment: micro and macro environmental factors affecting marketing.
- 3. Marketing Information System and Buyer Behavior** **6 hours**
Marketing information system: concept and components. Consumer behavior: buying process and determinants. Business buyer behavior: buying process and determinants.
- 4. Market Segmentation and targeting** **4 hours**
Market segmentation: levels of market segmentation, bases for segmenting consumer and business markets.
Market targeting: evaluation and selection of market segments. Positioning: concept and implementation
- 5. Product** **9 hours**
Concept of levels of product, product classifications, product life cycle, product life cycle, New product development process, Individual product decisions: product attributes, branding, packaging, labeling and product support service, product line and mix decisions. Service marketing: nature and characteristics of service, service marketing strategies- service- profit chain, service differentiation, service quality, and service productivity
- 6. Pricing** **5 hours**
Concept of price and pricing, Internal and external factors affecting price, pricing approaches: cost based, value- based, and competition based pricing. New product pricing, product mix pricing price adjustment strategies, price changes: initiating and responding to price changes
- 7. Distribution** **8 hours**
Concept of distribution, channel functions Channel levels for consumer and business markets Channel design decisions. Channel management decisions. Marketing logistics: nature, importance, and major logistics: functions; integrated logistics management
- 8. Promotion** **8 hours**
The marketing communication process, The promotion mix strategy: push vs. pull strategies. Advertising: objectives and budgets, message and media selection. Personal selling: nature and importance. Relationship marketing, sales promotion: objectives and tools. Public relations: nature and tools

Text Book:

1. Gery Armstrong and Philip kotler: Marketing An Introduction, pearson Education Asia

Reference Books:

1. Kotler, Philip and G. Armstrong: Principles of marketing, prentice- Hall of India.
2. Koirala K.D.: Fundamentals of marketing Decisions, M>K> publishers.
3. Agrawl, Govind Ram: Marketing in Nepal, Eductional Enterprises (P) Ltd.

FIN 101.3 (Credit hours 3)

Finance I

BCIS, Third Year, Fifth Semester

Course Objectives:

The Two core course on Finance, Finance I and Finance II, aim to provide students with basic understanding of important concepts in finance and investments. For students choosing to specialize in finance the two core courses give them solid foundation. For students choosing to concentrate on other areas of management, the two core courses equip them adequately to understand financial decisions and communicate effectively with finance managers or finance professionals.

Course Contents:

- 1. Earnings and Cash Flow Analysis** **3 hours**
Inadequacy of accounting numbers; Emphasis on Free Cash Flow; Interpretation of Financial Ratios
- 2. Liquidity and Working Capital Management** **3 hours**
Working capital and its components; Cash conversion cycle; managing cash, inventories, and receivables
- 3. Concepts of Return and Time Value of Money** **9 hours**
Compound interest, compounding frequency and their implication on future values of an investment; periodic interest rate and effective annual interest rate; Discounting and present values of flows; Valuation of level and growth perpetuities, annuities; Nominal return, inflation, and real return; Nominal and real interest rate/ discount rate.
- 4. Introduction to Concept of Risk** **9 hours**
Concept of Expected Value, Variance, standard Deviation, and covariance of Returns; Limitation of variance as a measure of risk; normal distribution and adequacy of expected return and variance.
Concept of diversification; Use and limitations of diversification in risk reduction; market versus unique risk; Assets versus portfolio risk
Capital Asset pricing Model (CAPM) and beta as a measure of asset risk
- 5. Valuation of Default Risk Free Bond** **6 hours**
Price and yield relationship of a bond; price risk of a default risk free bond; Coupon rate and price risk; maturity and price risk.
- 6. Valuation of Common Stock** **6 hours**
Book value, Liquidation value, Replacement cost value, Dividend Discount Model of stock valuation. Growth stocks and income stocks; Earning per share and P/E multiple; growth, reinvestment, ROE and stock price; market Efficiency and stock price Behavior
- 7. Capital Investment Decisions** **6 hours**
Superiority of Net present Value (NPV) over pay back period, accounting rate of return, internal rate of return (IRR), discounted payback period., and profitability index.
Estimating cash flow: sunk cost, opportunity cost, cannibalization, sales creation and the concept of incremental cash flows.
Capital Replacement Decision; Optimal Timing of Investment; comparing investment with deferent lives; capital Rationing problem. Sensitivity and scenario analysis;
- 8. Capital Structure and Theories of Capital Structure** **6 hours**
Modigliani and miller's (MM) irrelevance proposition of capital structure; static Tradeoff Theory of capital structure; pecking order Theory; Impact of debt on incentive and agency problems. Cost of Capital and Weighted Average cost of capital

Text Book:

1. Brealey, R. A. Myers S. C. Marcus A.J.: Fundamentals of corporate finance, McGraw – Hill International edition.

Reference Books:

1. Brigham, E.F. Gapenski, L.C., and Ehourhardt: Financial management: Theory and practice, Harcourt college publication, 9th edition.
2. Van Horne, J.C., and Wachowicz, Jr.: fundamentals of Financial management, prentice – Hall India Ltd.

STT 102.3 (Credit hours 3)

Data Analysis and Modeling

BCIS, Third Year, Fifth Semester

Course Objectives:

This course aims to acquaint with major statistical and quantitative tools used in modeling and analysis of business decision involving alterative choices.

Course Contents:

- 1. Relationships** **7 hours**
Scatterplot, least square regression- assumptions, statistical model, correlation- statistical model and inference, the question of causation, prediction and confidence intervals for estimating regression parameters
- 2. Multiple Regressions** **8 hours**
Multiple regression analysis, selection of predictor variables, multi nonlinearity, standard error of estimate, prediction and confidence intervals, mode building curvilinear models, qualitative variables, stepwise regression, residual analysis.
- 3. Time Series Analysis** **5 hours**
Index number, decomposition of a time series
- 4. Forecasting** **6 hours**
Choosing the appropriate foresting technique, moving average, exponential smoothing, forecasting using time series model
- 5. Linear Programming** **15 hours**
Problem formulation, graphical solution, special cases, some standard LP models with application in business, sensitivity analysis and duality
- 6. Network Models**
Transpiration and assignment problems, PERT and CPM

Text Books:

1. Mark L. Berenson, David M. Levine and Timothy K. Krehbiel: Basic Business statistics (Ninth edition), pearson
2. GD Eppen, F J Gould and CP Schmidt: Introductory Management science, Prentice-Hall

Reference Books:

1. Levin, Richard I. David S. Rubin, joel P. Stinson and Everest S. Gardner (jr): Quantitative Approaches to management, McGraw-Hill
2. Siegel, Andrew F: Practical Business Statistics, Irwin.
3. Taha, Hamady, A.: Operations Research. An Introduction, McMillan.

CMP 327.3 (Credit hours 3)

Networks and Data Communication

BCIS, Third Year, Fifth Semester

Course objectives:

This course aims to provide the study of computer systems, computer communications and computer networks. The course includes different kinds of networking topologies and their structure and design. This course also covers the telephone system, electronic email, data flows, networking protocols, and organization around ISO-OSI seven-layer architecture, with review of each layer.

Course Contents:

- 1. Background study and revision** **2 hours**
Introduction and necessity of computer Networking, Different types of multiplexing: Simplex, Duplex, Half Duplex, Modulation and its types
- 2. Introduction to LAN** **3 hours**
Definition, Need and use of LAN, prospect LAN, History and development of LAN, Types networking: LAN, WAN, MAN, Extra-Net, Intra- Net, Inter- Net
- 3. Network Architecture** **3 hours**
Star, Clustered star, Bus, Ring: Logical and physical, Client server Network Model peer-to-peer Network architecture model
- 4. Reference model** **6 hours**
Network software: protocol Hierarchy and its need, Introduction of OSI Reference Model
- 5. Physical layers and its Design issues** **3 hours**
Twisted pair Cable, Co-axial Cable: Base-band Cable, Broad-band Cable; fiber optics, Wireless Networking, introduction of ISDN and PSTN.
- 6. Data Link Layers** **7 hours**
Services, framing, Flow control and Error control, Elementary Data link protocols sliding window protocols, HDLC, SLIP, PPP
- 7. TCP/ IP Reference Model** **8 hours**
Introduction of TCP/ IP model, comparison with OSI Reference model, IPV4 Frame Format, IP Addresses and classes, subnet and subnet class, Introduction of IPV6
- 8. Network Layer and Internet Layer** **9 hours**
Network layer and Design issues, Virtual Circuit and Datagram subject, Introduction of Routing: Shortest path Routing Algorithm, flow Based Routing Algorithm, Distance Vector Routing Algorithm; Congestion Control, Leaky Bucket Algorithm
- 9. Network Servers** **5 hours**
HTTP, DHCP, SMTP, DNS, PROXY, FTP, Examples of clients and server Tools
- 10. Virtual private Network and Network Security** **2 hours**

Laboratory:

1. Computer Networking on windows Based platform
2. Installation and configuration of Different Types of servers
3. Networking with Unix
4. Network security and policies

Text Books:

1. Neil Jenkins and Stan schatt: Understanding Local Area networks, PHI
2. Andrew S. Tanenbaum: Computer networks, PHI

CMP328.3 (Credit hours 3)

Visual Programming Language

BCIS, Third Year, Fifth Semester

Course objectives:

The course aims to familiarize and enable students to use visual programming and its component.

Course Contents:

- 1. Introduction to Visual C++ and Windows concept** **6 hours**
The Windows Environment, Hungarian Notation, Windows Data Types and structures, visual C++ and its components
- 2. Introduction to Windows programming** **10 hours**
Windows programming options, windows programming model, win main function, window procedure, A Complete windows program
- 3. Microsoft Foundation classes** **10 hours**
MFC, MFC Application Framework, MFC Class Hierarchy, Global Functions, MFC DLLS, Application Framework messages Handling, Document/ View Architecture, MFC collection classes
- 4. Drawing in window** **6 hours**
Painting and Repainting, GDI, Device context, Drawing models, Mapping modes.
- 5. Keyboard, Mouse & Timer** **3 hours**
Keyboard and mouse, keyboard messages, character messages, client Area mouse messages, non-client Area messages, Timer
- 6. Dialogs and Windows common controls** **5 hours**
Model vs. modeless Dialogs, Resource, Windows common controls, common Dialog Boxes, Menus and Toolbars
- 7. Registry, clipboard and Multi Threading** **5 hours**
Accessing Registry, Clipboard, Threads, Thread synchronization
- 8. Multimedia Programming** **3 hours**
Multimedia Hardware, Multimedia Data Formats and Interfaces, the media control Interface

Laboratory:

There will be 8 labs throughout the semester and a project towards its end

Text Books:

1. Charles petzold: Programming Windows
2. Jeff prosise: Programming Windows with MFC

BCIS
Third Year
Sixth Semester

ACC 103.3 (Credit hours 3)

Management Accounting

BCIS, Third Year, Sixth Semester

Course Objectives:

This course aims to provide an understanding of cost and cost behavior and develop an ability to use cost information for planning and control decision.

Course Contents:

- 1. Introduction** **4 hours**
Concept, scope and objectives of managerial accounting; changing, managerial accountant in an organization, controllership accounting responsibility and limitation, managerial accounting as a career.
- 2. Basis Cost Management, Allocation and Product Cost Determination** **9 hours**
Cost concepts, manufacturing costs, manufacturing costs flows, product costs in service industry, firms and non-profit organizations; cost behavior patterns, variable cost and fixed costs, direct, controllable and uncontrollable costs. Opportunity costs sunk costs, differential costs marginal and average costs; cost estimation; product cost definition for manufacturing, service and retail inductees; need for accurate determination of product costs, target analysis; analyzing cost to activities
- 3. Income Recognition, Management and Reporting** **3 hours**
Absorption and variable costing, reconciliation under absorption and variable costing
- 4. Cost-Volume-profit Analysis** **10 hours**
Assumptions behind breakeven analysis, breakeven formula derivation and significance, profit volume graph and its usefulness, contribution margin and its interpretations, goal setting and breakeven analysis, multiple products and breakeven rules, cost structure and operating leverage introduction to activity based costing.
- 5. Planning and Control Systems** **10 hours**
Budgeting and profit planning, master budgeting, cash budgeting, flexible budgeting concept of responsibility accounting
- 6. Alternative Decision Making** **6 hours**
Make or buy, drop or continue, accept or reject a special offer, replacement of assets.
- 7. Capital Expenditure Decisions** **6 hours**
Concept of present value, discounted, cash-flow analysis, methods for making investment decisions.

Text BOOK:

1. Hilton, Ronald W: Managerial Accounting. Tata McGraw-Hill.

Reference Books:

1. Horngren. Charles T. Gary I. Sundem, and William O. Stratton: Introduction to Management Accountancy prentice –Hall of India
2. Bajracharya, Ojha, Goet, Sharma: Management Accounting in Nepal, Asmita publishers, Kathmandu, 2005.

CMP 329.3 (Credit hours)

Operating Systems

BCIS, Third Year, Sixth Semester

Course Objectives:

The students will become familiar with the of operating systems and the feature controlling of modern operating system:

Course Contents:

1. Principles of operation system

5 hours

Introduction, Operating system concepts: files shell, system calls, security and operating system structure: Monolithic systems, Layered, virtual machines, client- server and Evolution of operating systems: User driven, monolithic driven, simple batch system, off-line batch system, directly coupled off-line system, multi programmed spooling system, online timesharing system, multiprocessor systems, multi computer/distributed systems, Real time operating systems

2. Processes and Threads

12 hours

Process Concepts: Introduction, Definition of process, process states and transition, PCB (Process control Block), concurrent process: Introduction, parallel processing, IPC (Inter-process Communication), critical Regions and conditions, mutual Exclusion, mutual Exclusion primitives and Implementation, Dekker's Algorithm, Peterson's Algorithm, TSL (test and set lock), Locks, producer and consumer problem, monitors, Message passing, classical IPC problems, Deadlock and Indefinite postponement: Introduction, preemptable and Nonpreemptable Resources, conditions for deadlock modeling, deadlock prevention, deadlock avoidance, deadlock detection and recovery, starvation, Threads: Introduction, thread model, thread usage, advantages of threads.

3. Kernel

2 hours

Introduction, context switching (Kernel mode and user mode), First level interrupt handling, kernel implementation of processes

4. Scheduling

5 hours

Introduction: scheduling levels, scheduling objectives and criteria, Quantum size, policy versus mechanism in scheduling, preemptive versus No preemptive scheduling, scheduling techniques: priority scheduling, deadline scheduling, first In First- Out scheduling, Round Robin scheduling, Shortest –job-First (SJF) scheduling, shortest- Remaining-Time (SRT) scheduling, Highest- Response- Next (HRN) scheduling Multilevel Feedback Queues.

5. Memory Management

6 hours

Introduction, storage organization and hierarchy, contiguous versus noncontiguous storage allocation, logical and physical memory, fragmentation, fixed partition multiprogramming, variable partition multiprogramming, relocation and protection, Coalescing and compaction, virtual memory: Introduction, paging, page tables, Block mapping, Direct mapping, TLB (Translation Look aside Buffers), page fault, page Replacement algorithms, Optimal page Replacement algorithm, Not Recently Used page Replacement algorithm, first- In –First – Out algorithms, second chance page Replacement algorithm, Least Recently Used Replacement algorithm, clock page Replacement algorithm, working set page Replacement algorithm, WS clock Replacement algorithm, segmentation, implementation of pure segmentation, segmentation with paging.

6. Input/output

3 hours

Introduction, principles of I/O hardware: I/O devices, device controllers, memory-mapped I/O DMA (Direct memory Access), principles of I/O software: polled I/O versus Interrupt driven I/O character User Interface and Graphical User Interface, Goals of I/O software, device drivers, device independent I/O software, Disk disk hardware, disk arm scheduling algorithms, RAID (Redundant Array of Inexpensive Disks)

7. File Systems

3 hours

File naming, file structure, file types, file access, file attributes, file operations, file descriptor, Access control Matrix, sharing, ACL (Access control List), Directories and directory hierarchy, file system implementation, contiguous allocation, linked list allocation, I-Nodes, security and Multi-media files

8. Distributed operating systems

6 hours

Introduction, Goals, Network architecture, hardware and software concepts, Communication in distributes systems, ATM (Asynchronous Transfer Mode), Client-server Model, RPC (Remote procedure Call), Group Communication, processes and processors in distributed system, taxonomy of MIMD computer system, Clock synchronization, scheduling in distributed system.

9. Case Studies

6 hours

DOS Operating system: system configurations, filing and disk management, Graphical capabilities, Memory management.

Unix/Linux Operating System: File systems and disk management, filters, pipelining sockets, shell, Memory management, Networking feature, multiprocessing feature

Window 2000: File System and disk management, Networking security.

Laboratory:

1. Housekeeping in DOS and Windows.
2. Memory and I/O management in DOS and Windows
3. Housekeeping in UNIX/LINUX
4. Shell management in UNIX/LINUX
5. Memory management in UNIX/LINUX
6. Resource management

Text Books:

1. **A.S. Tanenbaum:** Modern Operating System, Second Edition, prentice hall India.
2. **W. Stalling,** Operating Systems, Prentice hall India.

MGT 104.3 (Credit hours 3)

Operations Management

BICS, Third Tear, Sixth Semester

Course Objectives:

This course aims to acquaint students with current operations management practices and research results and with the core concepts, tools, models and managerial considerations used in making operations management decisions.

Course Contents:

- 1. Introduction** **3 hours**
Definition, operations functions and its environments, operations objectives, operations system, the life cycle approach, historical development of operations management, productivity and competitiveness
- 2. Manufacturing Environment** **3 hours**
Product design, frequency of decision changes, process selection, automation, process flow design
- 3. Service Environment** **3 hours**
Nature and importance of services, designing service organization, service blue printing, service guarantees
Total Quality Management: Philosophical elements, quality specification and quality costs, statistical quality control, process control, acceptance sampling, ISO 9000
- 4. Supply Chain Management** **3 hours**
Supply chain strategy, supply chain design strategy, outsourcing, and mass customization
- 5. Forecasting** **6 hours**
Demand management, components of demand, qualities techniques in forecasting, time series analysis, causal relationship forecasting
- 6. Capacity Planning** **3 hours**
Important capacity concepts, capacity planning
- 7. Product Design and process Selection** **5 hours**
Concept, classification, process and approaches, designing products for manufacture and assembly, process selection, flow design, nature of services as a product, service- system design matrix, emerging issues in products design
- 8. Aggregate Sales and operations planning** **6 hours**
Overview of sales, and operations planning activities, the aggregate operations plan, aggregate planning techniques, yield management
Waiting Line Theory: Economies of the waiting line problem, the queuing system, waiting line characteristics, simple waiting line models
- 9. Inventory Systems** **5 hours**
Inventory costs, independent vs. dependent demand, inventory systems, basic model types, EOQ models, problem in determining realistic costs, materials requirement planning systems and its structure
- 10. Japanese operation management** **3 hours**
Features of Japanese operation management, Elements of JIT system, stabilizing schedule, elimination of waste, JIT implementation requirement, Flexible manufacturing system, concept of Kanban and Kaizen

11. Waiting Line Theory**3 hours**

Economies of the waiting line problem. The queuing system, waiting line characteristics, simple waiting line models

12. Total Quality Management**5 hours**

Philosophical elements, quality specification and quality costs, statistical quality control, process control, acceptance sampling, ISO 9000

Text Books:

1. Chase, Richard B. and Nicholas J. Aquilano: production and operations Management: A life cycle approach, Irwin.
2. Adam, Everett E. Jr and Ronald J. Ebert: production and operations Management, prentice Hall of India.

CMP 330.3 (Credit hours 3)

Computer Graphics

BCIS, Third Year, Sixth Semester

Course Objectives:

This course aims to present the basic techniques used in computer graphics system. The topics included in this course are; purpose of computer graphics, hardware concepts, two-dimensional algorithms, graphical languages and three-dimensional graphics.

Course Contents:

- 1. Introduction to computer graphics** **1 hours**
History, Development Graphics System, Field of Computer graphics
- 2. Basic concepts of drawing** **6 hours**
Line: multiple division of a line in equals parts, circle, ellipse, parabola, hyperbola, Arc, tangent, projections: orthographic, oblique, perspective, Drawing isometric, oblique, perspective
- 3. Overview of Graphics system** **7 hours**
Video display devices: Refresh cathode –ray Tubes, Color CRT display, Flat- panel display, Raster-scan systems, Random- scan systems, Input Devices: Keyboard, Mouse, Joysticks, Data glove, Digitizer, Touch panel, Light pens
- 4. Overview of Mathematics** **2 hours**
- 5. Two-dimensional Graphics** **12 hours**
DDA line drawing algorithm, Bresenham’s line drawing algorithm, Midpoint Circle Algorithm, Two—Dimensional Geometric transformations: Translation, Rotation, Scaling, Composite transformation, Two-Dimensional object to screen viewing
- 6. Three-Dimensional Graphics** **12 hours**
Three –Dimensional object to screen viewing, Extension of two-dimensional transform to three-dimensions, Three-dimensional display methods: parallel projection, perspective projection, Methods of generating non-planar surface Visible surface detection methods, polygon-Rendering methods: Constant-Intensity Shading, Gouraud Shading, Phong shading, fast phong shading, color Models and its applications
- 7. Graphical Languages** **4 hours**
Need for machine independent graphical language, Discussion of available, languages and file formats, Discussion of graphical language to be used in projects.
- 8. Project Development** **4 hours**
Project planning and description, project development, project report and presentation

Laboratory:

Develop a graphical project, The topic could be either initiated by the student or selected from a list provided by the instructor. An oral presentation with a demonstration should be part of the laboratory project report.

Text Books:

1. David Rogers: procedural Elements for Computer Graphics, 2nd edition, McGraw –Hill. 1998.
2. J. foley, A. van Dam, S. Feiner and J. Hughes: Computer Graphics principles and practice, Addison- Wesley, 1990.
3. Donald Hern and M. Pauline Baker: Computer Graphics, prentice –Hall.

CMP 331.3 (Credit hours 3)

Web Technology I

BCIS, Third Year, Sixth Semester

Course Objectives:

This course aims to familiarize with the basic techniques of web technology and web page design. The students will be familiar with the recent software used in web technology.

Course Contents:

- 1. Architecture of Internet** **1 hours**
Review of Internet concepts, Web server, protocols used in Internet, Client/Server connection via Internet, Domain names and its hierarchy, Issue of Domain Name Registration, DNS Concepts
- 2. Overview of HTML** **1 hours**
Using Browser, Introduction to HTML, Creating HTML document, Creating Basic HTML file Modifying HTML file, Adding Comments to file
- 3. HTML Basic** **4 hours**
Formatting Text with HTML
Paragraph formatting with HTML, Formatting Body text, Viewing heading types, Centering lines of text, Horizontal paragraph formatting with HTML, Formatting Characters, Controlling character size setting character colors, Adding special Characters, Procedural and Descriptive formatting, Internet Explorer preferences, Navigator preferences
Adding Local and Remote Links
Adding local links, linking to local file, linking using absolute addressing, Adding remote links, Links to other www sites, clearing temporary Internet files, clearing memory and disk caches, Guidelines for linking to remote sites, Adding Internet links with named anchors
Adding Graphics and Sounds
Linking to and embedding graphics, JPEG and GIF file format, Embedding Graphics in Web page, Linking to Graphic link, Animated GIF, Linking to multimedia files, Multimedia support, Adding graphic link
Creating List in HTML
Creating lists, ordered and unordered lists, displaying list of terms and definitions, Using Graphic as bullets, creating nested lists, nesting ordered and unordered lists
Setting body and background
Setting background colors, setting background graphics, setting color of text, Adding links to other Internal services
Links to non web internet services, FTP links, Mailto links
- 4. Creating Tables in HTML** **3 hours**
Creating and modifying tables, creating table headers, setting table parameters, creating advanced table elements, spanning cells across rows and columns, Aligning tables and cells, setting column width, Including link in table cells, Embedding graphic in a table.
Creating nested tables, Adding border color and background colors, Controlling cell padding and spacing, creating empty cells and blank cells, Using tables for page layout, page layout and table sizing options, Using a transparent GIF for page layout
- 5. Web page Design Guidelines and Web References** **2 hours**
Web page style considerations, Graphical aspects of page design, Network related of page design, Creating alternative text to image, Layout and consistency issues, Trademark and

- ownership issues. HTML versions, online references for HTML development, HTML development tools
- 6. Graphics and Frames in HTML** **2 hours**
Importing graphics into document, Image and text alignment, Creating and using Imagemaps, How server-side imagemaps work, Client side imagemaps, Imagemap technology. Overview of frames, creating frames, setting frame name and linking to frame, Using target name, Applying frame attributes, controlling size of frames, Controlling scroll bars, setting margin width and height, Alternatives for non frame browsers, Using nested framesets
 - 7. Creating Forms** **2 hours**
Introduction to forms, viewing the source code of a form, creating a form, Adding radio buttons to form, Using advanced input types, creating password input fields, creating checkboxes, setting input type attributes, Setting display size of text input field, setting maximum number of characters, Aligning input fields, creating form list boxes, specifying list box size, Enabling multiple selection in list box specifying default selection, setting wrapping attributes
 - 8. Cascading Style sheets** **3 hours**
Introduction to style sheets, Value of style sheets, style sheet rules and syntax, creating simple style sheets, Adding comments to style sheet, Exploring cascading order, Working with properties and selectors, Applying multiple properties to selector Grouping selectors, Applying contextual selectors, Applying selector classes, Applying classes with no associated elements, Applying DIV tag to style sheet, Applying< SPN> to style sheet, Linking style sheets, creating CSS file, Linking multiple page to CSS file
 - 9. XML** **4 hours**
Introduction to XML, XML over HTML, Different types of XML markup, Data type definitions, well formed XML documents, XML schema.
 - 10. Scripting Language** **12 hours**
Introduction to scripting language, JavaScript programming fundamentals, JavaScript objects and functions, javascript events, javascript arrays and built in objects, javascript window objects, javascript properties.
 - 11. Dynamic and Interactive Documents** **2 hours**
Concept of interactive web pages, Dynamic update of web pages, Creating dynamic document with client pull, javascript in HTML document, Embedding java Applets
 - 12. Processing form data** **2 hours**
Form data validation, Client side form validation, Server side form validation, Comparison, illustrate simple CGI program, Storing form data text file, Retrieving data
 - 13. Browsers and Servers** **2 hours**
URLS, Web browsers and servers, HTTP, HTTP request and response, HTTP headers, HTTP request, MIME types
 - 14. CGI data flow architecture** **2 hours**
Architecture of CGI, URL, encoding and decoding, Data flow between browser and server, GET vs POST, Which to use, CGI environment variables, Accessing CGI environment variables
 - 15. Client Side Statefulness** **3 hours**
Stateful vs stateless, Why stateful CGI application, program to program interaction, Stateful access with hidden fields, Multiple forms and hidden fields, Stateful access with cooks, Cookies management, Session management
 - 16. Additional Web Programming Features** **2 hours**

Extra path information, Server side includes, The exec command, Example of SSI, Introduction to client pull and server push.

Text Books:

1. Eric Ladd, jim O' Donnell, et al: Using HTML4, XML and Java PHP
2. Thomas A. Powell: The Complete Reference HTML, Tata McGraw-Hill.
3. David Flanagan: Java Script the definitive Guide, O' Rellay ★★★★★★

**BCIS
Fourth Year
Seventh Semester**

MGT 103.3 (Credit hours 3)

Human Resource Management BCIS, Fourth Year, Seventh Semester

Course Objectives:

This course aims to familiarize the student with basic concepts and functions of HRM in the context of Nepal.

Course Contents:

- 1. HRM in Context** **7 hours**
Concept, nature, objectives, and functions of Human Resource Management; personnel Management Vs. Human Resource Management; Human Resource Management system; Importance of Human Resource Management; The changing word of work and changing role of Human Resource professionals; Human resource strategy- concept and perspectives; Environment of Human Resource Management in Nepalese organization; International perspective of Human Resource Management; Ethical issues in Human Resource Management
- 2. Meeting Human Resource Requirements** **8 hours**
Human resourcing and Human Resource Planning concepts and importance; Human Resource Information System and Human Resource Inventory importance and uses, succession planning; job analysis, job specification, job description; Attracting a high performing workforce –recruitment and selection, internal and external recruitment, Testing and selecting employees – selection tests and tools; Classification and differential placement
- 3. Developing Human Resources** **6 hours**
Concept and importance of developing Human Resource; Employee socialization; Determining training needs; Considerations in design of the training programmes- on –the-job vs. off-the-job training; Developing managers-methods of management and leadership development; Mentoring; Empowerment; Evaluating training, Testing and selecting employees- selection tests and tools; Classification and differential placement
- 4. Performance and Effectiveness** **4 hours**
Role of Human Resource in a firm's competitiveness; Concept and methods of evaluating employee performance; Emerging concepts and issues in performance appraisal; Career development
- 5. Compensation** **8 hours**
Concept; Compensation programmes; job evaluation system- method and process; The compensation structure; Incentive system-gain-sharing incentive plans, employee benefits and services; Retirement programmes; Retirement benefits; Executive compensation; Compensation in Nepal –government regulations, minimum wages, social welfare factors, and incentive compensation; Emerging concepts and issues in compensation management
- 6. Occupational Health and Safety** **3 hours**
Concepts, importance, legal provisions, practices and emerging issues in OHS
- 7. Managing Employee Relations, Change and Communication** **8 hours**
Human Resource Management Communications – concept, Human Resource Management Communications communication programme; Employee handbook, Mechanism of effective communications; organization culture, change and human resources; job stress factors; Spirituality in the workplace; participation, partnership and employee involvement
- 8. Industrial Relations** **8 hours**
Changing nature of the employment relationship; Industrial relations –concept; Trade unions; Employers associations; Labor legislation in Nepal along with important provisions; Collective bargaining –concept and process; Disciplinary actions; Grievance handling; Conflict management –unilateral, joint and third party decisions; Dismissal redundancy and outplacement; Current situation of IR in Nepal; Emerging concepts in industrial relations

Text Books:

1. Decenzo, D.A. and Robbins, S.P.: Human Resource Management, Prentice –Hall, India.
2. Dessler, Gary: Human Resource Management, prentice-Hall, India.

CMP 432.3 (Credit hours 3)

Web Technology II BCIS Fourth Year, Seventh Semester

Course Objectives:

This course aims to provide the theoretical and practical knowledge to develop web application.

Course Contents:

1. **Review of Web Technology I** **1 hours**
2. **Data Storage issues** **3 hours**
Data backup, Data mining, Data processing, Data warehousing
3. **Transaction control** **3 hours**
An overview of Transaction processing, Discrete transaction and serialization transaction
4. **Security Considerations** **5 hours**
Principle of Cryptography, Authentication, Encryption/ Decryption, Digital Certificates, Digital signature, secure socket Layer, VPN
5. **Electronic Payment** **4 hours**
Electronic Cash, Credit Card processing, Electronic Check processing, Gift and prepaid Certificates, Payer Authentication, Smart Authorization
6. **Legal Issues** **3 hours**
On-Line Contract Law, Consumer Transaction, Digital Copyright, Taxation
7. **Script based server side programming** **6 hours**
Introduction to script based server side programming languages, Basic syntax, Object Oriented programming concept, Forms handling, Database handling, Session handling, Security
8. **Other Server side programming** **4 hours**
Tag Based Programming (Cold Fusion), Complete Sever Systems (Zope)
9. **XML** **9 hours**
10. **XML in Context, XML implementation, XML Basics, DTD Basics, XML Schemas, XSL Basics**
11. **Advanced XML** **8 hours**
XML Document Object Model the Simple API for XML (SAX), Databases and XML, simple object Access Protocol (SOAP)
12. **Future Trends** **2 hours**
NET, ASP, Current web programming technologies, Future data storage technologies

Laboratory:

Lab sessions will be based on any one of the script based server side programming

Lab sessions include

- Simple programs for getting familiar with the features.
- Form processing
- Database related programs
- Session handling
- Security.
- At the of the semester the students should submit project.

Text Book:

1. Janice Reynolds, Roya Mofazal, The complete E- commerce Book: Design, Build & Maintain a successful web – based Business

Reference Book:

1. Kenneth C, laudon, Carol Guercio Travel, E-commerce Business, Technology, Society: (Available in Apex Lib.)

CMP 433.3 (Credit hours 3)

Simulation and modeling

BCIS, Four Year, Seventh Semester

Course Objectives:

This course aims to provide the knowledge of different real time systems, their modeling and analysis, implementation using programming in simulation languages and analysis of output.

Course Contents:

- 1. Introduction to Simulation and modeling** **2 hours**
Human modeling and simulation, simulation of Communication Network, social simulation, Web –based Simulation, parallel and Distributed Simulation
- 2. Review of probability concept for system simulation** **8 hours**
Stochastic Variables, Continuous and Discrete Random Variables, probability Density Functions: Continuous Distribution Functions, Discrete Distribution Functions; Concept of Correlation: Correlation, Correlation Coefficient, Auto Correlation
- 3. Generation of Random Numbers** **5 hours**
Uniform Random Generators, Testing of Uniform Random Generators, Methods of Generating Non-uniform Random Numbers, Inversion, Rejection, Composition
- 4. Simulation Languages** **10 hours**
Continuous system Simulation Languages: System modeling program (CSMP); Discrete system Simulation Languages: SIMSCRIPT: SIMSCRIPT system concept, program organization; General purpose system simulation (GPSS): GPSS symbols and Block Diagrams, Action Times, Succession of Events, Choice of paths, Facilities and storages, Gathering statistics, Conditional Transfer program control statements, simulation of a Manufacturing shop
- 5. System Concepts and Modeling** **8 hours**
Introduction of systems: A Corporate model of a production system: system Environment, production segment, Management segment; Introduction to a service providing system; Stochastic Activities, Types of systems: Continuous systems, Discrete systems; system studies: system Analysis, system postulation, System Modeling and Design, system Modeling; Types of system Models: static physical model, Dynamic physical model, Static Mathematical Model, Dynamic Mathematical Model; Queuing systems
- 6. System Simulation** **8 hours**
Monte Carlo Method, simulation verses Analytical Methods, Experimental Nature of Simulation, System Simulation Models: Continuous Numerical Model, Discrete Numerical Model, Distributed Lag Model, cobweb model; continuous systems, Simulation: Continuous System Models, Differential Equations, Analog Computers, Simulation of an Autopilot; Discrete System Simulation: Discrete systems, Representation of Time, Simulation of a Telephone System
- 7. Analysis of Simulation Output** **6 hours**
Estimation Method, Simulation Run Statistics, Replication of Run, Elimination of Initial Bias, Output Analysis, Time Series Analysis, Spectral Analysis

Laboratory:

1. Continuous time simulation program
2. Discrete time simulation program Introduction to CSMP and SIMSCRIPT
3. Programming with GPSS

Text Books:

1. G. Gordon: System Simulation, Prentice Hall of India
2. J. A. Spriest and G. C. Vansteekiste: Computer-Aided Modeling and Simulation, Academic press
3. M. Law and R. F. perry: Simulation: A problem solving method, Addison Wesley publishing Company
4. M. Law and W. D. Kelton: Simulation Modeling and Analysis, McGraw Hail

Note:

The packages like CSMP, SIMSCRIPT and GPSS are not available in the market presently. These packages must be gathered before any lab exercise is started

MGT 106.3 (Credit hours 3)

International Business

BCIS, Fourth Year, Seventh Semester

Course Objectives:

This course aims to help the students in understanding the basics of international business and its environment, and develop the analytical skills required to compete effectively in this environment.

- 1. Overview of Global Business** **4 hours**
Meaning of international business and globalization, drivers of globalization, overview of changing global picture: declining trade barriers and change in communication, information and transportation technologies
- 2. International Trade Theories** **7 hours**
Adam Smith's Theory of Absolute Advantage, David Ricardo's theory of comparative advantage, Heckscher-Ohlin's theory of factor endowment, Raymond Vernon's product life-cycle theory new trade theory based on economies of scale, theory of national competitive advantage: porter's diamond.
- 3. Global Business Environment** **10 hours**
Political, Economic and Environment
Political system: individualism vs. collectivism; democratic vs. totalitarian, legal system: property rights, protection of intellectual property, product safety requirements, economic environment: market economy, command economy & of mixed economy, interconnection of political, legal and economic system followed by a country, impact of differences in system on international business
Cultural Environment
Meaning of culture, values and norms, determinants of culture: social structure, religion, education, language, aesthetics, history and geography, impact of differences in culture on international business
Multinational Companies
Concept and characteristics of MNCS and their impact in host countries (political, economic and cultural)
- 4. World Trading System & Regional Trade Agreements** **9 hours**
Tariff and non-tariff trade-barriers, international financial system: exchange rate, exchange control and trends of exchange rate system, role of international financial institutions: World Bank, IMF and ADB, Evolution of GATT and WTO. Regional groupings: EU, NAFTA, ASEAN and SAARC
- 5. International Strategic Management** **5 hours**
Types of strategies: international strategy, multidomestic strategy, global strategy, transnational strategy, advantages and disadvantages of these strategies.
- 6. Entry Into International Business and Strategic Alliances** **6 hours**
Market entry decisions: timing of entry, scale of entry and strategic commitments, entry modes: exporting, licensing, franchising, joint ventures. Choice of entry mode, comparison of green-field and acquisition, advantages and is advantages of strategic alliances
- 7. International Marketing** **7 hours**
- 8. International marketing management, international market positioning, product policy, pricing issues, promotion issues, and distribution issues: international distribution and channels of distribution**

Text Book:

1. Robert Bennett: International Business, Pearson Education

Reference Books:

1. John Daniels and W S Radebough: International Business: Environments and Oparsons, Pearson Education
2. Czinkota, Michael R, Ron Kainon: I. K, L Moffett, M. H. International Business, Thompson South-Western.
3. Hill, Richard: International Business: Concepts & Issues, Tata McGraw Hill, 5th edition

BCIS
Fourth Year
Eighth Semester

ECO 403.3 (Credit hours 3)

Digital Economy BCIS, Fourth Year, Eighth Semester

Courses Objectives:

The course aims to familiarise with the economic concepts of the digital age.

Course Contents:

- 1. Cognitive dimensions of economy** **3 hours**
Role of information and knowledge, Survival value of Information, Information and Knowledge as fourth factor of production, Contemporary practices in information and knowledge management
- 2. Development of Knowledge based societies** **5 hours**
Conceptual premise: Delivery of public information and services e-governance, E-business; policy issues, comparative study of policy provisions and regulatory instruments, Infrastructure issues, The need for Intellectual and cultural shift; Latest technological trends and their policy ramifications: Media convergence, Bandwidth and IP-enabled service issues, WAP, WLL, Wifi, Radio-spectrum management
- 3. E-readiness assessment techniques** **4 hours**
- 4. Role of Information and communications technologies in economic Development** **4 hours**
Economic dimensions, Social dimensions
- 5. Calculating efficiency and productivity gains in corporate scenarios** **4 hours**
ERP (Enterprise Resource Planning), CRM (Customer Relationship Management)
- 6. Fundamentals of knowledge economy** **7 hours**
Internet economy, E-business: Building brand awareness and providing marketing information through internet; Components of fully integrated E-business models: Enterprise, Manufacturing, Distribution, Financials, Human Resources, Suppliers: Supply chain management, Electronic procurement, Stock Management, Integrated forecasting, Quality system Management; Customers: Electronic Commerce: Interactive marketing, Demand forecasting, Order Management, Value chain integration, Developing e-business models, and demand Chain management
- 7. E-commerce** **2 hours**
Topology of e-commerce- B2C, B2B and B2G
- 8. Developing e-commerce based business models** **2 hours**
Analyzing value proposition, Techno graphic proofing
- 9. Financing** **3 hours**
Venture capital (VC), Angels
- 10. Information economy: requisite infrastructure** **3 hours**
Regulatory regime, Trust- governance and accountability, Operational issues, payment mechanisms, order fulfillment
- 11. Technological implementation** **5 hours**
Data Mining, XML, public key Infrastructure (PKI), payment gateways, PKI implementation
- 12. Information economy landscape: Nepal** **3 hours**
IT policy and strategy, Application of ICTs in corporate settings, Level of e- business related activities, Regulatory instruments, Opportunities /Constraints/ limitations
- 13. Access and Infrastructure issues** **3 hours**
Telecom policy, Telecom infrastructure, ISP's, Affordability issues

Text Books:

1. Don Tapscott: The Digital Economy, McGraw Hill professional Book Group, 1996, Copyright © 1996 by The McGraw- Hill Companies, Inc.
2. Don Tapscott, Alex Lowy, David Ticoll: Blueprint to the Digital Economy, McGraw Hill professional Book Group, 1998 Copyright © 1998 Alliance for Converging Technologies Corporation.
3. Rene Tissen, Daniel Andriessen, Frank Lekanne Deprez: The knowledge Dividend, Financial Times/ Prentice Hall, 2000, Copyright © Pearson Education Limited 2000.
4. Paul Timmers: Electronic Commerce, John Wiley & Sons, Ltd, 1999, Copyright © 1999 by John Wiley & Sons, Ltd.

References:

1. Charles Trepper: E-Commerce Strategies, Microsoft press, 2000, Copyright © 2000 by Microsoft Corporation
2. IT policy 2000, National Planning Commission, His Majesty's Government of Nepal
3. Electronic Transaction Ordinance, 2061, His Majesty's Government of Nepal.

BCIS
Electives

(Credit hours 3)

Image Processing and Patten Recognition

BCIS, Elective

Course Objectives:

The Course aims to provide the knowledge image processing and pattern recognition and the applications to related fields.

Course Contents:

- 1. Introduction to Digital Image Processing** **5 hours**
Digital image representation, Digital image processing problems; current technology, Elements of visual perception, Human vs. machine vision, steps in DIP
- 2. Two-dimensional system and Mathematical Preliminaries** **5 hours**
Random signals, Noise, Spectral Analysis, Fourier, transform and Fast Fourier Transform, Matrix Theory, Sampling and quantization, Relationships between pixels.
- 3. Image Enhancement** **4 hours**
Cosine transform, sine transform, Hadamard transform, Haar transform, slant transform
- 4. Image Enhancement** **10 hours**
Point operations, Contrast stretching, Clipping and thresholding, Digital negatives, Intensity level slicing, Bit extraction, Histogram modeling: Equalization, modification, specification, spatial operations: Averaging, directional smoothing, median filtering, spatial low pass, high pass and band pass filtering, magnification by replication and interpolation, Morphology-based Operations: Fundamental definitions, dilation and erosion, Boolean convolution, opening and closing, hit and miss operation, skeleton, propagation, Gray –value morphological processing, False Color and pseudocolor
- 5. Image Filtering and Restoration** **5 hours**
Smoothing operations: Liner and non-liner filters, Wiener Filter, Least Squares Filters
- 6. Image coding and compression** **4 hours**
Pixel coding: run length, bit plan, predictive and inter-frame coding
- 7. Pattern Recognition and classification** **3 hours**
Recognition techniques, feature extraction, Models, prototyping, Davison of sample space
- 8. Segmentation** **6 hours**
Segmentation by thresholding, Edge Findimg, Binary mathematical Morphology Gray- value mathematical morphology
- 9. Advanced topics and their applications** **6 hours**
Expert systems and object representation, Neural networks for image compression and pattern recognition.

Text Books

1. A. K. Jain: Fundamental if Digital Image processing, prentice Hall of India, Ltd. 2003.
2. R.C. Gonzalez and P. Wintz: Digital Image processing. Addison- Wesley publishing, 1987

(Credit hours 3)

Distributed Database Management System
BCIS, Elective

Course Objectives:

The course aims to introduce the fundamental concepts and issues of distributed database systems, to discuss the emerging approaches and technologies, and to provide insight into related research problems.

Course Contents:

- 1. Distributed data processing** **3 hours**
What is a DDBS; Advantages and disadvantages of DDBS; problem areas; Overview of database and computer network concepts.
- 2. Distributed Database Design Management system Architecture** **3 hours**
Transparencies in a distributed DBMS, Distributed DBMS architecture, Global directory issues
- 3. Distributed Database Design Alternative design strategies** **4 hours**
Distributed design issues, Fragmentation, Data allocation.
- 4. Query processing issues** **5 hours**
Objectives of query processing, Characterization of Query processors, Layers of query processing, query decomposition, Localization of distributed data.
- 5. Optimizing Distributed Queries** **4 hours**
Factors governing query optimization, Centralized query optimization, ordering of fragment queries, Distributed query optimization algorithms.
- 6. Transaction Management** **4 hours**
The transaction concept; Goals of transaction management; Characteristics of transactions; Taxonomy of transaction models
- 7. Concurrency Control** **4 hours**
Concurrency control in centralized database systems; in DDBSs; Distributed concurrency control algorithms; Deadlock management
- 8. Reliability** **4 hours**
Reliability issues in DDBSs, Types of failures, Reliability techniques, Commit protocols, Recovery protocols
- 9. Parallel SBMSs** **4 hours**
Database servers, parallel architectures, parallel DBMS techniques
- 10. Distributed Object Database Management** **7 hours**
Object model features, fundamental object management issues, DOM architectures, Object caching, Object clustering, Object migration, Query processing in distributed object DBMSs, Transaction management in distributed object DBMSs.
- 11. Database Interoperability** **6 hours**
Multidatabase systems, Database interoperability, Multidatabase query processing, Multidatabase transaction management, Object orientation and database interoperability, Distributed object platforms for interoperability (CORBA, DCOM/OLE)

Text Books:

1. Ozsu and valduriez: Principle of Distributed Database Systems, prentice Hall.
2. Bukhres and Elmagarmid: Object Oriented Multidatabase Systems, prentice Hall.
3. Additional papers form the Lecturer may be assigned as reading material.

(Credit hours 3)

NET Technologies

BCIS, Elective

Course Objectives:

This course to familiarize students with various technologies brought or changed by the introduction of the MET framework, and enable them to be able develop different kinds of applications using these technologies.

Prerequisites:

Programming in at least one C++, java or Visual Basic Object Oriented programming Concepts

Course Contents:

- 1. NET Fundamentals** **2 hours**
History, Overview, Terminology, Advantages
- 2. Windows Development using NET** **5 hours**
Overview- structured programming and object oriented programming, C#, Windows forms, User Controls
- 3. Web Development using NET** **6 hours**
Overview- HTML, JavaScript ASP NET Web Applications, Web forms ASP. NET mobile applications
- 4. Web services using NET** **6 hours**
Overview- We services and their applications, XML, MNL Web services, SOAP, WSDL and UDDI
- 5. Database Development using NET** **6 hours**
Overview,- Database concepts and SQL, ADO, NET, XML and data
- 6. NET Common Language Runtime** **7 hours**
Overview, assemblies and JIT, Garbage Collection, security, Events and Delegates, Reflection, Remoting, CLS and Interop
- 7. NET Framework Class Library** **8 hours**
Overview, GSI+, Exceptions, Input/Output, Threading, CodeDom, WMI, Windows Service Applications
- 8. Case Studies** **8 hours**
Developing Graphics Applications using GDI+, Developing Network Applications, Creating and publishing Customizable web Reports, Database Application, web service

Notes: The bracketed number at the end is the estimated number of 1.5 hour periods required for the topic.

NET Technologies Lab Plan

Language to be used

Labs will be conducted in C#. The first few labs will be introductory to visual studio and C#, These labs will enable the students to migrate from C++to C#

Lab Procedure:

The lab sheet will be provided to the students one week before the lab, The lab sheet will indicate relevant chapters in the book. Students are required to study the related chapters from the book and prepare a pre- report before coming to the lab. The lab instructor will make a presentation explaining the concepts, through the use of one or several typical program. In the lab, students will modify the program as instructed, or write an entirely new program, similar to the one presented.

Buffer Labs:

In addition to accommodate for labs that could not be conducted, buffer labs can be used to repeat labs, or complete labs that were not completed in the assigned session. However, at the end of the buffer lab, the student should have submitted all lab reports until that point.

Lab 1 – Introducing the VS. net IDE

Lab 2 – Introducing the C# language: Structured programming and exception handling

Lab 3 – Introducing the C# language: object oriented programming

Lab 4- Buffer

Lab 5 – Windows Forms: Simple Controls and Events

Lab 6 – Windows Forms: Treeviews, Listviews, MDIS and user controls

Lab 7 – GDI+: Drawing and Imaging

Lab 8 – Buffer

Lab 9 – IO: Streams, sequential files and random access files

Lab 10 – XML: The Basics

Lab 11 – Databases and ADO, NET

Lab 12 – Buffer

Lab 13 – Web Programming: HTML, JavaScript and ASP

Lab 14 – Web Forms and ASP.NET

Lab 15 – Web Services and ASP.NET

Lab 16- Buffer

Text Book:

Deities: C# - How to program will be used for lab purposes.

(Credit hours 3)

Internet, Intranet and Applications

BCIS, Elective

Course Objectives:

The course aims to review the materials studied in the data communication, to study the working of internet focusing on TCP/IP based networks. To enable the students to have a knowledge to plan, maintain, and manage TCP/IP based networks.

Course Contents:

- 1. Introduction and Review** **2 hours**
History of the internet, Review of Data Communication, Circuit switched and packet switched networks, Network modeling and layers concepts, Concepts, of network protocols, OSI model vs TCP/IP model, Request for comments (RFCs)
- 2. Application Layer** **8 hours**
Introduction and functions, Common application layer protocols, HTTP, SMTP, FTP, DNS, SNMP (to be covered in network management), Concepts of sockets and APIs for socket programming
- 3. Transport Layer** **8 hours**
Connection oriented vs connectionless, Concepts of reliable data transfer, Introduction to TCP, Reliable data transfer with TCP, Session establishment, Acknowledgements
Session Teardown, TCP flow control, TCP congestion control, Introduction to UDP
UDP and its applications (RTP used in multimedia transmission)
- 4. Internet Layer** **8 hours**
Introduction to IP, IP and best effort delivery, IP addressing: Class based, CIDR, public and private networks, IP and Routing: Inter autonomous system routing, Intra autonomous system routing, Some routing protocols and case study: Link state routing, Distant vector routing, eg: BGP, RIP, OSPF, Route aggregation, IPV6
- 5. Security** **10 hours**
Key concepts of security, Introduction to cryptography, Symmetric key and asymmetric key cryptography, Hashing and message digest techniques, Case study of some cryptographic techniques, DES, RSA, MD5, Concepts of secure Email a case study of PGP (Pretty Good Privacy), Security in different layers of the networks, Transport Layer Security (TLS = > SSL), Network Layer Security (IPsec), Secure e-commerce (SET) < Firewalls, Using firewalls to protect corporate networks, Case study of some of the commercially available firewall, Securing corporate systems
- 6. Network Management** **8 hours**
SNMP, Managing entity vs managed entity, Management information block (MIB) Structure of management information (SMI), Monitoring and auditing network activity
- 7. Planning corporate networks (Intranets)** **4 hours**
Identifying key components, Requirements study, Security Issues, Design, Implementation and management issues.

Laboratory:

The lab works shall include six lab sessions based on UNIX and NT based systems, It focuses on setup of networks and socket programming based on java, C or any other high level languages.

1. Setting up LINUX based networks
2. Setting up NT based networks

3. +
4. Introduction to some of the application layer servers like web, mail, ftp, dns.
5. Introduction to socket programming
6. Implementation of a multithreaded web server using socket programming.

Text Book:

1. Andrew Tanenbaum: Computer Network, prentice Hall,

Reference Books:

1. James F. Kurose, Keith W. Ross: Computer networking
2. Behrouz A Foruldzan: TCP/IP protocol.

(Credit hours 3)

Financial Institutions and Markets

BCIS, Elective

Course Contents:

This course aims to enhance the students; ability to understand the financial market and increase and their effectiveness in working with or interacting with the financial institutions.

Course Contents:

- 1. Economics of Financial System** **3 hours**
Basic needs served by the financial system: payments, resource transfer, and risk trading; the technology adopted in serving these needs: delegation, credit substitution, risk pooling, and netting, Market Failure in these services and the need for government intervention.
- 2. Money, Prices, Interest rates and Exchange Rates** **9 hours**
Relationship among these factors and determination of interest rates, exchange rates, and inflation
- 3. Financial Intermediation by Depository Institutions** **12 hours**
Deposit and Loan pricing and factors affecting them; competition, asymmetric information, default risk, transaction cost. Adverse selection, moral hazard and credit rationing Agency problems in financial institutions Liquidity risk, interest rate and exchange rate risk, credit risk, and operation risk inherent in financial institutions, and management of those risks. Lessons learnt from the national and international experiences.
- 4. Insurance** **6 hours**
Economics of insurance- benefit of risk pooling, problem of moral hazard and adverse selection. Pricing of Insurance and marketing of insurance; Agency problems in insurance business; Different types of insurance: life insurance and related products; health insurance; property- liability insurance; reinsurance. Regulation of insurance industry, its
- 5. Securities Markets** **6 hours**
Securities market and the function of price discovery, liquidity, transaction costs reduction. Dealer and auction market, risk of trade execution, clearing and settlement. Structure and regulation of securities market, comparing regulatory structure of Nepalese market with that of the other developed market
- 6. Market for Government Securities** **6 hours**
Types of Government securities; primary market and auction procedures; procedure in Nepalese market compared with the procedures in other countries especially India and the US. Secondary market and their organization: Nepal's market compared with that of India and the US. Dealing in securities: the bid-ask spread, carry, trading profits, Repurchase agreements, Reverse repos.
- 7. Stability of the Financial System** **6 hours**
Bank runs and panics, crashes in stock market, their causes and consequences. Factors affecting stability: and interference. Private and government measures in improving stability of the financial system: Clearing House Association, Regulation and Supervision, Lender of last resort, trading halts and circuit breaker, deposit insurance. Cost and benefit of such measures

Text Book:

1. Meir Kohn: Financial Institute and Market, Tata McGraw – Hill

Reference Books:

1. Masking, Frederic S: The Economics of Money, Banking and Financial Markets, Addison-Wesley.
2. Jeff Madura: Financial Market and Institution, South- Western college publishing.
3. Michael Baye and jansen: Money, Banking and Financial Market, A.I.T.B.S.

THE END