



**AMITY UNIVERSITY**  
— R A J A S T H A N —

**AMITY INSTITUTE OF INFORMATION TECHNOLOGY  
(AIIT)**

**Bachelor of Computer Applications (BCA)**

**Programme Code: 12048**

**Duration – 3 Years Full Time**

**Programme Structure  
and  
Curriculum & Scheme of Examination  
2021-24**

**AMITY UNIVERSITY**  
**RAJASTHAN**

## PREAMBLE

Amity University aims to achieve academic excellence by providing multi-faceted education to students and encourage them to reach the pinnacle of success. The University has designed a system that would provide rigorous academic programme with necessary skills to enable them to excel in their careers.

This booklet contains the Programme Structure, the Detailed Curriculum and the Scheme of Examination. The Programme Structure includes the courses (Core and Elective), arranged semester wise. The importance of each course is defined in terms of credits attached to it. The credit units attached to each course has been further defined in terms of contact hours i.e. Lecture Hours (L), Tutorial Hours (T), Practical Hours (P). Towards earning credits in terms of contact hours, 1 Lecture and 1 Tutorial per week are rated as 1 credit each and 2 Practical hours per week are rated as 1 credit. Thus, for example, an L-T-P structure of 3-0-0 will have 3 credits, 3-1-0 will have 4 credits, and 3-1-2 will have 5 credits.

The Curriculum and Scheme of Examination of each course includes the course objectives, course contents, scheme of examination and the list of text and references. The scheme of examination defines the various components of evaluation and the weightage attached to each component. The different codes used for the components of evaluation and the weightage attached to them are:

<u>Components</u>	<u>Codes</u>	<u>Weightage (%)</u>
Case Discussion/ Presentation/ Analysis	C	05 - 10
Home Assignment	H	05 - 10
Project	P	05 - 10
Seminar	S	05 - 10
Viva	V	05 - 10
Quiz	Q	05 - 10
Class Test	CT	10 - 15
Attendance	A	05
End Semester Examination	EE	50

It is hoped that it will help the students study in a planned and a structured manner and promote effective learning. Wishing you an intellectually stimulating stay at Amity University.

July, 2020

## **PROGRAMME LEARNING OUTCOME (PLO)**

### **BACHELOR OF COMPUTER APPLICATIONS (BCA)**

PLO -1 Analyze and apply foundational knowledge, and solve problems of both practical and theoretical nature.

PLO -2 Investigate and evaluate new technologies and their applications;

PLO -3 Utilize a variety of tools, techniques and programming languages and apply knowledge of computing, mathematics and science to real world problems;

PLO -4 Obtain employment as computer scientist in local and global industries and organization, where they are competent in applying the fundamental knowledge, computational principles and skills in computer science.

### **SKILL DEVELOPMENT DETAILS WITH CREDITS OF BCA PROGRAMME**

<b>Sr. No.</b>	<b>Sem</b>	<b>Skill Development</b>	<b>Credit</b>	<b>Employability</b>	<b>Credit</b>	<b>Entrepreneurship</b>	<b>Credit</b>	<b>Total Nos.</b>	<b>Total Credit</b>
1	I	4	8	0	0	0	0	4	8
2	II	5	11	2	6	0	0	7	17
3	III	4	8	1	3	0	0	5	11
4	IV	5	11	4	8	0	0	9	19
5	V	8	16	0	0	0	0	8	16
6	VI	0	0	3	19	2	4	5	23
	<b>Total</b>	<b>26</b>	<b>54</b>	<b>10</b>	<b>36</b>	<b>2</b>	<b>4</b>	<b>38</b>	<b>94</b>

## SKILL DEVELOPMENT SUBJECTS IN BCA PROGRAMME

Sem	Course Code	Course Name
I	BCI104	Programming and Problem solving through 'C' Language
I	BCI105	Computer Concepts and Problem Solving
I	BCI124	Programming and Problem solving through 'C' Language Lab
I	BCI125	Computer Concepts and Problem Solving Lab
II	BCI202	Introduction to Systems Analysis & Design
II	BCI203	Data Structures using C
II	BCI204	Introduction to Database Management Systems
II	BCI223	Data Structures using C LAB
II	BCI224	Introduction to Database Management Systems LAB
III	BCA302	Advance Database Management Systems
III	BCI303	Object Oriented Programming Concepts Using C++
III	BCA322	Advance Database Management Systems Lab
III	BCI323	Object Oriented Programming Concepts Using C++ Lab
IV	BCA405	Software Engineering
IV	BCI431	Introduction to .NET Technologies
IV	BCI432	Introduction to Open Source Technologies (PHP, MySql)
IV	BCI441	Introduction to .NET Technologies Lab
IV	BCI442	Introduction to Open Source Technologies (PHP, MySql) Lab
V	BCI502	Java Programming
V	BCI503	UNIX Operating System & Shell Programming
V	BCI522	Java Programming Lab
V	BCI523	UNIX Operating System & Shell Programming Lab
V	BCI533	Android Programming
V	BCA534	Web Programming
V	BCI543	Android Programming Lab
V	BCA544	Web Programming Lab
<b>Employability</b>		
Sem	Course Code	Course Name
II	BCI232	Internet Fundamental
II	BCI233	Cyber Security
III	BCI332	Web Designing
IV	BCA434	Cloud Computing
IV	BCA435	Big Data Analytics
IV	BCA444	Cloud Computing Lab
IV	BCA445	Big Data Analytics Lab
VI	BCA602	Introduction to Python Technologies
VI	BCA622	Introduction to Python Technologies Lab
VI	BCA660	Major Project
<b>Entrepreneurship</b>		
Sem	Course Code	Course Name
VI	BCA601	Web Technologies
VI	BCA621	Web Technologies Lab

**PROGRAMME STRUCTURE CREDITS SUMMARY**  
**Bachelor of Computer Applications (BCA)-2021**

	Credits UG (3 years/ 6 Semesters)							
Semester	CC	DE	VA	OE	EVS	NTCC	ANDP	Total
I	17	0	04	0	0	0	02	23
II	14	03	04	03	0	0	02	26
III	11	03	04	03	04	03	02	30
IV	16	04	04	03	0	03	02	32
V	11	04	04	03	0	03	02	27
VI	08	0	0	0	0	15	0	23
<b>Total</b>	<b>77</b>	<b>14</b>	<b>20</b>	<b>12</b>	<b>4</b>	<b>24</b>	<b>10</b>	<b>161</b>

Core Courses	CC
Domain Electives	DE
Value Added Course	VA
Open Electives	OE
Environmental Science	EVS
Project Work (Non Teaching Credit Course)	NTCC
Anandam Project	ANDP

**PROGRAMME STRUCTURE SUBJECTWISE CATEGORY SUMMARY**  
**Bachelor of Computer Applications (BCA)-2021**

	Courses/Subjects UG (3 years/ 6 Semesters) Programmed							
Semester	CC	DE	VA	OE	EVS	NTCC	ANDP	Total
I	07	0	06	0	0	0	01	14
II	06	03	06	01	0	0	01	17
III	05	03	06	01	01	01	01	18
IV	06	10	06	01	0	01	01	25
V	05	08	06	01	0	01	01	22
VI	04	0	0	0	0	01	0	05
<b>Total</b>	<b>33</b>	<b>24</b>	<b>30</b>	<b>04</b>	<b>01</b>	<b>04</b>	<b>05</b>	<b>101</b>

Core Courses	CC
Domain Electives	DE
Value Added Course	VA
Open Electives	OE
Environmental Science	EVS
Project Work (Non Teaching Credit Course)	NTCC
Anandam Project	ANDP

# PROGRAMME STRUCTURE

## Programme Structure Bachelor of Computer Application -BCA 2021-24

### FIRST SEMESTER

CODE	COURSE	CATEGOR Y	L	T	P/FW	CREDIT UNITS
BCA101	Digital Electronics	CC	2	1	-	3
BCI102	Basic Mathematics	CC	2	1	-	3
BCI103	Introduction to Computer Networking	CC	2	1	-	3
BCI104	Programming and Problem solving through 'C' Language	CC	2	1	-	3
BCI105	Computer Concepts and Problem Solving	CC	2	1	-	3
BCI124	Programming and Problem solving through 'C' Language Lab	CC	-	-	2	1
BCI125	Computer Concepts and Problem Solving Lab	CC	-	-	2	1
<b>Non Teaching Credit Course (NTCC)</b>						
AND001	Anandam-I	ANDP	-	-	-	2
<b>VALUE ADDED COURSES</b>						
BCS 101	English	VA	1	-	-	1
BSS 103	Behavioural Science-I (Understanding Self for Effectiveness)	VA	1	-	-	1
FLT 101 FLG 101 FLS 101 FLC 101	Foreign Language - I French German Spanish Chinese	VA	2	-	-	2
<b>TOTAL</b>						<b>23</b>

**SECOND SEMESTER**

<b>CODE</b>	<b>COURSE</b>	<b>CATEGOR Y</b>	<b>L</b>	<b>T</b>	<b>P/FW</b>	<b>CREDIT UNITS</b>
BCA201	Discrete Mathematical Structures with Application to CS	CC	2	1	-	3
BCI202	Introduction to Systems Analysis & Design	CC	2	1	-	3
BCI203	Data Structures using C	CC	2	1	-	3
BCI204	Introduction to Database Management Systems	CC	2	1	-	3
BCI223	Data Structures using C LAB	CC	-	-	2	1
BCI224	Introduction to Database Management Systems LAB	CC	-	-	2	1
<b>DE Elective: Choose any one course from the following courses</b>						
BCI231	Networking for Home & Small Business	DE	2	1	-	3
BCI232	Internet Fundamental					
BCI233	Cyber Security					
<b>OPEN ELECTIVE</b>						
	Open Elective	OE	2	1	-	3
<b>Non Teaching Credit Course (NTCC)</b>						
AND002	Anandam-II	ANDP	-	-	-	2
<b>VALUE ADDED COURSES</b>						
BCS 201	English	VA	1	-	-	1
BSS 203	Behavioural Science – II (Problem Solving and Creative Thinking)	VA	1			1
FLT 201 FLG 201 FLS 201 FLC 201	Foreign Language - II French German Spanish Chinese	VA	2	-	-	2
	<b>TOTAL</b>					<b>26</b>

**SUMMER PROJECT – I**

### THIRD SEMESTER

CODE	COURSE	CATEGORY	L	T	P/F W	CREDI T UNITS
BCA301	Computer Oriented Statistical & Optimization Methods	CC	2	1	-	3
BCA302	Advance Database Management Systems	CC	2	1	-	3
BCI303	Object Oriented Programming Concepts Using C++	CC	2	1	-	3
BCA322	Advance Database Management Systems Lab	CC	-	-	2	1
BCI323	Object Oriented Programming Concepts Using C++ Lab	CC	-	-	2	1
EVS 001	Environmental Studies	EVS	4	-	-	4
<b>Domain Elective : Choose any one from the following courses</b>						
BCI331	Working at a Small-to-Medium Business or ISPs	DE	2	1	-	3
BCI332	Web Designing	DE				
BCI333	Advance Technologies in Computer Science	DE				
<b>OPEN ELECTIVE</b>						
	Open Elective	OE	2	1	-	3
<b>Non Teaching Credit Course (NTCC)</b>						
BCA351	Summer Project – I	NTCC	-	-	-	3
AND003	Anandam-III	ANDP	-	-	-	2
<b>VALUE ADDED COURSES</b>						
BCS 301	Communication Skills – I	VA	1	-	-	1
BSS 303	Behavioural Science - III (Interpersonal Communication and relationship Management)	VA	1	-	-	1
	Foreign Language - III	VA	2	-	-	2
FLT 301	French					
FLG 301	German					
FLS 301	Spanish					
FLC 301	Chinese					
	<b>TOTAL</b>					<b>30</b>

#### FOURTH SEMESTER

CODE	COURSE	CATEGORY	L	T	P/F W	CREDIT UNITS
BCI401	Computer Graphics	CC	2	1	-	3
BCI402	Design & Analysis of Algorithms	CC	2	1	-	3
BCI403	Operating Systems	CC	2	1	-	3
BCA404	Computer Oriented Numerical Methods	CC	2	1	-	3
BCA405	Software Engineering	CC	2	1	-	3
BCI421	Computer Graphics Lab	CC	-	-	2	1
<b>Domain Elective :</b> Choose any one from the following courses						
BCI431	Introduction to .NET Technologies	DE	2	1	-	3
BCI432	Introduction to Open Source Technologies (PHP, MySql)	DE				
BCI433	Introducing Routing & Switching in the Enterprise	DE				
BCA434	Cloud Computing	DE				
BCA435	Big Data Analytics	DE				
BCI441	Introduction to .NET Technologies Lab	DE	-	-	2	1
BCI442	Introduction to Open Source Technologies (PHP, MySql) Lab	DE				
BCI443	Introducing Routing & Switching in the Enterprise Lab	DE				
BCA444	Cloud Computing Lab	DE				
BCA445	Big Data Analytics Lab	DE				
<b>OPEN ELECTIVE</b>						
	Open Elective	OE	2	1	-	3
<b>Non Teaching Credit Course (NTCC)</b>						
BCA450	Minor Project	NTCC	-	-	-	3
AND004	Anandam-IV	ANDP	-	-	-	2
<b>VALUE ADDED COURSES</b>						
BCS 401	Communication Skills – II	VA	1	-	-	1
BSS 403	Behavioral Science - IV (Group Dynamics & Team Building)	VA	1	-	-	1
FLT 401	Foreign Language - IV French	VA	2	-	-	2
FLG 401	German					
FLS 401	Spanish					
FLC 401	Chinese					
	<b>TOTAL</b>					<b>32</b>

#### SUMMER PROJECT – II

**FIFTH SEMESTER**

CODE	COURSE	CATEGORY	L	T	P/FW	CREDIT UNITS
BCA501	Systems Software	CC	2	1	-	3
BCI502	Java Programming	CC	2	1	-	3
BCI503	UNIX Operating System & Shell Programming	CC	2	1	-	3
BCI522	Java Programming Lab	CC	-	-	2	1
BCI523	UNIX Operating System & Shell Programming Lab	CC	-	-	2	1
<b>Domain Elective : Choose any one from the following courses</b>						
BCI531	Designing & Supporting Computer Network	DE	2	1	-	3
BCI532	Data Warehousing & Data Mining	DE				
BCI533	Android Programming	DE				
BCA534	Web Programming	DE				
BCI541	Designing & Supporting Computer Network Lab	DE	-	-	2	1
BCI542	Data warehousing & Data Mining Lab	DE				
BCI543	Android Programming Lab	DE				
BCA544	Web Programming Lab	DE				
<b>OPEN ELECTIVE</b>						
	OPEN ELECTIVE	OE	2	1	-	3
<b>Non Teaching Credit Course (NTCC)</b>						
BCA551	Summer Project – II	NTCC	-	-	-	3
AND005	Anandam-V	ANDP	-	-	-	2
<b>VALUE ADDED COURSES</b>						
BCS 501	Communication Skills – III	VA	1	-	-	1
BSS 503	Behavioural Science - V (Individual Society and Nation)	VA	1	-	-	1
FLT 501 FLG 501 FLS 501 FLC 501	Foreign Language - V French German Spanish Chinese	VA	2	-	-	2
	<b>TOTAL</b>					<b>27</b>

**SIXTH SEMESTER**

CODE	COURSE	CATEGORY	L	T	P/FW	CREDIT UNITS
BCA601	Web Technologies	CC	2	1	-	3
BCA602	Introduction to Python Technologies	CC	2	1		3
BCA621	Web Technologies Lab	CC	-	1	2	1
BCA622	Introduction to Python Technologies Lab	CC	-	-	1	1
<b>Non Teaching Credit Course (NTCC)</b>						
BCA660	Major Project	NTCC	-	-	-	15
	<b>TOTAL</b>					<b>23</b>

# DIGITAL ELECTRONICS

**Course Code: BCA 101**

**Credit Units: 03**

## **Course Objective:**

An entry level course in digital electronics covering number systems, binary mathematics, digital codes, logic gates, Boolean algebra, Karnaugh maps, and combinational logic. Emphasis will be on circuit logic analysis and design of digital circuits. The student will explain the operation of digital logic gates and use Boolean algebra and Karnaugh mapping to express logic operations and minimize logic circuits in design. The student will construct, analyze combinational logic circuits & sequential circuits; create a truth table for standard digital logic gates; and add, subtract, multiply and divide using the binary numbering system. Student will also be able to understand about digital to analog conversion and vice versa.

## **Course Contents:**

### **Module I: Number System**

Decimal, Binary, Octal, Hexadecimal Number Systems and Conversion of the bases.

#### **Introduction to logic systems**

Positive and negative logic, Logic functions - NOT, AND, OR, NOR, EX-OR, EX NOR

Truth tables Boolean algebra, De Morgan's theorems Standard forms for Logical Expressions - Sum of Products, Product of Sums Specification of Logical functions in terms of Minterms and Maxterms, Karnaugh Maps, Simplification of Logical functions, Introduction of "don't care" states.

### **Module II: Combinational Building Blocks**

Multiplexers, Decoders, Encoders

#### **Arithmetic circuits**

Half Adders and Full Adders, Half Subtractor and Full Subtractor, Representation of negative numbers, revisited

### **Module III: Flip-flops**

The RS latch, the clocked RS flip-flop, JK Flip Flop, the Master-Slave JK flip-flop, Delay and Toggle flip-flops

#### **Flip-flops in counter circuits**

Asynchronous (ripple) Counters (UP/DOWN), Synchronous Counter design (UP/DOWN), Non Sequential Counting

### **Module IV: Shift Registers**

Shift registers in general, Ring Counters, Johnson Counter

#### **Introduction to Memory**

Primary: RAM, Static RAM, Dynamic RAM, ROM, PROM, EAPROM, Secondary: Floppy Disk, Hard Disk, CDROM

### **Module V: DACs and ADCs**

Binary weighted resistor DAC, Resolution, linearity and settling time of DACs, Successive approximation ADC

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- R.P Jain, Mordern Digital Electronics

### **References:**

- Malvino& Leach, Digital Electronics
- Floyd, Digital Fundamentals
- M.M Mano, Digital Logic and Computer Design
- Gothman ,Digital Electronics

# BASIC MATHEMATICS

**Course Code:** BCI 102

**Credit Units:** 03

## **Course Objective:**

The objective of this course is to provide an introduction to the fundamentals and concepts of basic mathematics covering sets, functions, differentiation, integration, differential equations, vectors and matrices. This course aims to assist the students to develop confidence in handling mathematical concepts and techniques and to understand the principles and uses of differential and integral calculus.

Course Contents:

## **Module I: Matrix**

Matrices: Matrix, Sub matrix, types of matrices, such as symmetric, square, diagonal matrices, singular and nonsingular matrices. Addition, Subtraction, multiplication of matrices, determinant, inverse of matrix, matrix equation, Solution by Cramer's rule, Matrix inversion Method.

## **Module II: Continuity and Differentiation**

Limit and Continuity: Concept of limit, definition of continuity, kinds of discontinuity, simple problem based on continuity .

Differentiation of function, Derivative of some common functions, polynomial, rational, exponential, logarithmic and trigonometric functions.

Successive differentiation, Leibnitz theorem.

## **Module III: Integration**

Integration as inverse process of differentiation, integration of simple functions, method of change of variable and substitution for integrals, integration by parts and partial fraction. definite integrals.

## **Module IV: Differential equations**

Differential equations of first order, Differential equations of second order with constant coefficients

## **Module V: Vectors and 2-Dimensional Geometry**

Vector, Vector Algebra: addition, subtraction, Scalar Multiplication. Magnitude, Vector multiplication, Simple application of Vectors.

Straight line and Circle: Concept of straight line, slope form , intercept form and problem based on Circle.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

Engineering Mathematics, E. Kreyig

### **References:**

Higher Engineering Mathematics, B. S. Grewal

Differential Calculus, Shanti Narayan

# INTRODUCTION TO COMPUTER NETWORKING

**Course Code: BCI 103**

**Credit Units: 03**

## **Course Objective:**

The objective of the course is to provide introductory concepts in Communications such as Signaling, Encoding, Modulation, Error Detection & Correction.

The course is also aimed at providing basic understanding of Computer networks starting with OSI Reference Model, Protocols at different layers with special emphasis on IP, TCP & UDP and Routing algorithms.

## **Course Contents:**

### **Module I**

Introduction to Data Communication, Networks-protocols, advantages, disadvantages & applications, Line Configuration, topology, Transmission mode, Classification of networks.

Parallel & Serial Transmissions, Analog & Digital Signals, Periodic & Aperiodic Signals, Modulation--- Amplitude Modulation, Frequency Modulation, Phase Modulation, Pulse Amplitude Modulation, Pulse Code Modulation, Sampling.

### **Module II**

Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, Bit/ Baud Comparison, DTE-DCE Interface, 56 K Modem, Cable Modem.

OSI Model, Transmission Media-Twisted Pair Cable, Coaxial Cable, Fiber-Optics Cable, Radio frequency Allocation, Terrestrial Microwave, Infrared rays, Satellite Communication, Cellular Telephony. Introduction to ISDN.

### **Module III**

Framing, Line Discipline, Types of Errors, Error Detection & Correction (VRC, LRC, CRC, Checksum, Hamming Code), Flow Control (Stop-and-wait & Sliding Window), Error Control (Stop & Wait ARQ, Sliding Window ARQ using Go-back n method and Selective-Reject).

CSMA/CD, Project 802, IEEE Standards-802.3, Token Bus (802.4), Token Ring (802.5), Introduction to Bridges.

### **Module IV**

Internal Organization of Network Layer, Routing Algorithms-Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing, General Principles of Congestion, Congestion Prevention Policies.

Duties of Transport Layer, Connection Establishment & Connection Termination.

### **Module V**

Introduction to TCP/IP, Data Link Layer in Internet-SLIP & PPP, Network Layer in Internet-IP protocol, IP addressing, Subnetting & Internet Control Protocols, Transport Layer in Internet-TCP & UDP.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

- Behrouz ., Forouzan., "Data Communication and Networking", TMH
- W. Stallings, "Data and Computer Communication" PHI
- A.S. Tanenbaum, "Computer Networks" , PHI
- Kennedy, "Electronics Communication System", TMH

# PROGRAMMING AND PROBLEM SOLVING THROUGH 'C' LANGUAGE

**Course Code: BCI 104**

**Credit Units: 03**

## **Course Objective:**

The primary objective of this course is to understand all the components of C, including the C language, the C Preprocessor, and the C Standard Library. An understanding of some advanced practical issues, including memory management, testing and debugging, complex declarations and expression evaluation, building and using libraries, and evaluating tradeoffs, such as size vs. speed and speed vs. complexity. The ability to write C code and create and manipulate linked lists.

## **Course Contents:**

### **Module I: Introduction to Computer Fundamentals**

Basic Computer Organization, Computer Hardware Components, Disk, Primary and Secondary Memory, Keyboard, Mouse, Printer, Monitor, CD etc. Computer Software: Introduction to Application software, System Software, Compilers, Interpreters etc. Basic Operating System Concepts, Functional knowledge of MSDOS and WINDOWS.

Number System-Binary, Hexadecimal, Octal, and Decimal. Conversion from one number system to another. Computer Codes - ASCII

### **Module II: Introduction to 'C' Language**

Character set, Variables Identifiers, Data type, Arithmetic operation, Constant, operators, Expression, Assignments, basic input/output statements, Simple 'C. Programs.

Decision making in program, Relational Logical operators, if statements, if -else, nested if-else statements, Switch, case loop, Do-While, While, for loop and nesting of loop.

### **Module III: Arrays and Functions**

One Dimensional Arrays, Arrays Manipulation, Sorting, Searching, Problems solving Top down Approach, Modular Programming and functions, Passing Arguments, call by value and call by references, Recursive function, .Recursion,

### **Module IV: Pointers**

Pointers: Declaration, Pointer assignments, initialization, Pointers and Dynamic Memory Allocation , Discuss Array of Pointers .

### **Module V: Structure and Union**

Structure definition, Declaration, structure Assignments, Arrays in structure, Structure Arrays, Pointer Structure, Nested Structure, Arrays and Arrays of Structure, Union and File Handling

## **Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Problem Solving through C language, E. Balagurusamy, TMH publication.
- Peter Nortons, "Introduction to Computers", TMH

### **References:**

- Let us C, YashwantKanetkar, BPB Publication.
- P.K. Sinha, "Computer Fundamentals", BPB Publications
- V. Rajaraman, "Computer Fundamentals", Prentice Hall
- Y. Kanetkar, "Let us C", BPB Publications.

# COMPUTER CONCEPTS & PROBLEM SOLVING

**Course Code: BCI 105**

**Credit Units: 03**

## **UNIT I FUNDAMENTALS OF COMPUTERS**

Evolution of Computers, Inputs/Outputs devices, Alternative Methods of Input, Organization of Modern Digital Computers, Operating System, Multitasking OS, Graphical User Interface.

## **UNIT II WORD PROCESSING**

Word Processing Programs and Their Uses, Word Processor's Interface, Editing Text Formatting Text, Macro, Special Features of Word, Desktop Publishing Service, Converting doc into www pages.

## **UNIT III SPREADSHEET SOFTWARE**

Spreadsheet Programs, Applications, Spreadsheet package features, attributes, structure, label, data, importing data, formula, functions, data handling, Managing workbooks.

## **UNIT IV INTRODUCTION TO COMPUTER PROBLEM SOLVING**

Introduction, Problem Solving aspects, Top-Down Design-Implementation of Algorithms, Program Verification-Efficiency of Algorithm, Analysis of Algorithm fundamental algorithm, factorial computation, generation of Fibonacci sequence.

## **UNIT V FACTORING AND ARRAY TECHNIQUES**

Factoring Methods, finding the square root of a number, generating prime numbers, Array techniques, array order reversal, Finding the maximum number in a set, Removal of duplicates from an ordered Array-finding the k<sup>th</sup> smallest element.

### **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

### **Text & References:**

*Text:*

**Books:**

### **REFERENCES:**

1. V.Rajaraman "Computer Programming in C" Prentice Hall of India, New Delhi, 2001
2. Kamthane, A.N., "Programming with ANSI and Turbo C", Pearson Education, Delhi, 2006.
3. Yashavant P. Kanetkar "Pointers In C", BPB Publications, NewDelhi, 2002
4. E.Balagurusamy "Programming in ANSI C", Tata McGraw Hill, 2004
5. Deitel and Deitel "C How to Program", Addison Wesley, 2001

# PROGRAMMING AND PROBLEM SOLVING THROUGH 'C' LANGUAGE LAB

Course Code: BCI 124

Credit Units: 01

1. Write a program to find the area and perimeter of (I) square (ii) rectangle.
2. Write a Program to find the sum of first n natural numbers.
3. Write a program to calculate the average of n numbers.
4. Write a program to check whether the number is even or odd.
5. Write a program to find largest of three numbers.
6. Write a program to swap the values of two given variables.
7. Write a program to find the square of a given number.
8. Write a program to calculate the roots of a quadratic equation.
9. Write a program to compute the sum of squares of n natural numbers.
10. Write a program to reverse a given number and also calculate the number of digits in the number.
11. Write a program to calculate the sum of digits of a given number.
12. Write a program to calculate the factorial of a given positive number.
13. Write a program to generate fibonaaci series upto n terms.
14. Write a program to find the GCD and LCM of two given positive numbers.
15. Write a program to print first n prime numbers.
16. Write a program to print 1 if input character is capital, 2 if input character is a lowercase alphabet, 3 if input character is a digit and 4 if some other special character.
17. Write a C program to check whether a number is an Armstrong number.
18. Write a C program to find the power of a number.
19. Write a C program to find the sum of n terms of the series:  $n \cdot n^2/2! + n^3/3! - n^4/4! + \dots$
20. Write a C program to find the maximum/minimum number in a given array.
21. Write a C program to search a number in an array using linear search.
22. Write a C program to sort a given array using Bubble sort.
23. Write a C program to concatenate two one-dimensional arrays.
24. Write a C program to add, subtract and multiply two m by n matrices.
25. Write a C program to detect the occurrence of a character in a given string.
26. Write a C program to count the number of characters in a given string with and without using strlen () function,
27. Write a C program to copy the contents of one string to another with and without using strepy () function.
28. Write a C program to determine whether the entered character string is palindrome or not.
29. Write a C program to enter the marks, address of several students and prepare the mark sheet of each student. Use structures.
30. Write a C program to calculate net salary / printing of salary statement of an employee. Use Structures.
31. Write a C program to calculate the factorial of a number using recursion.
32. Write a C program to generate a fibonacci series using recursion.

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

## COMPUTER CONCEPTS & PROBLEM SOLVING LAB

Course Code: BCI 125

Credit Units: 01

### Course Contents:

- 1 Program to find sum of two numbers
- 2 Program to find area and circumference of circle. [ $A=3.14*R*R$  &  $C=2*3.14*R$ ]
- 3 Program to find the simple interest. [ $SI=(P*R*T)/100$ ]
- 4 Program to convert temperature from degree centigrade to Fahrenheit. [ $F=(1.8*C)+32$ ]
- 5 Program to calculate sum of 5 subjects & find percentage
- 6 Program to use bitwise AND & OR operator between the two integers
- 7 Program to shift inputted data by two bits to the left
- 8 Program to show swap of two no's without using third variable
- 9 Program to find gross salary.  
[Gross Salary= Basic salary + T.A. (12% of Basic) + D.A. (10% of basic)]
- 10 Program to find greatest in 3 numbers
- 11 Program to show the use of conditional operator
- 12 Program to find that entered year is leap year or not
- 13 Program to find whether given no is even or odd
- 14 Program to use switch statement. Display Monday to Sunday.
- 15 Program to display arithmetic operation using switch case.
- 16 Program to print a table of any number.
- 17 Program to display first 10 natural no & their sum.
- 18 Program to reverse a given number.
- 19 Program to print stars Sequence 1  
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\* \* \* \*  
\* \* \* \* \*
- 20 Program to print stars Sequence 2  
\*  
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\* \* \* \* \*  
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\* \* \*  
\* \*  
\*  
\*
- 21 Program to print star Sequences 3  
\*  
\* \*  
\* \* \*  
\* \* \* \* \*
- 22 Program to print Fibonacci series up to 100
- 23 Program to find factorial of a number. [Ex:  $5! = 5*4*3*2*1$ ]
- 24 Program to find whether given no is a prime number or not
- 25 Program to show sum of 10 elements of array & show the average

- 26 Program to find the maximum no in an array
- 27 Program to display matrix
- 28 Program to find sum of two matrices
- 29 Program to find subtraction of two matrices
- 30 Program to find multiplication of two matrices

**Examination Scheme:**

<b>IA</b>				<b>EE</b>	
<b>A</b>	<b>PR</b>	<b>LR</b>	<b>V</b>	<b>PR</b>	<b>V</b>
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# ENGLISH

**Course Code: BCS 101**

**Credit Units: 01**

## **Course Objective:**

The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond form different perspectives.

## **Course Contents:**

### **Module I: Vocabulary**

Use of Dictionary

Use of Words: Diminutives, Homonyms & Homophones

### **Module II: Essentials of Grammar - I**

Articles

Parts of Speech

Tenses

### **Module III: Essentials of Grammar - II**

Sentence Structure

Subject -Verb agreement

Punctuation

### **Module IV: Communication**

The process and importance

Principles & benefits of Effective Communication

### **Module V: Spoken English Communication**

Speech Drills

Pronunciation and accent

Stress and Intonation

### **Module VI: Communication Skills-I**

Developing listening skills

Developing speaking skills

### **Module VII: Communication Skills-II**

Developing Reading Skills

Developing writing Skills

### **Module VIII: Written English communication**

Progression of Thought/ideas

Structure of Paragraph

Structure of Essays

### **Module IX: Short Stories**

Of Studies, by Francis Bacon

Dream Children, by Charles Lamb

The Necklace, by Guy de Maupassant  
A Shadow, by R.K.Narayan  
Glory at Twilight, Bhabani Bhattacharya

**Module X: Poems**

All the Worlds a Stage	Shakespeare
To Autumn	Keats
O! Captain, My Captain	Walt Whitman
Where the Mind is Without Fear	Rabindranath Tagore
Psalm of Life	H.W. Longfellow

**Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

**Text & References:**

- Madhulika Jha, Echoes, Orient Long Man
- Ramon & Prakash, Business Communication, Oxford.
- Sydney Greenbaum Oxford English Grammar, Oxford.
- Successful Communications, Malra Treece (Allyn and Bacon)
- Effective Technical Communication, M. Ashraf Rizvi.

**\* 30 hrs Programme to be continued for Full year**

# BEHAVIOURAL SCIENCE – I (UNDERSTANDING SELF FOR EFFECTIVENESS)

**Course Code: BSS 103**

**Credit Units: 01**

## **Course Objective:**

This course aims at imparting an understanding of:  
Self and the process of self exploration  
Learning strategies for development of a healthy self esteem  
Importance of attitudes and its effect on personality  
Building emotional competence

## **Course Contents:**

### **Module I: Self: Core Competency**

Understanding of Self  
Components of Self – Self identity  
Self concept  
Self confidence  
Self image

### **Module II: Techniques of Self Awareness**

Exploration through Johari Window  
Mapping the key characteristics of self  
Framing a charter for self  
Stages – self awareness, self acceptance and self realization

### **Module III: Self Esteem & Effectiveness**

Meaning & Importance  
Components of self esteem  
High and low self esteem  
Measuring your self esteem

### **Module IV: Building Positive Attitude**

Meaning and Nature of Attitude  
Components and Types of Attitudes  
Relevance and Importance of Attitudes

### **Module V: Building Emotional Competence**

Emotional Intelligence – Meaning, Components, Importance and Relevance  
Positive and Negative Emotions  
Healthy and Unhealthy expression of Emotions

### **Module VI: End-of-Semester Appraisal**

Viva based on personal journal  
Assessment of Behavioural change as a result of training  
Exit Level Rating by Self and Observer

## **Examination Scheme:**

<b>Components</b>	<b>SAP</b>	<b>A</b>	<b>Mid Term Test (CT)</b>	<b>VIVA</b>	<b>Journal for Success (JOS)</b>
<b>Weightage (%)</b>	20	05	20	30	25

## **Text & References:**

- Dressler, David and Cans, Donald: The Study of Human Interaction
- Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company

# FRENCH - I

Course Code: **FLT 101**

Credit Units: **02**

## Course Objective:

To familiarize the students with the French language

- with the phonetic system
- with the syntax
- with the manners
- with the cultural aspects

## Course Contents:

### Module A: pp. 01 to 37: Unités 1, 2, Unité 3 Objectif 1,2

Only grammar of Unité 3: objectif 3, 4 and 5

### Contenu lexical: Unité 1: Découvrir la langue française: (oral et écrit)

1. se présenter, présenter quelqu'un, faire la connaissance des autres, formules de politesse, rencontres
2. dire/interroger si on comprend
3. Nommer les choses

### Unité 2: Faire connaissance

1. donner/demander des informations sur une personne, premiers contacts, exprimer ses goûts et ses préférences
2. Parler de soi: parler du travail, de ses activités, de son pays, de sa ville.

### Unité 3: Organiser son temps

1. dire la date et l'heure

### Contenu grammatical:

1. organisation générale de la grammaire
2. article indéfini, défini, contracté
3. nom, adjectif, masculin, féminin, singulier et pluriel
4. négation avec « de », "moi aussi", "moi non plus"
5. interrogation: Inversion, est-ce que, qui, que, quoi, qu'est-ce que, où, quand, comment, quel(s), quelle(s)  
Interro-négatif: réponses: oui, si, non
6. pronom tonique/disjoint- pour insister après une préposition
7. futur proche

### Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### Text & References:

- le livre à suivre: Campus: Tome 1

# GERMAN - I

**Course Code:** FLG 101

**Credit Units:** 02

## **Course Objective:**

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

## **Course Contents:**

### **Module I: Introduction**

Self introduction: heissen, kommen, wohnen, lernen, arbeiten, trinken, etc.

All personal pronouns in relation to the verbs taught so far.

Greetings: Guten Morgen!, Guten Tag!, Guten Abend!, Gute Nacht!, Danke sehr!, Danke!, Vielen Dank!, (es tut mir Leid!),

Hallo, wie geht's?: Danke gut!, sehr gut!, prima!, ausgezeichnet!, Es geht!, nicht so gut!, so la la!, miserabel!

### **Module II: Interviewspiel**

To assimilate the vocabulary learnt so far and to apply the words and phrases in short dialogues in an interview – game for self introduction.

### **Module III: Phonetics**

Sound system of the language with special stress on Diphthongs

### **Module IV: Countries, nationalities and their languages**

To make the students acquainted with the most widely used country names, their nationalities and the language spoken in that country.

### **Module V: Articles**

The definite and indefinite articles in masculine, feminine and neuter gender. All Vegetables, Fruits, Animals, Furniture, Eatables, modes of Transport

### **Module VI: Professions**

To acquaint the students with professions in both the genders with the help of the verb “sein”.

### **Module VII: Pronouns**

Simple possessive pronouns, the use of my, your, etc.

The family members, family Tree with the help of the verb “to have”

### **Module VIII: Colours**

All the color and color related vocabulary – colored, colorful, colorless, pale, light, dark, etc.

### **Module IX: Numbers and calculations – verb “kosten”**

The counting, plural structures and simple calculation like addition, subtraction, multiplication and division to test the knowledge of numbers.

“Wie viel kostet das?”

**Module X: Revision list of Question pronouns**

W – Questions like who, what, where, when, which, how, how many, how much, etc.

**Examination Scheme:**

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

**Text & References:**

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

# SPANISH – I

**Course Code: FLS 101**

**Credit Units: 02**

## **Course Objective:**

To enable students acquire the relevance of the Spanish language in today’s global context, how to greet each other. How to present / introduce each other using basic verbs and vocabulary.

## **Course Contents:**

### **Module I**

A brief history of Spain, Latin America, the language, the culture...and the relevance of Spanish language in today’s global context.

Introduction to alphabets

### **Module II**

Introduction to ‘*Saludos*’ (How to greet each other. How to present / introduce each other).

Goodbyes (*despedidas*)

The verb *llamarse* and practice of it.

### **Module III**

Concept of Gender and Number

Months of the years, days of the week, seasons. Introduction to numbers 1-100, Colors, Revision of numbers and introduction to ordinal numbers.

### **Module IV**

Introduction to *SER* and *ESTAR* (both of which mean To Be).Revision of ‘*Saludos*’ and ‘*Llamarse*’. Some adjectives, nationalities, professions, physical/geographical location, the fact that spanish adjectives have to agree with gender and number of their nouns. Exercises highlighting usage of *Ser* and *Estar*.

### **Module V**

Time, demonstrative pronoun (*Este/esta, Aquel/aquella* etc)

### **Module VI**

Introduction to some key AR /ER/IR ending regular verbs.

## **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

## **Text & References:**

- Español, En Directo I A
- Español Sin Fronteras

# CHINESE – I

**Course Code: FLC 101**

**Credit Units: 02**

## **Course Objective:**

There are many dialects spoken in China, but the language which will help you through wherever you go is Mandarin, or Putonghua, as it is called in Chinese. The most widely spoken forms of Chinese are Mandarin, Cantonese, Gan, Hakka, Min, Wu and Xiang. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

## **Course Contents:**

### **Module I**

Show pictures, dialogue and retell.

Getting to know each other.

Practicing chart with Initials and Finals. (CHART – The Chinese Phonetic Alphabet Called “Hanyu Pinyin” in Mandarin Chinese.)

Practicing of Tones as it is a tonal language.

Changes in 3<sup>rd</sup> tone and Neutral Tone.

### **Module II**

Greetings

Let me Introduce

The modal particle “ne”.

Use of Please ‘qing’ – sit, have tea ..... etc.

A brief self introduction – Ni hao ma? Zaijian!

Use of “bu” negative.

### **Module III**

Attributives showing possession

How is your Health? Thank you

Where are you from?

A few Professions like – Engineer, Businessman, Doctor, Teacher, Worker.

Are you busy with your work?

May I know your name?

### **Module IV**

Use of “How many” – People in your family?

Use of “zhe” and “na”.

Use of interrogative particle “shenme”, “shui”, “ma” and “na”.

How to make interrogative sentences ending with “ma”.

Structural particle “de”.

Use of “Nin” when and where to use and with whom. Use of guixing.

Use of verb “zuo” and how to make sentences with it.

### **Module V**

Family structure and Relations.

Use of “you” – “mei you”.

Measure words

Days and Weekdays.

Numbers.

Maps, different languages and Countries.

**Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

**Text & References:**

**“Elementary Chinese Reader Part I” Lesson 1-10**

# DISCRETE MATHEMATICAL STRUCTURES WITH APPLICATIONS TO CS

**Course Code: BCA 201**

**Credit Units: 03**

## **Course Objective:**

This course is aimed to solve standard topical text book-level problems by analytical means. Apply multiple concepts in the solution of a more sophisticated problem, which may be derived from a scientific application or from basic application. Model a topical problem from math, solve the problem, and report the results in the original problem context.

## **Module I: Set Theory**

Sets, Types of Sets, Basic Operations on Sets, Venn diagram, Cartesian product of two sets, Distributive law, De Morgan's Law.

Functions: Interval and sub-intervals. Definition of function and examples, polynomial, rational, exponential, logarithmic and trigonometric functions.

## **Module II: Mathematical Logic and circuits**

Basic Concepts, Propositions or Statements, Truth Table, Connectives and Compound Propositions, Implication, Bi-conditional of Connectives, Converse, Inverse and Contra positive of an Implication, Tautology, Logical Equivalence, Switching Circuits

## **Module III: Modern Algebra**

Binary Operations, Properties of Binary Operations, Semi group, Monoid, Groups, Finite and Infinite Groups, Algebra of Groups, Subgroups and other Groups.

## **Module IV: Graph Theory**

Graph, Multi Graph, Complete Graph, Bi Graph, Degree, Degree Sequence, Matrices of graphs, tree, spanning trees

## **Module V: Data Analysis**

Data and Statistical Data, Frequency Distribution, Graphical Representation, Measure of the Central Tendency, Measures of Dispersion (Mean Deviation and Standard Deviation)

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Elements of Discrete Mathematics: C.L. Liu
- Graph Theory: Wilson
- S.C Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics.

### **References:**

- Discrete Mathematics: Harikishan & ShivrajPundir
- Discrete Mathematics: J.K. Sharma.

# INTRODUCTION TO SYSTEMS ANALYSIS & DESIGN

**Course Code:** BCI 202

**Credit Units:** 03

## **Course Objective:**

This course addresses both what is required of an Information System and how this can be achieved. Studying the practices, processes, activities and technologies involved in the development of an Information system provide an excellent insight to develop skills for employment & professional life. Students are involved in activities ranging from the front-end of requirements analysis and system design to the development of User Interfaces and testing & maintenance of software.

## **Course Contents:**

### **Module I: System Concepts and the Information Systems Environment**

What is System?, Important System Characteristic, Business Systems, Business, Information Systems, Categories of Information Systems, Transaction, Processing System, MIS, DSS, and Scope of Information system.

The Role of System Analyst: Overview of System Analysis and Design, Multifaceted role of System analyst: Analytical Skill, Technical Skills, and Interpersonal Skills.

### **Module II: System Development Life Cycle**

The System Development Life Cycle, Structured Analysis Development Method, and Systems Prototype Method. System planning and Initial Investigation: System Planning: Information System Committee Method, User Group Committee Method, Initial Investigation, Feasibility Study: Operational, Technical and Economical Feasibility Cost Benefit Analysis: Data Analysis, Cost Benefit Analysis, The system proposal.

### **Module III: Determining System Requirements**

Performing Requirements Determination, Traditional Method, Modern' Methods, and Radical Methods. The Tools of Structured Analysis: Process Modeling: DFD, Logical Modeling: Structured English, Decision Trees, and Data Modeling: ER Diagram

### **Module IV: Process and Stages of System Design**

The process of design: logical design, physical design, Structured Design, Functional Decomposition, and Structured Walkthrough. Input/Output and Forms Design: Input design, output design, *forms* design, types of *forms*, layout considerations and *forms* control.

### **Module V: File organization and Database Design**

File structure, file organization, -objectives of database, data structure, normalization, the role of database administrator. Automated Tools *for* Systems Development: CASE Tools

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

- P-analysis & Design of Information Systems James A. Senn
- Modern System Analysis & Design: Jeffery A. Hoffer, Joey F. George, Joseph S. Valacich
- Elements of System Analysis & Design: Elias Awad.

# DATA STRUCTURES USING C

**Course Code: BCI 203**

**Credit Units: 03**

## **Course Objective:**

This course is an introduction to the use, design, and analysis of data structures in computer programs. The very commonly used data structures like arrays, stacks, queues, lists, trees, and graphs will be discussed in detail. Sorting and hashing are important topics in the study of algorithms. They are also closely related to the design of data structures. Several algorithms to implement these techniques are included in the syllabus.

## **Course Contents:**

### **Module I: Basic concepts of data representation**

Abstract data types: Fundamental and derived data types, Representation, Primitive Data Structures.

### **Module II: Arrays**

Representation of arrays single and multi dimensional arrays. Address calculation using column and rows major ordering. Various operations on arrays, Vector, Application of arrays: matrix multi multiplication, sparse polynomial and addition.

### **Module III: Stacks and Queues**

Representation of stacks and queues using arrays and linked list. Circular queues, priority queue and D-queue. Application of stacks: conversion from infix to postfix expression, Evaluation of postfix expression using stacks.

### **Module IV: Linked List**

Singly linked list; operations on list. Linked stacks and queue. Polynomial representations and manipulation using linked lists, doubly linked list, addition of two polynomial list.

### **Module V: Trees**

Binary trees traversal method: preorder, in-order, post-ordered traversal. Recursive and non-recursive algorithm for above mentioned Traversal methods. Representation of trees and its application: Binary tree representation of a tree, Binary search tree: height balanced (AVL) tree

### **Module VI: Searching, sorting and complexity**

Searching: Sequential and binary search, indexed search, Sorting: insertion, selection, bubble, quick, merge, heap sort.

### **Module VII: Graphs**

Graph representation: adjacency list, adjacency multicasts, adjacency lists. Traversal scheme: Depth first search, Breadth first search. Spanning tree: definition, minimal spanning tree algorithms.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### ***Text:***

- T. Langsam, M.J Augenstein and A.M. Tanenbaum, “Data structure using C and C++ Second edition, 2000, Prentice Hall of India.
- R.Kruse, G.L. Tonodo and B. Leung,” Data structures and program design in C”, Second Edition, 1997, Pearson education.
- S. Chotopadhyay, D. Ghoshdastidar & M. Chotopadhyay. Data structures through language”, First edition, 2001, BPB Publication.

### ***References:***

- G.L. Heileman, Data structures, Algorithms and object oriented programming,” First Edition 2002, Tata McGraw Hill.
- E. Horowitz, Sahni and D. Mehta,” Fundamentals of data structures in C++,” 200 Galgotia Publication

# INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

**Course Code: BCI 204**

**Credit Units: 03**

## **Course Objective:**

The objective of this course is to expose the students to the fundamentals & basic concepts in Data Base Management Systems. This course discusses architecture of Database Systems with concept of relational model & ER model. This course explains techniques for database design, Normalization and database recovery and protection.

## **Course Contents:**

### **Module I: Introduction to DBMS**

Definition of DBMS, Data Independence, DBMS Architecture, Levels, Database Administrator, File System Approach Vs DBMS Approach, Advantages of Using a DBMS, Data Models , Schemas, and Instances.

### **Module II: Relational Database & ER Model**

Relational System, Codd's Rule, Relational Model, Optimization, Tables and Views, Entity, Types of Entity, Weak Entity Attributes , Entity sets , Entity – Relationship Diagrams.

### **Module III: Relational Model Objects**

Domains and Relations, Relations and predicates, Relational Data Integrity ; Primary Key, Candidate Key , Foreign Key and their rules; Relational operators, Relational Algebra, Relational Calculus, SQL Language, Data definition, Data retrieval and update operations.

### **Module IV: Database Design**

Definition Of Functional Dependencies, Process Of Normalization, First Normal Form, Second Normal Form, Third Normal Form. Boyce Codd Normal Form, Fourth Normal Form, Fifth Normal Form.

### **Module V: Data Recovery & Protection**

Recovery-Transaction recovery, System recovery, Media Recovery, Concurrency Control Techniques, Locking, Dead Lock, Serializability; Security - Introduction.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

- Elmasari, Navathe, “Fundamentals of Database Systems”, Addison Wesley.
- Korth, Silbertz, Sudarshan, “Database Concepts”. McGraw Hill.
- Majumdar & Bhattacharya, “Database Management System”, Tata McGraw Hill.
- Date C J.” An Introduction to Database Systems”, Addison Wesley.

# Data Structures using C LAB

Course Code: BCI 223

Credit Units: 01

## List of Data Structure Programs

1. Write a program to generate Fibonacci Series, using recursion.
2. Write a program to calculate Factorial of nth number, using recursion.
3. Write a program to implement Tower of Hanoi, using recursion.
4. Write a program to calculate GCD of two numbers, using recursion.
5. Write a program to calculate power of a number, using recursion.
6. Write a program to reverse a given string, using recursion.
7. Write a program to swap two elements without using third variable.
8. Write a program to remove all the duplicate elements present in the given array.
9. Write a program to search an element using Linear Search.
10. Write a program to search an element using Binary Search.
11. Write a program to sort the given array using Bubble Sort.
12. Write a program to sort the given array using Selection Sort.
13. Write a program to sort the given array using Insertion Sort.
14. Write a program to insert a new element in the given unsorted array at k<sup>th</sup> position.
15. Write a program to insert a new element in the given sorted array at proper place.
16. Write a program to delete an element from given sorted array.
17. Write a program to merge to given sorted arrays.
18. Write a program to perform addition of two matrices.
19. Write a program to perform multiplication of two matrices.
20. Write a program to check whether given matrix is diagonal matrix, upper triangular matrix, lower triangular matrix.
21. Write a program to find out transpose of a given matrix.
22. Write a program using array of pointers, sort the given array of strings, using bubble sort.
23. Write a program to implement Stack using array, also show overflow and underflow in respective push and pop operations.
24. Write a program to implement Queue using array, which shows insertion and deletion operations.
25. Write a program to implement Circular Queue using array, which shows insertion and deletion operations.
26. Write a program to implement Linear Linked List, showing all the operations, like creation, display, insertion, deletion and searching.
27. Write a program to implement Stack, using Linked List. Implement Push, Pop and display operations.
28. Write a program to implement Queue, using Linked List. Implement Insertion, deletion and display operations.
29. Write a program to count the number of times an item is present in a linked list.
30. Write a program to increment the data part of every node present in a linked list by 10. Display the data both before incrementation and after.
31. Write a program to implement Doubly Linked List, showing all the operations, like creation, display, insertion, deletion and searching.
32. Write a program to create a Binary Search Tree and display its contents using preorder, postorder and inorder traversal.
33. Write a program to implement insert, delete and search operations in a Binary Search Tree

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# INTRODUCTION TO DATABASE MANAGEMENT SYSTEM LAB

**Course Code: BCI 224**

**Credit Units: 01**

## **Course Contents:**

### **Module I: Introduction to oracle**

Tools of Oracle, Features of oracle.

- 1) Create a table “PRODUCTS” with the below mentioned structure:

Product ID	NUMBER(11)
Supplier ID	NUMBER(11)
Category ID	NUMBER(11)
Quantity Per Unit	VARCHAR2(20)
Unit Price	NUMBER(11)
Units In Stock	NUMBER(11)
Units On Order	NUMBER(11)

Product ID should be the Primary Key.

### **Module II: SQL**

Overview of SQL, Component of SQL (DDL, DML, DCL), Advantage of SQL, Basics of syntax writing, Data Definition Language, Create command, Data type, Constraints, ALTER & DROP, UPDATE & DELETE Commands, Substitutions variables, Run time Environments variables, SELECT Commands Basic Constructs, Functions, Nested Queries, Correlated queries, Views, Sequence, Synonymous, User Management Commands.

- 2) Consider the following tables:

WORKS(Pname,Cname,Salary)

LIVES(Pname,Street,City)

LOCATED\_IN(Cname,City)

MANAGER(Pname,Mgrname)

Where Pname=Person name, Cname= Company name and Mgrname = Manager name.

Write the SQL for the following:

- List the names of the people who work for the company Wipro along with the cities they live in.
  - Find the people who work for the company “Infosys” with a salary more than Rs. 50000/-. List the names of the people , along with the street and city addresses.
  - Find the names of the persons who live and work in the same city.
  - Find the names of the persons who did not work for “Infosys”.
  - Find the persons whose salaries are more than that of all of the “Oracle” employees.
  - Find the names of the companies that are located in every city where the company “Infosys” is located.
- 3) Create table EMP and DEPT with the below mentioned structure
- Structure for EMP table

EmpID	NUMBER(4)
DeptID	VARCHAR2(10)
EmpName	CHAR(10)
Job	CHAR(10)
HireDate	DATE
Salary	NUMBER(7, 2)
Commission	NUMBER (7, 2)

Structure for DEPT table

DeptId	VARCHAR2(10)
Deptname	VARCHAR2(20)
No_of_Faculties	NUMBER(2)

In table EMP: EmpID should be the Primary Key and DeptID should be the foreign key.

In table DEPT: DeptId should be the primary key.

- 4) INSERT the following values in the EMP table:
  - a) 1001,SET\_01,Harrey,SE,01-Jan-2009,15000,3
  - b) 1002,SET\_02, Ron, SSE,15-Feb-1998,20000,4
  - c) 1003,SEM\_05, Peter, Manager,15-April-1999,40000,5
  - d) 1002,SED\_07, Jolie,Assistant Manager,15-Dec-1998,50000,5
  - e) 1008,SET\_08, Santy, SSE,15-Feb-2000,20000,4
  - f) 1008,SED\_10, San, SE,10-Feb-2009,22000,5
  
- 5) Considering the above table i.e EMP write the queries for the following:
  - a) Find out the number of employees having “manager” as job.
  - b) Display only the jobs with maximum salary greater than or equal to 3000
  - c) Find all those employees whose job does not start with ‘M’.
  - d) Find the names of the employees whose name starts with ‘S’.
  - e) Find the names of the employees who are Managers and their date of joining is after “02-Jan-2006”.
  - f) For describing the structure of the EMP table and DEPT table.
  - g) For getting the average salary of the employees from EMP table.
  - h) For displaying the current date and give the column a name “DATE”.
  - i) For converting the name of the employee into uppercase where the employee name is “Santy”
  - j) Create a sequence with name SEQ\_EMP , which will generate numbers from 1 to 99 in ascending order with an interval of 1. The sequence must start from 1 after generating the number 99.
  - k) Displaying the names of the employees who have an a and an e in their names.
  
- 6) Considering the table DEPT in question 3, find the total number of departments.
  
- 7) Alter the EMP table for the changing the width of the field EmpID from 4 to 10.
  
- 8) Alter the DEPT table for changing the width of the field No\_of\_Faculties from 2 to 4.
  
- 9) Delete all the records from the EMP table where the EmpName starts with “S” ,
  
- 10) Insert some values in the PRODUCTS table created in Question 1 and then DROP the table PRODUCTS.
  
- 11) Update the EMP table for the following values:
  - a) Increase the salary of all the employees by 10% where the job is SE and SSE.
  - b) Change the hiredate of the employee “Harry” to 01-Feb-2009.
  - c) Update the salary of the employees to an increase of 15% where deptid is SED\_07.
  
- 12) Alter the table EMP for the following:
  - a) Add one more field in the table i.e DOB DATE
  - b) Drop the column named Commission from the EMP table.
  
- 13) Write a query to select all the records from the EMP table.
  
- 14) Write a query to select all the records from the DEPT table.
  
- 15) Write a query to select the distinct deptid from EMP table.

16) Write a query to find the name and salary of the employee from EMP table where the salary is maximum.

17) Create a view named v\_EMP on the table EMP,DEPT by selecting the following fields

Emp ID, Dept ID, Emp Name, Job

Where the EMP.Dept ID = DEPT. Dept Id.

18) Create a synonym S\_EMP on the table EMP.

### Module III

Basic features, Block Structure of a PL/SQL Programs, Control Structures, Exception Handling, Cursor, Procedure, function and Triggers, Internet features of Oracle, Overviews of SQLJ

19) Write a PL/SQL program for:

- Printing the Fibonacci series from 1 to 50.
- Printing the smallest number among any three numbers.
- Printing the table of any specific number entered.

20) Create a trigger named "Client\_Master" which keeps track of records deleted or updated when such operations are carried out. Records in this table are inserted into table "Audit" when database trigger fires due to an update or delete statement fired on this table "Client".

Table: Client

<i>Column name</i>	<i>Data type</i>	<i>Size</i>
Client_no	Varchar2	6
Name	Varchar2	20
Address	Varchar2	30
Balance_Due	Number	10,2

21) Write a sql query to drop the table EMP, can we drop a table with data in it.

#### Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

#### Text & References:

- SQL, PL/SQL Ivan Bayross BPB Publication

# DOMAIN ELECTIVE

## NETWORKING FOR HOME & SMALL BUSINESS

**Course Code: BCI 231**

**Credit Units: 03**

**Course Objective:**

This course is aimed to provide a fundamental understanding of Computer Networking, Operating System, Connecting to the networks, network addressing, network services and Wireless technologies etc. After the completion of the course you will understand the core concepts around which computer networks revolve.

**Course Contents:**

**Module I: Personal Computer Hardware**

Personal Computers and Applications, types of Computers, Binary Representation of Data, Computer Components and Peripherals, Computer System Components

**Module II: Operating System**

Choosing the Operating Systems, Installing the Operating System, Maintaining the Operating System.

**Module III: Connecting to the Networks**

Introduction to Networking, Principles of Communication, Communicating on a Local Wired Network, Building the Access Layer of an Ethernet Network, Building the Distribution Layer of Network, Plan and Connect a Local Network

**Module IV: Connecting to the Internet through ISP**

The Internet and How We Connect To It Sending Information across the Internet  
Networking Devices in a NOC Cables and Connectors Working with Twisted Pair Cabling

**Module V: Network Addressing**

Addresses and Subnet Masks, Types of IP Addresses, How IP Addresses are obtained  
Address Management

**Module VI: Network Services**

Clients/Servers and Their Interactions, Application Protocols and Services, Layered Model and Protocols

**Module VII: Wireless Technologies**

Wireless Technology, Wireless LANs, Security Considerations on a Wireless LAN  
Configuring an Integrated AP and Wireless Client

**Module VIII: Basic Security**

Networking Threats, Methods of attack, Security Policy, Using Firewalls

**Module IX: Trouble Shooting your Network**

Troubleshooting Process, Troubleshooting Issues, Common Issues, Troubleshooting and the Helpdesk

**Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

**Text & References:**

*Text:*

- CCNA-Discovery 4.0, module 1, Cisco Certified Networking Academy

*References:*

- Data Communication and Computer Network, Forozoun, TMH Publication
- Data Communication and Network, Stallings, PHI
- Computer Network, Tanenbaum, PHI

# INTERNET FUNDAMENTALS

**Course Code: BCI 232**

**Credit Units: 03**

**Course Objective:** The course provides introduction to internet and a deep insight into the basics of internet, world wide web, security risks over internet, basics of various languages used over internet. With this course students would be able to know the basics of each and every introductory internet and computer features which would prove to be very helpful throughout their degree, and would prove helpful in understanding other related subjects also.

## **Course Contents:**

### **Module 1: Internet Basics**

Introduction to Internet, History of Internet, Internet Working, Modes of Connecting to Internet, Internet Service Providers(ISPs), Differentiate between Internet, Intranet and Extranet, Protocol, Internet address, IP addressing, standard address, domain name, DNS, internet tool, TCP/IP and UDP, OSI reference model.

### **Module 2: Electronic Mail**

Introduction to E-mail, advantages and disadvantages of e-mails, structure of an e-mail address, message components, message composition, mailer features, Internal working of E-mail, E-mail management, MIME types, Newsgroups, mailing lists, chat rooms, secure-mails, SMTP,POP, PICO, Pine, Gopher.

### **Module 3: World Wide Web**

Introduction to www, Miscellaneous Web Browser details, searching www: Search engines and meta search engines, search fundamentals, search strategies, working of search engines, Telnet, FTP, HTTP, Introduction to Browser, Coast-to-coast surfing, HTML, Web page installation and setup , Basics of HTML, formatting & hyperlink creation. Using and installing Plug-ins.

### **Module 4: Introduction to Languages and Servers**

Basics of java script language, Client/Server Side Programming in java script, Using Forms and data entry using java script, XML and DHTML basics, Creating Static and dynamic web pages. Web Servers: PWS, IIS, Apache, Advantages and limitations of using these servers.

### **Module 5: Privacy and security**

Introduction to security over internet,Network Attacks, security and privacy levels, security policy, virus worms andd Trozan horses, Cryptography: Encryptionand Decryption techniques, SecureWeb document, Digital Signatures, Firewalls and its types, IDS.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### *Text:*

- Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
- Internet & World Wide Programming, Deitel,Deitel & Nieto, 2000, Pearson Education

### *References:*

- Complete idiots guide to java script,. Aron Weiss, QUE, 1997
- Atul Kahate, “Cryptography and Network Security”, Tata McGraw-Hill, 2003

# CYBER SECURITY

**Course Code: BCI 233**

**Credit Units: 03**

## **Course Objective:**

The goal of the Cyber Security course is to provide an awareness of cyber threats and vulnerabilities, risk factors present in the cyber world. It will provide the student with basic knowledge of cyber crime dynamics and is aware to the students desiring Security Systems

## **Course Contents:**

### **Module I: Introduction to Cyber Security**

Introduction to Cyber Security, Cyber Crime / Social Theories, Threats to security, Government requirements, Information Protection and Access Controls, Computer security efforts, Standards, Computer Security mandates and legislation, Privacy considerations, International security activity, Intrusion Detection , Malicious Software Use and Detection

### **Module II: Information Technology Law**

The Information Technology Legal Framework in India, Cyber Crime, Digital Evidence, Technological Standards under the Information Technology Law, Liability of companies under the Information Technology Act

### **Module III: Network Security**

Intrusion Detection & Prevention systems, Firewalls and Firewall Policy, Computer Security Log Management, Securing WiMAX Wireless Communications

### **Module IV: Information security**

Fundamentals, Employee responsibilities, information classification, Information handling, Tools of information security, Information processing, secure program, administration.

### **Module V: Information Technology Act Compliance**

IT Act compliance for e-Commerce Sector, Education Sector, Healthcare Sector, Hospitality Sector, Outsourcing Sector, Retail Sector

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text Book:**

- Rick Lehtinen and G.T. Gangemi, Computer Security Basics, 2<sup>nd</sup> ed. (2006), O'Reilly Media Inc.

### **Reference Book:**

- McClure, Stuart & Scambray, Joel, Hacking Exposed 5<sup>th</sup> ed. et al (2005),, McGraw-Hill Osborne Media.
- Ortmeier, P. J., Security Management: An Introduction, 2<sup>nd</sup> ed. (2005), Prentice Hall.

# ENGLISH

**Course Code: BCS 201**

**Credit Units: 01**

## **Course Objective:**

The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond form different perspectives.

## **Course Contents:**

### **Module I: Vocabulary**

Use of Dictionary

Use of Words: Diminutives, Homonyms & Homophones

### **Module II: Essentials of Grammar - I**

Articles

Parts of Speech

Tenses

### **Module III: Essentials of Grammar - II**

Sentence Structure

Subject -Verb agreement

Punctuation

### **Module IV: Communication**

The process and importance

Principles & benefits of Effective Communication

### **Module V: Spoken English Communication**

Speech Drills

Pronunciation and accent

Stress and Intonation

### **Module VI: Communication Skills-I**

Developing listening skills

Developing speaking skills

### **Module VII: Communication Skills-II**

Developing Reading Skills

Developing writing Skills

### **Module VIII: Written English communication**

Progression of Thought/ideas

Structure of Paragraph

Structure of Essays

### **Module IX: Short Stories**

Of Studies, by Francis Bacon

Dream Children, by Charles Lamb

The Necklace, by Guy de Maupassant

A Shadow, by R.K.Narayan  
Glory at Twilight, Bhabani Bhattacharya

**Module X: Poems**

All the Worlds a Stage	Shakespeare
To Autumn	Keats
O! Captain, My Captain	Walt Whitman
Where the Mind is Without Fear	Rabindranath Tagore
Psalm of Life	H.W. Longfellow

**Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

**Text & References:**

- Madhulika Jha, Echoes, Orient Long Man
- Ramon & Prakash, Business Communication, Oxford.
- Sydney Greenbaum Oxford English Grammar, Oxford.
- Successful Communications, Malra Treece (Allyn and Bacon)
- Effective Technical Communication, M. Ashraf Rizvi.

## **BEHAVIOURAL SCIENCE – II**

### **(PROBLEM SOLVING AND CREATIVE THINKING)**

**Course Code:** BSS 203

**Credit Units:** 01

#### **Course Objective:**

To enable the students:

Understand the process of problem solving and creative thinking.

Facilitation and enhancement of skills required for decision-making.

#### **Course Contents:**

##### **Module I: Thinking as a tool for Problem Solving**

What is thinking: The Mind/Brain/Behaviour

Thinking skills

Critical Thinking and Learning:

Making Predictions and Reasoning

Memory and Critical Thinking

Emotions and Critical Thinking

##### **Module II: Hindrances to Problem Solving**

Perception

Expression

Emotion

Intellect

Work environment

##### **Module III: Problem Solving Process**

Recognizing and Defining a problem

Analyzing the problem (potential causes)

Developing possible alternatives

Evaluating Solutions

Resolution of problem

Implementation

##### **Module IV: Plan of Action**

Construction of POA

Monitoring

Reviewing and analyzing the outcome

### **Module V: Creative Thinking**

Definition and meaning of creativity

The nature of creative thinking

Convergent and Divergent thinking

Idea generation and evaluation (Brain Storming)

Image generation and evaluation

Debating

The six-phase model of Creative Thinking: ICEDIP model

### **Module VI: End-of-Semester Appraisal**

Viva based on personal journal

Assessment of Behavioural change as a result of training

Exit Level Rating by Self and Observer

### **Examination Scheme:**

<b>Components</b>	<b>SAP</b>	<b>A</b>	<b>Mid Term Test (CT)</b>	<b>VIVA</b>	<b>Journal for Success (JOS)</b>
<b>Weightage (%)</b>	20	05	20	30	25

### **Text & References:**

- Michael Steven: How to be a better problem solver, Kogan Page, New Delhi, 1999
- Geoff Petty: How to be better at creativity; Kogan Page, New Delhi, 1999
- Phil Lowe Koge Page: Creativity and Problem Solving, New Delhi, 1996
- Bensley, Alan D.: Critical Thinking in Psychology – A Unified Skills Approach, (1998), Brooks/Cole Publishing Company.

## FRENCH - II

**Course Code:** FLT 201

**Credit Units:** 02

### Course Objective:

To enable the students to overcome the fear of speaking a language and take position as a foreigner speaking French.

To make them learn the basic rules of French Grammar.

### Course Contents:

**Module A: pp.38 – 47: Unité 3: Objectif 3, 4, 5, 6**

**Module B: pp. 47 to 75 Unité 4, 5**

**Contenu lexical: Unité 3: Organiser son temps**

1. donner/demander des informations sur un emploi du temps, un horaire  
SNCF – Imaginer un dialogue
2. rédiger un message/ une lettre pour ...
  - i) prendre un rendez-vous/ accepter et confirmer/ annuler
  - ii) inviter/accepter/refuser
3. Faire un programme d'activités  
imaginer une conversation téléphonique/un dialogue  
Propositions- interroger, répondre

#### Unité 4: Découvrir son environnement

1. situer un lieu
2. s'orienter, s'informer sur un itinéraire.
3. Chercher, décrire un logement
4. connaître les rythmes de la vie

#### Unité 5: s' informer

1. demander/donner des informations sur un emploi du temps passé.
2. donner une explication, exprimer le doute ou la certitude.
3. découvrir les relations entre les mots
4. savoir s'informer

- Contenu grammatical:**
1. Adjectifs démonstratifs
  2. Adjectifs possessifs/exprimer la possession à l'aide de:
    - i. « de »
    - ii. A+nom/pronom disjoint
  3. Conjugaison pronominale – négative, interrogative -  
construction à l'infinitif
  4. Impératif/exprimer l'obligation/l'interdiction à l'aide de « il faut... »/ «il ne faut pas... »
  5. passé composé
  6. Questions directes/indirectes

### Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### Text & References:

- le livre à suivre: Campus: Tome 1

## GERMAN – II

**Course Code: FLG 201**

**Credit Units: 02**

### **Course Objective:**

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Introduction to Grammar to consolidate the language base learnt in Semester I

### **Course Contents:**

#### **Module I: Everything about Time and Time periods**

Time and times of the day.

Weekdays, months, seasons.

Adverbs of time and time related prepositions

#### **Module II: Irregular verbs**

Introduction to irregular verbs like to be, and others, to learn the conjugations of the same, (fahren, essen, lesen, schlafen, sprechen und ähnliche).

#### **Module III: Separable verbs**

To comprehend the change in meaning that the verbs undergo when used as such

Treatment of such verbs with separable prefixes

#### **Module IV: Reading and comprehension**

Reading and deciphering railway schedules/school time table

Usage of separable verbs in the above context

#### **Module V: Accusative case**

Accusative case with the relevant articles

Introduction to 2 different kinds of sentences – Nominative and Accusative

#### **Module VI: Accusative personal pronouns**

Nominative and accusative in comparison

Emphasizing on the universal applicability of the pronouns to both persons and objects

#### **Module VII: Accusative prepositions**

Accusative prepositions with their use

Both theoretical and figurative use

#### **Module VIII: Dialogues**

Dialogue reading: 'In the market place'  
'At the Hotel'

### **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmoe, Deutsch als Fremdsprache 1A, Grundkurs

## SPANISH – II

**Course Code:** FLS 201

**Credit Units:** 02

### **Course Objective:**

To enable students acquire more vocabulary, grammar, Verbal Phrases to understand simple texts and start describing any person or object in Simple Present Tense.

### **Course Contents:**

#### **Module I**

Revision of earlier modules.

#### **Module II**

Some more AR/ER/IR verbs. Introduction to root changing and irregular AR/ER/IR ending verbs

#### **Module III**

More verbal phrases (eg, Dios Mio, Que lastima etc), adverbs (*bueno/malo, muy, mucho, bastante, poco*). Simple texts based on grammar and vocabulary done in earlier modules.

#### **Module IV**

Possessive pronouns

#### **Module V**

Writing/speaking essays like my friend, my house, my school/institution, myself...descriptions of people, objects etc, computer/internet related vocabulary

### **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- Español, En Directo I A
- Español Sin Fronteras

## CHINESE – II

**Course Code:** FLC 201

**Credit Units:** 02

### **Course Objective:**

Chinese is a tonal language where each syllable in isolation has its definite tone (flat, falling, rising and rising/falling), and same syllables with different tones mean different things. When you say, “ma” with a third tone, it mean horse and “ma” with the first tone is Mother. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

### **Course Contents:**

#### **Module I**

Drills

Practice reading aloud

Observe Picture and answer the question.

Tone practice.

Practice using the language both by speaking and by taking notes.

Introduction of basic sentence patterns.

Measure words.

Glad to meet you.

#### **Module II**

Where do you live?

Learning different colors.

Tones of “bu”

Buying things and how much it costs?

Dialogue on change of Money.

More sentence patterns on Days and Weekdays.

How to tell time. Saying the units of time in Chinese. Learning to say useful phrases like – 8:00, 11:25, 10:30 P.M. everyday, afternoon, evening, night, morning 3:58, one hour, to begin, to end ..... etc.

Morning, Afternoon, Evening, Night.

#### **Module III**

Use of words of location like-li, wai hang, xia

Furniture – table, chair, bed, bookshelf,.. etc.

Description of room, house or hostel room.. eg what is placed where and how many things are there in it?

Review Lessons – Preview Lessons.

Expression ‘yao’, ‘xiang’ and ‘yaoshi’ (if).

Days of week, months in a year etc.

I am learning Chinese. Is Chinese difficult?

#### **Module IV**

Counting from 1-1000

Use of “chang-chang”.

Making an Inquiry – What time is it now? Where is the Post Office?

Days of the week. Months in a year.

Use of Preposition – “zai”, “gen”.

Use of interrogative pronoun – “duoshao” and “ji”.

“Whose”??? Sweater etc is it?

Different Games and going out for exercise in the morning.

### Module V

The verb “qu”

- Going to the library issuing a book from the library
- Going to the cinema hall, buying tickets
- Going to the post office, buying stamps
- Going to the market to buy things.. etc
- Going to the buy clothes .... Etc.

Hobby. I also like swimming.

Comprehension and answer questions based on it.

### Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### Text & References:

- “Elementary Chinese Reader Part I” Lesson 11-20

# COMPUTER ORIENTED STATISTICAL AND OPTIMIZATION METHODS

**Course Code: BCA 301**

**Credit Units: 03**

## Course Objective:

The objective of this course is to expose students to the fundamentals and concepts of statistical and optimization methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, skewness and kurtosis, theory of probability, linear programming problems, transportation, assignment and game problems. This course is designed with an aim of helping the students to understand important theorems, different formulae and practical applications of these statistical and optimization methods in the field of Computer Sciences and Applications.

## Course Contents:

### Module I

Collection of Data, Sampling and Sampling Designs, Classification and Tabulation of Data, Graphical representation of Data, Measures of Central Value, Measures of Dispersion. Moments, Skewness, Kurtosis, Correlation and Regression.

### Module II: Probability

Classical Definition of Probability, Algebra of Events, Probability Axioms, Conditional Probability.

**Probability Distributions:** Discrete and Continuous Distributions, Binomial Distribution, Poisson distribution, Normal Distribution.

### Module III: Linear Programming

Mathematical Formulation of Linear Programming models and its Graphical Solutions, Simplex Method, Charne's Big M method, Two Phase Method.

### Module IV: Transportation Problem

General Transportation model, Starting basic Solutions:-North west Corner Method, Least Cost Method, Vogel's Approximation Method, Test of optimality, unbalanced Problem.

### Assignment Problems

### Module V: Game Theory

Two-Person Zero Sum Games, Maximin-Minimax Principal, Pure Strategies, Mixed Strategies, Expected Pay off, Concept of Dominance, Graphical Solution of  $m \times 2$  and  $2 \times n$  Games.

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

### Text:

- P.K. Gupta & Manmohan, Linear Programming and Theory of Games.
- S.C Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics.

### References:

- Hogg, Probability and Statistical Inference.
- Alexander. M. Mood, Introduction to the Theory of Statistics
- Franklin. A. Graybill, Dane. C. Boes
- Taha, Handy A, Operations Research
- G. Hadley, Linear Programming.

# ADVANCE DATABASE MANAGEMENT SYSTEMS

**Course Code: BCA 302**

**Credit Units: 03**

## **Course Contents:**

To familiarize students with the advance database management system fundamentals and make students enable to deal with advance SQL query, indexing, optimization, concurrency control etc. and ADBMS administration works.

## **Course Contents**

### **Module I Design Theory for Relational Database**

Functional Dependencies, Decomposition of Relation Schemes, Normal Forms for Relations, Schemes, Multivalued and other kinds of Dependencies, Transactions and Concurrency Control.

### **Module -II: Basics of PL/SQL**

PL/SQL basics, blocks, architecture, variables, constants, attributes, character set, JOIN and its types with queries, data types, control structure, conditional and sequential control statements.

### **Module -III: Advanced PL/SQL**

PL/SQL precompiler, cursors, type of cursors, exceptions, Indexing, View, triggers, PL/SQL Stored procedures and packages00

### **Module IV Query Optimization and Database Protection**

Basic Optimization Strategies, Algebraic Manipulation, Optimization of Selections in System, Exact Optimization for a Subset of Relational Queries, Optimization under Weak Equivalence. Integrity, Constraints in Query-by-Example, Security, Security in Query-by- Example, Security in Statistical Databases.

### **Module V Object and Object Relational Databases**

Concepts for Object Databases, Object Identity, Object structure, Type Constructors, Encapsulation of Operations, Methods, Persistence, Type and Class Hierarchies, Inheritance, Complex Objects, Object Database Standards, Languages and Design: ODMG Model – ODL – OQL – Object Relational and Extended – Relational Systems, Object Relational features in SQL/Oracle – Case Studies.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text Books:**

1. J.D.Ullman- Principles of Database Systems, Galgotia, New Delhi.
2. S.Ceri and G. Relagatti- Distributed Databases, McGraw-Hill.

## **Reference Books:**

1. M.T.Ozsu & P.Valduriez-Principles of Distributed Database Systems, 2nd Edn, Pearson Education, New Delhi-2001.
2. Elmasri & Navathe- Fundamentals of Database Systems, 3rd Edn, Pearson Education, New Delhi, 2001

# OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++

**Course Code: BCI 303**

**Credit Units: 03**

## Course Objective:

C++ is one of the most widely used programming languages for solving problems. The objective of this course is to provide object oriented programming fundamentals using C++. Topics to be covered include fundamentals of syntax & semantics of C++, loops & decisions, functions, classes and structures and features of classes such as overloading and inheritance, files, streams, pointers etc.

## Course Contents:

### Module I: Overview of C++

What is Object Oriented Programming, Characteristics of OOP, Difference between C and C++.

Basics:-Input/Output in C++ using cin/cout, Preprocessor Directives, Data Types-Integer, Float, character, Enumerated data types, library functions, comments, storage classes, manipulators, type conversion, arithmetic operators, arrays and strings

### Module II: Loops and Decisions

Relational operators, Logical operators, Decisions-if, if-else and switch. Loops-for, while, do-while and nested loops, precedence summary, break, continue and goto statements.

Functions: Simple functions, passing arguments to functions, returning values from functions, reference arguments, returning by reference, Overloaded functions, Inline functions

### Module III: Structures

A simple Structure, specifying the Structure, defining the structure variable, accessing members of structure, structure within structure, accessing structure members using pointers

Classes and objects: A simple class, C++ objects as physical objects, Constructors, Destructors, objects as function arguments, returning objects from functions, static class data, array as class data member, array of objects.

### Module IV: Operator Overloading & Inheritance

Overloading unary operator, Overloading binary operator, data conversion. Inheritance: Derived and Base class, Derived class Constructor, types of Inheritance , Abstract base class , public and private Inheritance, level of Inheritance, Ambiguity in multiple inheritance .

### Module V: Pointers and Virtual functions

Pointers and Arrays, pointers and strings, pointers and functions, pointers to objects, virtual functions, friend functions, static functions, this pointer.

Files and Streams: streams, string I/O, character I/O, object I/O, file pointer, error handling, command line arguments.

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

- Programming with C++, Ravi Chandran
- Mastering C++, Venugopal
- Programming in C++, SCHAUM's series
- The complete reference C++, Herbert Schildt
- Turbo C++, Robert Lafore

# ADVANCE DATABASE MANAGEMENT SYSTEMS LAB

**Course Code: BCA 322**

**Credit Units: 01**

## INSTRUCTIONS TO STUDENTS

1. Students should be regular and come prepared for the lab practice.
2. In case a student misses a class, it is his/her responsibility to complete that missed experiment(s).
3. Students should bring the observation book, lab journal and lab manual. Prescribed textbook and class notes can be kept ready for reference if required.
4. They should implement the given experiment individually.
5. While conducting the experiments students should see that their programs would meet the following criteria:
  - Programs should be interactive with appropriate prompt messages, error messages if any, and descriptive messages for outputs.
  - Programs should perform input validation (Data type, range error, etc.) and give appropriate error messages and suggest corrective actions.
  - Comments should be used to give the statement of the problem and every function should indicate the purpose of the function, inputs and outputs
  - Statements within the program should be properly indented
  - Use meaningful names for variables and functions.
  - Make use of Constants and type definitions wherever needed.
6. Once the experiment(s) get executed, they should show the program and results to the instructors and copy the same in their observation book.
7. Questions for lab tests and exam need not necessarily be limited to the questions in the manual, but could involve some variations and / or combinations of the questions.

## LAB CONTENTS

SL NO.	TITLE OF EXPERIMENT	WEEKS
1.	SQL BASICS	2 weeks
2.	Analyzing given system and preparing ERmodel and converting it to relational schema.	1 week
3.	SQL Advanced Commands	2 weeks
4.	PL/SQL BASICS & Cursor	1 week
5.	Cursors continued & exception handling	1 week
6.	Triggers	1 week
7.	Procedures, Functions, Packages	2 weeks
8.	Interfacing DB with any latest front end	1 week
9.	Implementation	1 week

## LIST OF PROGRAMS

### 1. Week 1 SQL

#### 1.1 Create table EMP with following columns and constraints

**Note: Give descriptive enough name to the constraints**

Name	Type	Constraint
EMPNO	NUMBER(4)	Make this as primary key after creating table
ENAME	VARCHAR2(10)	
JOB	VARCHAR2(9)	CLRK/MGR/A.MGR/GM/CEO, default CLRK
MGR_ID	NUMBER(4)	References EMP
DATE_BIRTH	DATE	Must be less than joining Date
SAL	NUMBER(7,2)	More than 20000, default 20001
COMM	NUMBER(7,2)	DEFAULT 1000
DEPTNO	VARCHAR2(3)	References DEPT
DATE_OF_JOIN	DATE	

Add a primary key constraint to EMP table after creating the table

#### 1.2 Create table DEPT with following columns and constraints

Name	Type	Constraint
DNO	VARCHAR2(3)	Primary Key and Starts from 'D'
DNAME	VARCHAR2(10)	Unique
LOCATION	VARCHAR2(9)	BNG/MNG/MUB/HYD/CHN, default BNG

#### 1.3 Create table PROJECTs with following constraints

Combination of DNO and PRJ\_NO is primary key

Name	Type	Constraint
DNO	VARCHAR2(3)	References DEPT ,NOT NULL
PRJ_NO	VARCHAR2(5)	Starts from 'P' , NOT NULL
PRJ_NAME	VARCHAR2(10)	
PRJ_CREDITS	NUMBER(2)	Range from 1 to 10
STRT_DATE	DATE	
END_DATE	DATE	END_DATE > START_DATE

Add a column to EMP table named PRJ\_ID. Add a foreign key constraint to EMP table on (DeptNo,Proj\_Id) referencing PROJECTS. Indicates -an employee from which department is working on which project/s.

#### 1.4 Insert records into EMP table

In the following records take any valid values to the columns left blank, columns with null must be entered with null values only

Empno	Ename	Job	MgR_ID	Date_ofBirth	Sal	comm	Deptno	Prj_Id	Dateof join
100	Ravi	MGR	111	10-10-1985	32000		D1	P1	2-10-2001
102	Raviraj	CLRK	100	10-12-1980	24000		D1	P3	12-11-2000
111	Raghu	GM	150	10-12-1974	45000	15000	null	null	3-12-1985
150		CEO	null	10-12-1970	60000	30000	null	null	3-12-1990
103		A.CLRK	111	10-12-1980			D1	P1	2-10-2001
103		CLRK	111	2-10-1980			D1	P3	2-10-2002
125	Manu	A.MGR	150	10-12-1980			D4	P2	2-10-2002
104		CLERK	100	2-10-1980			D2	P1	2-10-2005
106		MGR	100	2-10-1986			D2		2-10-1985
123	Mahesh	CLRK	106	10-12-1974	25000		D3	P2	2-10-2002
108		CLRK	106	10-12-1970			D9		2-10-1985
103		CLRK	111	10-12-1980			D1	P3	2-10-2001
null		CLRK	106	10-12-1980	18000				10-12-1980

#### 1.5 Insert records into DEPT table

DNO	DName	Location
D1	Marketing	CHN
D2	Research	MNG
D3	Administrator	BNG
D4		BGG
D5	IT	BNG
Null	Corporate	HYD

Write the reason if some records are not inserted. Insert your own 2 records

## 1.6 Insert records into PROJECTS

<b>Dno</b>	<b>Prj_No</b>	<b>Prj_Name</b>	<b>Prj_Credits</b>
D1	P1		2
D2	P1		2
D3	P2		7
D1	P3		5
D4	P2		7

Insert your own 2 records

## 2. Week 2

2.1 Display all records from EMP,DEPT and PROJECTS table

2.2 Display records of Employees who have salary more than 25000 or working in department D2

2.3 Delete employee records working on project P2 and confirm the result. Type ROLLBACK to restore records back if records are deleted.

2.4 Delete department Marketing from DEPT table, confirm the result with reason. Type ROLLBACK to restore records back if records are deleted.

2.5 Delete records of employees working under Manger with ID 100 and in project P1.

2.6 Update the DNO of first record in PROJECTS to D5, confirm the result with reason.

2.7 Update the Job of employee with EmpNo 123 to MGR, salary to 35000 and his manager as 111.

2.8 List all employee names and their salaries, whose salary lies between 25200/- and 35200/- both inclusive.

2.9 List all employee names reporting to employees 100,125,150

2.10 List all employees whose name starts with either M or R.

2.11 List the name of employees whose name do not starts with M.

2.12 List all kind jobs available in employee table, avoid displaying duplicates.

2.13 List minimum, maximum, average salaries in company.

2.14 Display the number of employees working in each project.

2.15 List the Employees name and their manager's names

2.16 List Employees Name, their department name and Projects Name in which they are working.

2.17 List the employee names, salary of employees whose first character of name is R, 2nd and 3rd characters are 'v','i' and remaining characters are unknown.

### 3. Week 3

3.1 List the Projects name undertaken by Marketing Department.

3.2 Display current date, 53, absolute value of -45 and current date as date with format MONTH-YY.

3.3 Display the employees name and salary in descending order by salary.

3.4 List the name of departments which are working with more than 1 project

3.5 Display department name, Max salary and Min salary in each department.

3.6 List the employees whose experience is more than 5 years.

3.7 List the Employees number, Name and their Age and retirement date(assume 60 years retirement age).

3.8 List the Employees who born on December month.

3.9 List the Employees names who born on a given year.

3.10 List the Employees names who joined on day 12.

3.11 List the Employees names having service experience more than 10 years.

3.12 List the projects which have duration more than 1 year.

3.13 List the Employees Name who is working at Locations (BNG,MUB,HYD)7

3.14 Update the COMM column of EMP table based on the SAL. Use  $COMM=CMM+SAL*10/100$

3.15 List employee names, padded to right with a series of three periods and space up to a width of 30, and project credits of projects in which they are working.(Use RPAD,LPAD)

3.16 List the name of employees who are working in project with credit more than 7 and display name with only first letter capital and replace the character 'a'(if present) in the name by '\$'.

3.17 Display department Name and Total amount spent on each department by the company as Salary.

3.18 List Employee numbers,  $SAL *12$  (rename as ANNUAL\_SAL),  $SAL*12 *0.1$  (as TAX) , display ANNUAL\_SAL and TAX in the format of \$12,34,456.90.

### 4. Week 4

Analyzing the given system and designing ER –Model and converting the ER-model to relational scheme and implementing in Oracle. Listing the functionalities to be implemented and designing application logic(pseudo code) for the functionalities.

## 5. Week 5

5.1 List Job category and total salary paid for the each jobs category by the company

5.2 Display name of the department from which maximum number of employees are working on project P1

5.3 Display department names and number of CLERK working in the departments.

5.4 Display Employee names who are not working in any of the projects.

5.5 Create a View EMP\_PRJ\_VW to display records of employees of 'marketing' department and project in which they are working.

5.6 Display employee names and projects in which they are working using ViewEMP\_PRJ\_VW

5.7 Insert a record into View EMP\_PRJ\_VW and check the underlying tables for result and confirm result with reason.

5.8 Create an unique index on the column name DNAME on DEPT table

5.9 Create an index on the columns (name and job) on EMP table.

5.10 Create a Sequence STUD\_SEQ which starts from 100 to 999 with increments of 3.

5.11 Create a table STUD with columns ROLLNO and Name. Insert ROLLNO values by taking values from STUD\_SEQ.

5.12 Display Location of department and Employees name working in Marketing department or Research (using set operator).

5.13 Display the names of the Departments undertaking both projects P1 and P3 (using set operator).

8

## 6. Week 6 - PL/SQL

6.1 Write a PL/SQL block to insert row into EMP table.

6.2 Write a PL/SQL block for performing money withdrawal operation. Assume that the account has to maintain minimum 2000/- always. Assume current balance is 5000/- display the message- 'WITHDRAWAL COMPLETED' if new balance after withdrawal is  $\geq$  2000 otherwise 'WITHDRAWAL NOT COMPLETED'

6.3 Write a PL/SQL block to check an input string is palindrome or not palindrome.

6.4 Write a PL/SQL block to reverse a given number.

6.5 Write a PL/SQL block to accept employee number and display Employee Name, salary of employees in the format – 'RAVI draws 32000/- as salary'

6.6 \*Write a PL/SQL block to input employee number and display employee name, department name and project name on which employee is working for the given employee number.

6.7 Write a PL/SQL block to display ENAME and SAL of all employees drawing salary more than 30000/-.

6.8 Do the exercise 6.7 using cursor for loop.

7. Week 7

7.1 Write PL/SQL block to give salary hike of 10% to first five highest paid employees, create a save point for salary hike given to each of five employees Calculate total amount paid by the company as salary to all employees and it should not exceed 500000/-(this amount can be assumed suitably). If it exceeds, rollback up to the recent previous save point and check again to know whether total salary lies below 500000/- and so on. Commit the changes if total salary lies below 500000/-.

7.2 \*Write a PL/SQL block to process Pay roll of all Employees by calculating Bonus( considering Project Credits of projects in which they are working),HRA,PF,TAX,GROSS and NET\_SAL. Insert these salary details into a new

table PAYROLL(EmpNo, Pay\_Date, Salary, Bonus, HRA, GROSS,PF, TAX,

NET\_SAL). Note Salary is same as Sal from EMP table,

Bonus=Salary\*Proj\_Credits/100, HRA=10% of Salary, PF=10% of Salary

GROSS=Salary +Bonus + HRA, TAX=10% of GROSS, NET\_SAL=GROSS-PFTAX.(Hint:

use two cursor one for EMP and another for different projects and their

credits)

7.3 Write a PL/SQL block (using parameterized cursor) to display first two employees

details (Name, Salary, Department Name) in ascending order by their salary and working in Project P1.

7.4 Write a PL/SQL block to accept, Principle, Interest rate and duration (in years) to calculate Interest to be paid. Handle the exceptions if Principle  $\leq 1000$ , interest rate  $< 5$ , year  $< 1$  and display proper error message for each.9

7.5 Write a PL/SQL block to accept employee number from user and display employee details such as Empno, Name, and Sal. Handle the exception raised –

(i) If user entered a non-existing employee number.

(ii) If the salary more than 25000/-

If employee exists and salary is less than 25000/- then update that salary to 25000/-

7.6 When the oracle looks for the exception OTHERS and give an example for a PL/SQL block where OTHERS is used and explain it.

7.7 \* Write a PL/SQL block to insert record into EMP table with exception handling for oracle error numbers ORA-01438,ORA-01722,ORA-00904 and display proper error messages.

ORA-01438 –if salary value entered more than given digits width.ORA-01722 – if a character value is inserted into Salary (or to any numeric value column) ORA-00904 – if column name entered is incorrect.

8. Week 8

8.1 Write a PL/SQL trigger to fire when there is an updation of salary of any Empno and record the Empno, Dept. Name and Old Salary, date on which salary is modified and user name who modified information in the table SAL\_MOD (Empno, Dname, Old\_Sal, Mod\_Date, Modifier)

8.2 Write a PL/SQL trigger to fire when there is an insert /update/deletes operation on EMP table; record the information in AUDIT\_EMP table which has same structure as that of EMP along with a new column OPERATION (storesUPDATE/INSERT/DELETE depending on operation being done.)

- 8.3 Write a PL/SQL block trigger to do INSERT/UPDATE/DELETE operation only during week days. Raise an exception if the day is SAT or SUN and also display user name who initiated operation.
- 8.4 Write a PL/SQL block trigger to check existence of child records in EMP table on Performing DELETE operation on DEPT table. If child records exist display message and cancel the delete operation otherwise perform delete operation.
- 8.5 Do the program 4.16 using INSTEAD OF option.
- 8.6 \*Write PL/SQL block trigger to insert a record into a view EMP\_DEPT\_VIEW. Create the view containing EMPNO, ENAME, DATE\_OF\_BIRTH DEPTNO, and DNAME. Use INSTEAD OF option with trigger to make records to insert into underlying tables.

## 9. Week 9

- 9.1 Write a procedure to calculate simple interest, taking principle, rate and year as inputs.
- 9.2 Write a procedure to take SAL of given Employee as input and calculate HRA, PF, DA, GROSS, TAX and NETSAL and return them to calling PL/SQL block (take EMPNO as keyboard input to get SAL)
- 9.3 Write a function to calculate square of a number and return calculated value to calling PL/SQL block.
- 9.4 Write two functions to calculate age and service experience of all employees and return these values to calling PL/SQL block and display.
- 9.5 Write functions to find department name and number of projects it is handling. Display this information in the calling PL/SQL block.
- 9.6 Write a package containing procedure to calculate area of circle, perimeter and a function to find factorial of a number.
- 9.7 Write a package containing a procedure to display Employee name, department name, immediate superior name and a function to display retirement date by considering date of birth and retiring age as 65 years.

## 10. Week 10

Interfacing Oracle database with any latest front end and prepare GUI layout prototypes for the system under consideration.

## 11. Week 11

Implementing GUI layouts and application logic for the system under consideration.

## 12. Week 12

Completing the implementation of application for system under considerations and validation, basic functionality testing.

**Examination Scheme:**

<b>IA</b>				<b>EE</b>	
<b>A</b>	<b>PR</b>	<b>LR</b>	<b>V</b>	<b>PR</b>	<b>V</b>
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++ LAB

**Course Code: BCA 323**

**Credit Units: 01**

1. WAP to find greatest of three numbers.
2. WAP to calculate factorial of a number.
3. WAP to print Fibonacci series of 'n' numbers , where n is given by the programmer
4. WAP to check whether a number is prime or not.
5. WAP to find the number of characters and words in a string.
6. WAP to read a set of numbers in an array & to find the largest of them.
7. WAP to implement bubble sort using arrays.
8. WAP to read a set of numbers from keyboard & to find sum of all elements of the given array using a function.
9. WAP to exchange contents of two variables using call by value.
10. WAP to exchange contents of two variables using call by reference.
11. WAP to find the sum of three numbers using pointer to function method.
12. WAP to display content of an array using pointer arithmetic.
13. Calculate area of different geometrical figures (circle, rectangle, square, triangle) using function overloading.
14. WAP a program to maintain the student record containing roll number , Name, marks1, marks2, marks3 as data member and getdata(), display() and setdata() as member functions(use array of object)
15. WAP to increment the employee salaries on the basis of their designation (Manager-5000, General Manager-10000, CEO-20000, worker-2000). Use employee name, id, designation, salary as data member and inc\_sal as member function (Use array of object).
16. Write a class bank, containing data member: Name of Depositor, A/c type, Type of A/c, Balance amount. Member function: To assign initial value, To deposit an amount, to withdraw an amount after checking the balance (which should be greater than Rs. 500) , To display name & balance.
17. WAP to define nested class 'student\_info' which contains data members such as name, roll number and sex and also consists of one more class 'date' ,whose data members are day, month and year. The data is to be read from the keyboard & displayed on the screen.
18. WAP to generate a series of Fibonacci numbers using copy constructor, where it is defined outside the class using scope resolution operator.
19. Write a program to add two complex numbers using friend function.
20. Write a class string to compare two strings, overload (==) operator.
21. Write a class to concatenate two strings, overload (+) operator.

22. Create a class item, having two data members x & y, overload '-' (unary operator) to change the sign of x and y.
23. Create a class Employee. Derive 3 classes from this class namely, Programmer, Analyst & Project Leader. Take attributes and operations on your own. Write a program to implement this with array of pointers.
24. Create two classes namely Employee and Qualification. Using multiple inheritance derive two classes Scientist and Manager. Take suitable attributes & operations. Write a program to implement this class hierarchy.
25. Write a program to read data from keyboard & write it to the file. After writing is
26. Completed, the file is closed. The program again opens the same file, reads

**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# ENVIRONMENTAL STUDIES

**Course Code: EVS 001**

**Credit Units: 04**

## **Course Objective:**

The term environment is used to describe, in the aggregate, all the external forces, influences and conditions, which affect the life, nature, behaviour and the growth, development and maturity of living organisms. At present a great number of environment issues, have grown in size and complexity day by day, threatening the survival of mankind on earth. A study of environmental studies is quite essential in all types of environmental sciences, environmental engineering and industrial management. The objective of environmental studies is to enlighten the masses about the importance of the protection and conservation of our environment and control of human activities which has an adverse effect on the environment.

## **Course Contents:**

### **Module I: The multidisciplinary nature of environmental studies**

Definition, scope and importance

Need for public awareness

### **Module II: Natural Resources**

#### **Renewable and non-renewable resources:**

Natural resources and associated problems

Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

### **Module III: Ecosystems**

Concept of an ecosystem

Structure and function of an ecosystem

Producers, consumers and decomposers

Energy flow in the ecosystem

Ecological succession

Food chains, food webs and ecological pyramids

Introduction, types, characteristic features, structure and function of the following ecosystem:

- a. Forest ecosystem
- b. Grassland ecosystem

- c. Desert ecosystem
- d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

#### **Module IV: Biodiversity and its conservation**

Introduction – Definition: genetic, species and ecosystem diversity

Biogeographical classification of India

Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values

Biodiversity at global, national and local levels

India as a mega-diversity nation

Hot-spots of biodiversity

Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts

Endangered and endemic species of India

Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

#### **Module V: Environmental Pollution**

Definition

□□□ Causes, effects and control measures of:

- a. Air pollution
- b. Water pollution
- c. Soil pollution
- d. Marine pollution
- e. Noise pollution
- f. Thermal pollution
- g. Nuclear pollution

Solid waste management: Causes, effects and control measures of urban and industrial wastes.

Role of an individual in prevention of pollution.

Pollution case studies.

Disaster management: floods, earthquake, cyclone and landslides.

#### **Module VI: Social Issues and the Environment**

From unsustainable to sustainable development

Urban problems and related to energy

Water conservation, rain water harvesting, watershed management

Resettlement and rehabilitation of people; its problems and concerns. Case studies.

Environmental ethics: Issues and possible solutions

Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

Wasteland reclamation

Consumerism and waste products

Environmental Protection Act

Air (Prevention and Control of Pollution) Act

Water (Prevention and control of Pollution) Act

Wildlife Protection Act

Forest Conservation Act

Issues involved in enforcement of environmental legislation

Public awareness

#### **Module VII: Human Population and the Environment**

Population growth, variation among nations

Population explosion – Family Welfare Programmes  
 Environment and human health  
 Human Rights  
 Value Education  
 HIV / AIDS  
 Women and Child Welfare  
 Role of Information Technology in Environment and Human Health  
 Case Studies

**Module VIII: Field Work**

Visit to a local area to document environmental assets-river / forest/ grassland/ hill/ mountain.

Visit to a local polluted site – Urban / Rural / Industrial / Agricultural

Study of common plants, insects, birds

Study of simple ecosystems-pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

**Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

**Text & References:**

- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email:mapin@icenet.net (R)
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
- Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
- De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- Down to Earth, Centre for Science and Environment (R)
- Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- Heywood, V.H & Weston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- Mckinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions, Web enhanced edition. 639p.
- Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)

- Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- Survey of the Environment, The Hindu (M)
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

# DOMAIN ELECTIVE

## WORKING AT A SMALL-TO-MEDIUM BUSINESS OR ISPs

**Course Code: BCI 331**

**Credit Units: 03**

### **Course Objective:**

This course is aimed to provide a fundamental understanding of small to medium business or ISP. After the completion of this, students will know how to plan network upgrade, planning the addressing structure, configuring the network devices and ISP services.

### **Course Contents:**

#### **Module I: The Internet and Its Uses**

What is the Internet, Internet Service Providers, and ISP Connectivity

#### **Module II: ISP Help Desk**

Help Desk Technicians, OSI Model, ISP Troubleshooting

#### **Module III: Planning a Network Upgrade**

Common Issues, Planning the Network Upgrade, Purchasing and Maintaining Equipment

#### **Module IV: Planning the addressing structure**

IP Addressing in the LAN, NAT and PAT

#### **Module V: Configuring Network Devices**

Initial ISR Router Configuration, Configuring an ISR with SDM, Configuring a Router Using IOS CLI, Initial Cisco 2960 Switch Configuration, Connecting the CPE to the ISP

#### **Module VI: Routing**

Enabling Routing Protocols, Exterior Routing Protocols

#### **Module VII: ISP Services**

Introducing ISP Services, Protocols that Support ISP Services, Domain Name Service Services and Protocols

#### **Module VIII: ISP Responsibilities**

ISP Security Considerations, Security Tools, Monitoring and Managing the ISP Backups and Disaster Recovery

### **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

### **Text & References:**

#### **Text:**

- CCNA-Discovery 4.0, module 2, Cisco Certified Networking Academy

#### **References:**

- Data Communication and Computer Network, Forozoun, TMH Publication
- Data Communication and Network, Stallings, PHI
- Computer Network, Tanenbaum, PHI

## WEB DESIGNING

Course Code	L	T	P	Credit
BCI332	2	1	0	3

### Course Objective:

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus includes basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

### Course Contents:

#### Module I: Introduction to HTML

HTML Definition, Structure of HTML Document, HTML Elements, Web Browser, HTML History, HTML Editors, <!DOCTYPE> Declaration, Using Background Image, Marquee Tag, Headings, Paragraphs, Nested HTML Elements, Empty HTML Elements, HTML Attributes, HTML Styles, HTML Layout Elements and Techniques, HTML Symbol Entities Using Emojis in HTML, HTML Character Entities, HTML Text Formatting, Colors, Quotation and Citation Elements, HTML Comments Tags.

#### Module II: Introduction to HTML (contd...)

Hyper Links and Bookmarks, Images and Image Mapping and Its attributes, Tables and its attributes, Table Spacing and Padding, Rowspan, Colspan, Table Layout, Ordered Lists, Unordered Lists, Definition List, Nested Lists, Forms and its controls and attributes, IFrame, HTML Graphics, HTML Media.

#### Module III: Introduction to CSS

What is CSS, Inline CSS, Internal CSS, External CSS, CSS Color, Font, Sizes, CSS Border, CSS Padding, CSS Margins, Block Level Elements and Inline Elements, Class, ID, DIV, SPAN

#### Module IV: Working with Graphics and Images

Graphics, Images, Types of Images, Modifying the Brightness, Contrast, Size of Images, Changing the Image Resolution (dpi), SVG Intro, SVG in HTML, SVG Rectangle, SVG Circle, SVG Ellipse, SVG Line, SVG Polygon, SVG Polyline, SVG Path, SVG Text, SVG Stroking, SVG Filter Intro, SVG Blur Effects, SVG Drop Shadow, SVG Linear, SVG Radial.

#### Module V: Web Hosting

Web Hosting Basics, Types of Hosting Packages, Registering domains, Defining Name Servers, Using Control Panel, Creating Emails in Cpanel, Using FTP Client, Maintaining a Website

### Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

### Text & References:

- HTML, DHTML, JavaScript, Perl, CGI, Ivan Bayross, BPB Publication.
- HTML Complete Reference, BPB Publication.
- Internet for everyone, Alexis Leon and Mathew Leon, Leon Tech world.

## ADVANCED TECHNOLOGIES IN COMPUTER SCIENCE

Course Code	L	T	P	Credit
BCI333	2	1	0	3

### Course Objective

The objective is of this course to make aware the students about emerging technologies and areas in computer science viz Soft computing, Parallel computing, Pervasive computing, High performance computing and Quantum Computing.

### Course Contents

#### Module I: Soft Computing

Introduction of soft computing, soft computing vs. hard computing, various types of soft computing techniques, applications of soft computing.

#### Module II: Green Computing

Introduction to Green Computing, Websites, statistics, and government initiatives, Reducing the IT footprint, Computing technology for greener transportation, smarter buildings, Major green initiatives: Sustainable IT, Green Business, Smarter Plant

#### Module III: Internet of Things

Introduction – Concepts behind the Internet of Things, Trends and characteristics, Technologies behind the Internet of Things, Creative thinking techniques, application areas

#### Module IV: Civic technology

Civic technology, Smart city, e-democracy, open data, intelligent environment

#### Module V: Emerging Technologies

Brief introduction to emerging technologies: Quantum Computing, Parallel Computing, Pervasive Computing, High Performance Computing, Cluster computing, cloud computing, Super Computing

#### Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

#### Text & References:

- Internet and Emerging Technologies 2nd Edition, by FADAIRO SIKIRUA (Author), MOORNING KIM
- Advanced Technologies: Building in the Computer Age (The Information Technology Revolution in Architecture) Paperback – June 1, 2001 by Valerio Travi

# SUMMER PROJECT – I (Evaluation)

**Course Code: BCA 351**

**Credit Units: 03**

## **Course Objective:**

The objective of project work is to provide students, exposure about the technology they have learnt in previous and current semesters and their applications in real time situations. Appropriate application software as assigned by the project guide to be developed individually or in-groups.

They are supposed to follow the following technologies:

C,

C++

DBMS

## **Guidelines:**

There are certain phases of every Intern's professional development that cannot be effectively taught in the academic environment. These facets can only be learned through direct, on-the-job experience working with successful professionals and experts in the field. The internship program can best be described as an attempt to institutionalize efforts to bridge the gap between the professional world and the academic institutions. Entire effort in internship is in terms of extending the program of education and evaluation beyond the classroom of a university or institution. The educational process in the internship course seeks out and focuses attention on many latent attributes, which do not surface in the normal classroom situations. These attributes are intellectual ability, professional judgment and decision-making ability, inter-disciplinary approach, skills for data handling, ability in written and oral presentation, sense of responsibility etc.

In order to achieve these objectives, each student will maintain a file (**Internship File**). The Internship File aims to encourage students to keep a personal record of their learning and achievement throughout the Programme. It can be used as the basis for lifelong learning and for job applications. Items can be drawn from activities completed in the course modules and from the workplace to demonstrate learning and personal development.

The File will assess the student's analytical skills and ability to present supportive evidence, whilst demonstrating understanding of their organization, its needs and their own personal contribution to the organization.

The **layout guidelines** for the Project & Seminar Report:

### **1. File should be in the following specification**

- A4 size paper
- Font: Arial (10 points) or Times New Roman (12 points)
- Line spacing: 1.5
- Top & bottom margins: 1 inch/ 2.5 cm
- Left & right margins: 1.25 inches/ 3 cm

### **2. Report Layout:** The report should contain the following components

Front Page

Table of Content

Acknowledgement  
 Student Certificate  
 Company Profile (optional)  
 Introduction  
 Main Body  
 References / Bibliography

The File will include **five sections** in the order described below. The content and comprehensiveness of the main body and appendices of the report should include the following:

1. **The Title Page**--Title - An Internship Experience Report For (Your Name), name of internship organization, name of the Supervisor/Guide and his/her designation, date started and completed, and number of credits for which the report is submitted.
2. **Table of Content**--an outline of the contents by topics and subtopics with the page number and location of each section.
3. **Introduction**--short, but should include how and why you obtained the internship experience position and the relationship it has to your professional and career goals.
4. **Main Body**--should include but not be limited to daily tasks performed. Major projects contributed to, dates, hours on task, observations and feelings, meetings attended and their purposes, listing of tools and materials and their suppliers, and photographs if possible of projects, buildings and co-workers.
5. **References / Bibliography** --This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system

#### ASSESSMENT OF THE INTERNSHIP FILE

The student will be provided with the Student Assessment Record (SAR) to be placed in front of the Internship File. Each item in the SAR is ticked off when it is completed successfully. The faculty will also assess each item as it is completed. The SAR will be signed by the student and by the faculty to indicate that the File is the student's own work. It will also ensure regularity and meeting the delaines.

#### STUDENT ASSESSMENT RECORD (SAR)

1. **Range of Research Methods used to obtain information**
2. **Execution of Research**
3. **Data Analysis**
  - Analyse Quantitative/ Qualitative information
  - Control Quality
4. **Draw Conclusions**

#### Examination Scheme:

Components	V	S	R	FP
Weightage (%)	20	20	20	40

V – Viva, S – Synopsis, FP – Final Presentation, R - Report

# OPEN ELECTIVE

## COMMUNICATION SKILLS - I

**Course Code:** BCS 301

**Credit Units:** 01

**Course Objective:**

To form written communication strategies necessary in the workplace

**Course Contents:**

**Module I: Introduction to Writing Skills**

Effective Writing Skills

Avoiding Common Errors

Paragraph Writing

Note Taking

Writing Assignments

**Module II: Letter Writing**

Types

Formats

**Module III**

Memo

Agenda and Minutes

Notice and Circulars

**Module IV: Report Writing**

Purpose and Scope of a Report

Fundamental Principles of Report Writing

Project Report Writing

Summer Internship Reports

**Examination Scheme:**

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

**Text & References:**

- Business Communication, Raman – Prakash, Oxford
- Creative English for Communication, Krishnaswamy N, Macmillan
- Textbook of Business Communication, Ramaswami S, Macmillan
- Working in English, Jones, Cambridge
- A Writer's Workbook Fourth edition, Smoke, Cambridge
- Effective Writing, Withrow, Cambridge
- Writing Skills, Coe/Rycroft/Ernest, Cambridge
- Welcome!, Jones, Cambridge

## BEHAVIOURAL SCIENCE - III

### (INTERPERSONAL COMMUNICATION AND RELATIONSHIP MANAGEMENT)

**Course Code: BSS 303**

**Credit Units: 01**

#### **Course Objective:**

This course aims at imparting an understanding of:  
 Interpersonal communication and relationship.  
 Strategies for healthy interpersonal relationship  
 Effective management of emotions.  
 Building interpersonal competence.

#### **Course Contents:**

##### **Module I: Interpersonal Communication**

Importance of Behavioural/ Interpersonal Communication  
 Types – Self and Other Oriented  
 Rapport Building – NLP, Communication Mode  
 Steps to improve Interpersonal Communication

##### **Module II: Interpersonal Styles**

Transactional Analysis  
 Life Position/Script Analysis  
 Games Analysis  
 Interactional and Transactional Styles  
 Bridging differences in Interpersonal Relationship through TA  
 Communication Styles

##### **Module III: Conflict Management and Negotiation**

Meaning and Nature of conflicts  
 Styles and techniques of conflict management  
 Meaning of Negotiation  
 Process and Strategies of Negotiation  
 Interpersonal Communication: Conflict Management and Negotiation

##### **Module IV: Interpersonal Relationship Development**

Importance of Interpersonal Relationships  
 Interpersonal Relationship Skills  
 Types of Interpersonal Relationships  
 Relevance of Interpersonal Communication in Relationship Development

##### **Module V: Impression Management**

Meaning & Components of Impression Management  
 Impression Management Techniques  
 Impression Management Training-Self help and Formal approaches

##### **Module VI: End-of-Semester Appraisal**

Viva based on personal journal  
 Assessment of Behavioural change as a result of training  
 Exit Level Rating by Self and Observer

#### **Examination Scheme:**

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
<b>Weightage (%)</b>	20	05	20	30	25

#### **Text & References:**

- Vangelist L. Anita, Mark N. Knapp, Inter Personal Communication and Human Relationships: Third Edition, Allyn and Bacon
- Julia T. Wood. Interpersonal Communication everyday encounter
- Beebe, Beebe and Redmond; Interpersonal Communication, 1996; Allyn and Bacon Publishers.
- Rosenfeld, P., Giacalone, R.A. and Catherine, A.R. (2003). Impression Management: Building and Enhancing Reputations at Work. Thomson Learning, Singapore.

## FRENCH - III

**Course Code: FLT 301**

**Credit Units: 02**

### Course Objective:

To provide the students with the know-how

To master the current social communication skills in oral and in written.

To enrich the formulations, the linguistic tools and vary the sentence construction without repetition.

### Course Contents:

**Module B: pp. 76 – 88 Unité 6**

**Module C: pp. 89 to103 Unité 7**

#### Contenu lexical: Unité 6: se faire plaisir

1. acheter: exprimer ses choix, décrire un objet (forme, dimension, poids et matières) payer
2. parler de la nourriture, deux façons d'exprimer la quantité, commander un repas au restaurant
3. parler des différentes occasions de faire la fête

#### Unité 7: Cultiver ses relations

1. maîtriser les actes de la communication sociale courante (Salutations, présentations, invitations, remerciements) annoncer un événement, exprimer un souhait, remercier, s'excuser par écrit.
3. caractériser une personne (aspect physique et caractère)

#### Contenu grammatical:

1. accord des adjectifs qualificatifs
2. articles partitifs
3. Négations avec de, ne...rien/personne/plus
4. Questions avec combien, quel...
5. expressions de la quantité
  6. ne...plus/toujours - encore
  7. pronoms compléments directs et indirects
8. accord du participe passé (auxiliaire « avoir ») avec l'objet direct
9. Impératif avec un pronom complément direct ou indirect
10. construction avec « que » - Je crois que/ Je pense que/ Je sais que

#### Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

#### Text & References:

- le livre à suivre: Campus: Tome 1

## GERMAN - III

**Course Code:** FLG 301

**Credit Units:** 02

### **Course Objective:**

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

### **Course Contents:**

#### **Module I: Modal verbs**

Modal verbs with conjugations and usage

Imparting the finer nuances of the language

#### **Module II: Information about Germany (ongoing)**

Information about Germany in the form of presentations or “Referat”– neighbors, states and capitals, important cities and towns and characteristic features of the same, and also a few other topics related to Germany.

#### **Module III: Dative case**

Dative case, comparison with accusative case

Dative case with the relevant articles

Introduction to 3 different kinds of sentences – nominative, accusative and dative

#### **Module IV: Dative personal pronouns**

Nominative, accusative and dative pronouns in comparison

#### **Module V: Dative prepositions**

Dative preposition with their usage both theoretical and figurative use

#### **Module VI: Dialogues**

In the Restaurant,

At the Tourist Information Office,

A telephone conversation

#### **Module VII: Directions**

Names of the directions

Asking and telling the directions with the help of a roadmap

#### **Module VIII: Conjunctions**

To assimilate the knowledge of the conjunctions learnt indirectly so far

### **Examination Scheme:**

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

## SPANISH – III

**Course Code:** FLS 301

**Credit Units: 02**

### **Course Objective:**

To enable students acquire knowledge of the Set/definite expressions (idiomatic expressions) in Spanish language and to handle some Spanish situations with ease.

### **Course Contents:**

#### **Module I**

Revision of earlier semester modules

Set expressions (idiomatic expressions) with the verb *Tener, Poner, Ir....*

Weather

#### **Module II**

Introduction to *Gustar...* and all its forms. Revision of *Gustar* and usage of it

#### **Module III**

Translation of Spanish-English; English-Spanish. Practice sentences.

How to ask for directions (using *estar*)

Introduction to IR + A + INFINITIVE FORM OF A VERB

#### **Module IV**

Simple conversation with help of texts and vocabulary

En el restaurante

En el instituto

En el aeropuerto

#### **Module V**

Reflexives

### **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- Español, En Directo I A
- Español Sin Fronteras -Nivel Elemental

## CHINESE – III

**Course Code: FLC 301**

**Credit Units: 02**

### **Course Objective:**

Foreign words are usually imported by translating the concept into Chinese, the emphasis is on the meaning rather than the sound. But the system runs into a problem because the underlying name of personal name is often obscure so they are almost always transcribed according to their pronunciation alone. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

### **Course Contents:**

#### **Module I**

Drills

Dialogue practice

Observe picture and answer the question.

Introduction of written characters.

Practice reading aloud

Practice using the language both by speaking and by taking notes.

Character writing and stroke order

#### **Module II**

Measure words

Position words e.g. inside, outside, middle, in front, behind, top, bottom, side, left, right, straight.

Directional words – beibian, xibian, nanbian, dongbian, zhongjian.

Our school and its different building locations.

What game do you like?

Difference between “hii” and “neng”, “keyi”.

#### **Module III**

Changing affirmative sentences to negative ones and vice versa

Human body parts.

Not feeling well words e.g.; fever, cold, stomach ache, head ache.

Use of the modal particle “le”

Making a telephone call

Use of “jiu” and “cal” (Grammar portion)

Automobiles e.g. Bus, train, boat, car, bike etc.

Traveling, by train, by airplane, by bus, on the bike, by boat.. etc.

#### **Module IV**

The ordinal number “di”

“Mei” the demonstrative pronoun e.g. mei tian, mei nian etc.

use of to enter to exit

Structural particle “de” (Compliment of degree).

Going to the Park.

Description about class schedule during a week in school.

Grammar use of “li” and “cong”.  
Comprehension reading followed by questions.

### **Module V**

Persuasion-Please don't smoke.

Please speak slowly

Praise – This pictorial is very beautiful

Opposites e.g. Clean-Dirty, Little-More, Old-New, Young-Old, Easy-Difficult, Boy-Girl, Black-White, Big-Small, Slow-Fast ... etc.

Talking about studies and classmates

Use of “it doesn't matter”

Enquiring about a student, description about study method.

Grammar: Negation of a sentence with a verbal predicate.

### **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- “Elementary Chinese Reader Part I, Part-2” Lesson 21-30

# COMPUTER GRAPHICS

**Course Code: BCI 401**

**Credit Units: 03**

## **Course Objective:**

The objective of this course is to present the basic principles for the design, use and understanding of computer graphics systems. Both hardware and software components of graphics systems are discussed here. This course also teaches the students about different algorithms for creating and manipulating graphics displays. Varieties of mathematical methods are used in various computer graphics algorithm.

## **Course Contents:**

### **Module I: Introduction of Graphics**

Development of Computer Graphics, Basic Graphics System and Standards.

#### **Graphics Devices:**

Raster and Random Scan Devices, Continual Refresh and Storage Displays, Display Processor, Color Display Techniques, Frame Buffer, Concepts in Raster Graphics.

### **Module II: Graphics Primitives**

Points, Pixels, Scan Conversion, Line Drawing Algorithms, Circle Drawing Algorithms, Anti-aliasing Technique, Character generator

#### **Polygon**

Polygon representation, Polygon Filling, Inside/Outside Testing

### **Module III: Transformation**

Scaling, Translation, Rotation, Coordinate Axis Rotation, Reflection, Shears, Composite Transformation, Modeling and Coordinate Transformation

**Viewing:** Two – Dimensional Viewing, Viewing transformation, Interactive Picture Construction Techniques, Interactive Input/Output Devices,

### **Module IV: Segment**

Segment Table, Creating Deleting and Renaming a Segment, Visibility and Image Transformation

**Windowing and Clipping:** Window, View-port, Line clipping, polygon clipping, Multiple Windowing

### **Module V: Three Dimensional Concepts**

3-D Representation and Transformation, 3-D Viewing, Algorithm for 3-D Volumes, Introduction to Spline Curves and Surfaces

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Computer Graphics By Donald Hearn And Pauline Baker
- Harrington's "Computer Graphics " A Programming Approach

### **References:**

- Principle of Interactive Computer Graphics By New, W. M. And Spraul
- Foley "Computer Graphics" Addison Wesley
- Rogers' "Procedural Elements Of Computer Graphics " Mc-Grawhill

# DESIGN AND ANALYSIS OF ALGORITHMS

**Course Code:** BCI 402

**Credit Units:** 03

## Course Objective:

The objective of the course is to provide the fundamentals and the concepts of Design & analysis of Algorithms including Mathematical foundations, Sorting & Order Statistics, Data Structures, Advanced Design & Analysis techniques such as Divide & Conquer, greedy method & Dynamic Programming approaches.

## Course Contents:

### Module I: Introduction

Algorithms, Analyzing algorithms, Designing algorithms.

**Mathematical Foundations:** Growth of Functions-Asymptotic notation, Recurrence

The substitution Method, Recursion tree method, Master Method.

### Module II: Sorting and Order statistics

Divide & Conquer Strategy, Heap Sort, Quick Sort, V. stressen Matrix Multiplication, Sorting in Linear time.

**Data Structures:** Elementary data structures, hash tables, Binary search trees.

### Module III: Advanced Design and Analysis Techniques

Dynamic programming- Elements of

dynamic programming, Chain-matrix multiplication, All pair shortest path (Flayed -algorithm), Optimal Binary Search. Tree.

**Greedy algorithms** - Elements of the greedy strategy, Huffman codes, Single-source shortest path in a directed graph, Knapsack problem, Minimum Spmming trees- The Algorithm of Kruskals and Prims.

### Module IV: Graph Algorithms

Elementary graphs Algorithms, Minimum spanning Trees, Single source Shortest paths, All Pair Shortest Paths.

**Selected Topics:** Sorting Networks, Algorithms for Parallel Computers.

### Module V

Polynomials and tile FFT, String Matching, NP-Completeness, Approximation Algorithms.

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

### Text:

- Coreman, Rivest, Lisserson, "Algorithms", PHI

### References:

- Horowitz & Sahni, "Fundamental of Computer Algorithm", Galgotia. Aho, Hopcroft, Ullman,
- Data Structure & Algoritull", Addison Wesley.

# OPERATING SYSTEMS

**Course Code:** BCI 403

**Credit Units:** 03

## **Course Objective:**

The objective of this course is to provide a clear description of the concepts that underlie operating systems. It tells about fundamental concepts that are applicable to a variety of systems. We present a large number of examples that pertains particularly to UNIX and to other popular operating systems. This course basically revolves around process, and it tells about every thing about a process.

## **Course Contents:**

### **Module I: Operating System as a Resource Manager**

Operating System Classifications

Monitor, Multiprogramming, Time Sharing, Real Time Systems, Multiprocessor Systems and Operating System Services.

### **Module II: CPU Scheduling**

Basic Scheduling Concepts, Process Overviews, Process States, Multiprogramming, Scheduler and Scheduling Algorithms, Multiple Processor Scheduling

### **Module III: Memory Management**

Bare Machine, Resident Monitor, Partition, Paging and Segmentation, Virtual Memory and Demand Paging, Replacement Policies, Cache Memory

### **Module IV: File Systems**

File Support, Access Methods

Allocation Methods- Contiguous Linked and Index Allocation

#### **Directory Systems**

Single Level, Tree Structured, Acyclic Graph and General Graph Directory, File Protection

#### **Deadlock**

Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance and Deadlock Recovery

### **Module V: Security and Protection**

Security Policies and Mechanism

Protection and Access Control-Access Matrix Model of Protection, Access Hierarchies, Access List, Capabilities

### **Overview of UNIX Operating System**

Command-Language User's View of Unix, Implementation of Unix, Unix Summary Etc.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Peterson and Silberschatz, Operating System Concepts

### **References:**

- Tannenbaum A.S., Modern Operating System
- Crowley Charrles , Operating System- A design Approach
- Dietel H.M., Operating Systems

# COMPUTER ORIENTED NUMERICAL METHODS

**Course Code: BCA 404**

**Credit Units: 03**

## Course Objective:

The objective of this course is to provide conceptual understanding of various numerical methods, in particular, with reference to numerical solution of non linear equations and system of linear equations, interpolation, numerical differentiation and integration and numerical solution of ordinary differential equations. Important theorems and different formulae for various numerical methods to be covered with an aim of helping the students to understand the fundamentals, concepts and practical use of these methods in the field of computer sciences and applications.

## Course Contents:

### Module I: Numeric Computation

Computer Arithmetic- Floating point numbers-operations, Normalization and their Consequences, Absolute, Relative and Percent Error.

Iterative Methods:- Zeros of a single Transcendental equations and Zeros of Polynomial Equations using Bisection, False Position, Newton-Raphson Methods, Convergence of Solution.

### Module II: Simultaneous Linear Equations

Solution of Simultaneous Linear Equations. Direct Methods:- Gauss elimination method, Pivoting, Gauss-Jordan Method. Iterative methods:-Jacobi's Methods, Gauss-Seidal Method.

### Module III: Polynomial Interpolation

Newtons divided difference, Forward and backward difference Formulae, Difference Tables, Lagrange's Method.

### Module IV: Numerical Differentiation and Integration

Formula for first and second order derivatives using newton's- Forward and Backward formula, Numerical Integartion, Newton-Cotes Formula: Trapizoidal rule, Simpson's 1/3<sup>rd</sup> rule, Simpson's 3/8<sup>th</sup> rule, Weddle's rule.

### Module V: Numerical Solution of Differential Equations

Basic Terminology of Differential Equations, Picard's Method, Euler's method, Taylor's Series method, Runge-Kutta Methods, Predictor –Connector Method.

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

### Text:

- Jain M.K, Jain R.K and Iyenger, Numerical Methods for Scientific and Engineering Applications.

### References:

- Rajaraman V, Computer Oriented Numerical Methods.
- Krishnamuty, E.V., Sen, S.K, Computer Based Numerical Algorithms.
- Stoer, Bullrich, Computer Oriented Numerical Methods.

# SOFTWARE ENGINEERING

**Course Code: BCA 405**

**Credit Units: 03**

## **Course Objective:**

The purpose of this course is to acquaint students with the concepts and methods available for software development in industrial environments. Students will be exposed to a variety of topics such as design notations, costing techniques, and testing methods, as well as to the tools which are available to support software specification, design, testing, and maintenance.

## **Course Contents:**

### **Module I: Software Development Life Cycle**

Evolution of Software Engineering, Software Problems, Issues Involved in Software Engineering, Fundamental Qualities of a Software Product, Approaches to Software Engineering, Planning the development Process, Development/Product Life-Cycle Model, Kinds of Software Life-Cycle Model.

### **Module II: Project Management**

Project Management Concepts, Project Management Activities, Size Metrics. Software Requirement analysis and Specification, Cost Models.

### **Module III: System Design**

Design Objectives, Design Principles, Effective Modular Design (Functional Independence, Coupling, and Cohesion), Design Tools and Techniques, Prototyping, Structured Programming.

### **Module IV: Coding**

Programming Practices, Verification, Monitoring and Control.

### **Module V: Software Testing**

Testing Fundamentals, Test case design, Functional Testing, Structural Testing, Test Plan, Activities during testing, Unit System, Integration Testing, Software Maintenance.

### **Module VI: Software Reliability**

Concept of Software Reliability, Software Repair and Availability, Software Errors, Failure and Faults.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Software Engineering, A Practitioner's Approach - Roger S. Pressman.

### **References:**

- An Integrated Approach to Software Engineering, Pankaj Jalote.
- Software Engineering Concepts, Richard Fairley.

# COMPUTER GRAPHICS LAB

Course Code: BCI 421

Credit Units: 01

## PART - I

### Computer Graphics Programmes

- 1) Write a program to change the working mode from text to graphics and plot a pixel.
- 2) Write a program to draw a line of same dimension in three different graphics mode.
- 3) Write a program to display line, rectangle, circle and polyline using graphics command.
- 4) Write a program to draw a line of slope between 0 and 1 using DDA algorithm.
- 5) Write a program to draw a line of slope between 1 and  $\infty$  using DDA algorithm.
- 6) Write a program to draw a line of slope between 0 and 1 using midpoint algorithm.
- 7) Write a program to draw a line of slope between 1 and  $\infty$  using midpoint algorithm
- 8) Write a program to draw a dashed line of slope 1 using any line algorithm
- 9) Write a program to draw a dotted line of slope 1 using DDA algorithm
- 10) Write a program to draw a line of slope between 0 and -1 using midpoint algorithm.
- 11) Write a program to draw a line of slope between -1 and  $-\infty$  using midpoint algorithm.
- 12) Write a program to draw an octant of a circle with it's center at point (0,0) a using midpoint circle drawing.
- 13) Write a program to draw a circle with its center at point (0, 0) and radius r using midpoint circle drawing.
- 14) Write a program to draw an octant of a circle with it's center at point (a, b) and radius r using midpoint circle drawing.
- 15) Write a program to a circle with it's center at point (a, b) and radius r using midpoint circle drawing.
- 16) Write a program to fill a polygon using flood-fill method.
- 17) Write a program to fill a polygon using boundary-fill method.
- 18) Write a program to reflect a point in X and Y-axis both.
- 19) Write a program to rotate a point (100, 50) about origin in anti-clock wise direction.
- 20) Write a program to rotate a point (100,150) about point (30, 40) in clock wise direction..

### Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# DOMAIN ELECTIVE

## INTRODUCTION TO .NET TECHNOLOGIES

**Course Code: BCI 431**

**Credit Units: 03**

**Course Objective:**

To create web based applications using C# ASP.NET.

**Course Contents:**

**Module I: Introduction to .NET technologies**

Features of .NET, .NET Framework, CLR framework, MSIL, .NET class library, .NET Languages, CTS, assemblies, manifest, and metadata, What is ASP.NET?, Difference between ASP and ASP.NET.

**Module II:** Introduction to C#, Variables and expressions, flow controls, functions, debugging and error handling, OOPs with C#, Defining classes and class members, collections, Type Casting, String functions, Indexers, Delegates and events.

**Module III: Controls in ASP.NET**

Overview of Dynamic Web page, Understanding ASP.NET Controls, Applications, Web servers, Installation of IIS. Web forms, web form controls -server controls, client controls. Adding controls to a web form, Buttons, Text Box, Labels, Checkbox, Radio Buttons, List Box. Adding controls at runtime. Running a web Application, creating a multiform web project. Form Validation: Client side validation, server Side validation, validation Controls: Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control, Dynamic Controls.

**Module IV: Overview of ADO.NET and XML**

What is ADO.NET, from ADO to ADO.NET? ADO.NET architecture, Accessing Data using Data Adapters and Datasets , using Command & Data Reader, binding data to data bind Controls, displaying data in data grid, XML basics, attributes, fundamental XML classes: Document, text writer, text reader. XML validations, XML in ADO.NET, The XML Data Document.

**Module V: ASP.NET Applications and Web services**

Creating, tracking, caching, error handling, Securing ASP.NET applications- form based applications, window based application. Introduction, State management- View state, Session state, Application state, Building ASP.NET web services, working with ASP.NET applications, creating custom controls.

**Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

**Text & References:**

**Text:**

- ASP.NET Unleashed by Stephen Walther, SAMS publications

**References:**

- ASP.NET, Wrox Publications
- ASP.NET and VB.NET, Wrox Publication
- ASP.NET and C#.NET, Wrox publication.

# INTRODUCTION TO OPEN SOURCE TECHNOLOGIES (PHP, Mysql)

**Course Code:** BCI 432

**Credit Units:** 02

## **Course Objective:**

This course is aimed to provide a fundamental understanding of dynamic web site creation. PHP is the language used for development of most common web sites. Syllabus includes basic and advanced features of PHP which includes detailed introduction of PHP and MYSQL, Arrays, Loops and variables etc. It also gives an overview open source framework like JOOMLA, ZEND etc...

## **Course Contents:**

### **Module I: Introduction to PHP programming**

Introduction to PHP, installation and configuration, Variables, String functions, Numeric functions

### **Module II: Operator, Loops and Array**

Operators, Conditions, Loops, Array, Multidimensional Array, Associative array

### **Module III: Classes and Functions**

Classes, Regular Expr, Working with Datetime, code re-use, require (), include (), and the include-path; filesystem functions, and file input and output; file uploads; error handling and logging; sending mail,

### **Module IV: Working with database**

MYSQL, Introducing MySQL; database design concepts; the Structured Query, Language (SQL); communicating with a MySQL backend via the PHP, MySQL API Building Database Applications,

### **Module V: Working with Frameworks**

Working with Wordpress, Mambo, Joomla, OS Commerce, Zend Framework, Drupal

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### *Text:*

- Beginning PHP, Apache, MySQL Web Development
- Michael K. Glass, Yann Le Scouarnec, Elizabeth Naramore, Gary Mailer, Jeremy Stolz, Jason Gerner

### *References:*

- PHP Manual.

# INTRODUCING ROUTING AND SWITCHING IN THE ENTERPRISE

**Course Code:** BCI 433

**Credit Units:** 03

## **Course Objective:**

This course focuses networking in enterprise network, switching in enterprise network, addressing in enterprise network, routing & distance vector and link state protocol, and Trouble shooting an enterprise network.

## **Course Contents:**

### **Module I: Networking in the Enterprise**

Describing the Enterprise Network, Identifying Enterprise Applications

### **Module II: Exploring the Enterprise Network Infrastructure**

Describing the Current Network, Supporting the Enterprise Edge, Reviewing Cisco Routing and Switching

### **Module III: Switching in an Enterprise Network**

Describing Enterprise Level Switching, Preventing Switching Loops, Configuring VLANs, Trunking and Inter-VLAN Routing, Maintaining VLANs on an Enterprise Network

### **Module IV: Addressing in an Enterprise Network**

Using a Hierarchical IP Network Address Scheme, Using VLSM, Using Classless Routing and CIDR, Using NAT and PAT

### **Module V: Routing with a Distance Vector Protocol**

Managing Enterprise Networks, Routing Using the RIP Protocol, Routing Using the EIGRP Protocol, Implementing EIGRP

### **Module VI: Routing with a Link-State Protocol**

Routing Using the OSPF Protocol, Implementing Single-Area OSPF, Using Multiple Routing Protocols

### **Module VII: Implementing Enterprise WAN Links**

Connecting the Enterprise WAN, Comparing Common WAN Encapsulations  
Using Frame Relay

### **Module VIII: Filtering Traffic Using Access Control Lists**

Using Access Control Lists, Using a Wildcard Mask, Configuring Access Control Lists, Permitting and Denying Specific Types of Traffic, Filtering Traffic Using Access Control Lists

### **Module IX: Troubleshooting an Enterprise Network**

Understanding the Impact of Network Failure, Troubleshooting Switching and Connectivity Issues, Troubleshooting Routing Issues, Troubleshooting WAN Configurations, Troubleshooting Access Control List Issues

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- CCNA-Discovery 4.0, module 3, Cisco Certified Networking Academy

### **References:**

- Data Communication and Computer Network, Forozoun, TMH Publication
- Data Communication and Network, Stallings, PHI
- Computer Network, Tanenbaum, PHI

# CLOUD COMPUTING

**Course Code: BCA 434**

**Credit Units: 03**

## Course Objective:

- To understand the concept of Virtualization and design of cloud Services
- To introduce the broad perceptive of cloud architecture and model
- To learn to design the trusted cloud Computing system
- To apply different cloud programming model as per need.
- To understand the features of cloud simulator
- To be familiar with the lead players in cloud.

## Course Contents

### MODULE I: CLOUD ARCHITECTURE AND MODEL

Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud –Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

### MODULE II: VIRTUALIZATION

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

### MODULE III: CLOUD INFRASTRUCTURE

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

### MODULE IV: PROGRAMMING MODEL

Parallel and Distributed Programming Paradigms – MapReduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, Open Nebula, OpenStack, Aneka, CloudSim

### MODULE V: SECURITY IN THE CLOUD

Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

- John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2010.
- Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009.
- Kumar Saurabh, “Cloud Computing – insights into New-Era Infrastructure”, Wiley India,2011.
- James E. Smith, Ravi Nair, “Virtual Machines: Versatile Platforms for Systems and Processes”, Elsevier/Morgan Kaufmann, 2005.
- Ronald L. Krutz, Russell Dean Vines, “Cloud Security – A comprehensive Guide to Secure Cloud Computing”, Wiley – India, 2010.

# BIG DATA ANALYTICS

**Course Code: BCA 435**

**Credit Units: 03**

## **Course Objective:**

This course provides an overview of approaches facilitating data analytics on huge datasets. Different strategies are presented including sampling to make classical analytics tools amenable for big datasets, analytics tools that can be applied in the batch or the speed layer of a lambda architecture, stream analytics, and commercial attempts to make big data manageable in massively distributed or in-memory databases. Learners will be able to realistically assess the application of big data analytics technologies for different usage scenarios and start with their own experiments.

## **Course Contents:**

### **Module I Introduction to Big Data**

Introduction – distributed file system – Big Data and its importance, Four Vs, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

### **Module II Introduction Hadoop**

Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

### **Module III Hadoop Architecture**

Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Task trackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering – Monitoring & Maintenance.

### **Module IV Hadoop Ecosystem and Yarn**

Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features- NameNode High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

### **Module V HIVE AND HIVEQL, HBASE**

Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries, HBase concepts- Advanced Usage, Schema Design, Advance Indexing - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

- Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, “Understanding Big
- Data: Analytics for Enterprise Class Hadoop and Streaming Data”, McGrawHill Publishing, 2012
- Bill Franks, “Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics”, JohnWiley & sons, 2012.

# INTRODUCTION TO .NET TECHNOLOGIES LAB

Course Code: BCI 441

Credit Units: 01

## Course Contents:

1. Write a console application that obtains four int values from the user and displays the product.
2. If you have two integers stored in variables var1 and var2, what Boolean test can you perform to see if one or the other (but not both) is greater than 10?
3. Write an application that includes the logic from Exercise 1, obtains two numbers from the user, and displays them, but rejects any input where both numbers are greater than 10 and asks for two new numbers.
4. Write a console application that places double quotation marks around each word in a string.
5. Write an application that uses two command-line arguments to place values into a string and an integer variable, respectively. Then display these values.
6. Write an application that receives the following information from a set of students: Student Id: Student Name: Course Name: Date of Birth: The application should also display the information of all the students once the data is entered. Implement this using an Array of Structures.
7. Write programs using conditional statements and loops:
  - Generate prime numbers.
  - Generate various patterns (triangles, diamond and other patterns) with numbers.
8. Write a program to declare a class 'staff' having data members as name and post. Accept this data 5 for 5 staffs and display names of staff who are HOD.
9. Write a program to declare class 'Distance' have data members dist1, dist2, dist3. Initialize the two data members using constructor and store their addition in third data member using function and display addition.
10. Write a program using function overloading to swap two integer numbers and swap two float numbers.
11. Write a program to implement single inheritance.
12. Define a class 'salary' which will contain member variable Basic, TA, DA, HRA. Write a program using Constructor with default values for DA and HRA and calculate the salary of employee.
13. Write a program for above class hierarchy for the Employee where the base class is Employee and derived class and Programmer and Manager. Here make display function virtual which is common for all and which will display information of Programmer and Manager interactively.
14. Write a program to accept a number from the user and throw an exception if the number is not an even number.
15. Create an application that allows the user to enter a number in the textbox named 'getnum'. Check whether the number in the textbox 'getnum' is palindrome or not. Print the message accordingly in the label control named lbldisplay when the user clicks on the button 'check'.
16. Create an application which will ask the user to input his name and a message, display the two items concatenated in a label, and change the format of the label using radio buttons and check boxes for selection, the user can make the label text bold, underlined or italic and change its color. include buttons to display the message in the label, clear the text boxes and label and exit.
17. Create a project that calculates the total of fat, carbohydrate and protein. Allow the user to enter into text boxes. The grams of fat, grams of carbohydrate and grams of protein. Each gram of fat is 9 calories and protein or carbohydrate is 4 calories. Display the total calories of the current food item in a label. Use to other labels to display and accumulated some of calories and the count of items entered. The form food have 3 text boxes for the user to enter the grams for each category include label next to each text box indicating what the user is entering.

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# INTRODUCTION TO OPEN SOURCE TECHNOLOGIES (PHP, Mysql) LAB

**Course Code:           BCI 442**

**Credit Units: 01**

**Course Contents:**

1. Write the process of installation of web server.
2. Write programs to print all details of your php sever. Use phpinfo().
3. Write a program to give demo of ECHO and PRINT command.
4. Write a program sort ten number by using array.
5. Create a database in Mysql and connect that database from PHP.
6. Write a program to Update, insert and delete the values of table in Question No – 9 database.

**Examination Scheme:**

<b>IA</b>				<b>EE</b>	
<b>A</b>	<b>PR</b>	<b>LR</b>	<b>V</b>	<b>PR</b>	<b>V</b>
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# INTRODUCING ROUTING AND SWITCHING IN THE ENTERPRISE LAB

**Course Code:           BCI 443**

**Credit Units: 01**

## **Course Contents:**

1. Application of Cisco Router and Switches in Enterprise Network with example design.
2. Enterprise level Switching techniques.
3. Creating LAN with switch and preventing loops with example.
4. Creating ,Managing and deleting different VLAN.
5. Creating Trunking and Intr-VLAN Routing.
6. Use of VLSM and CIDR for Hierarchical IP Network Address Scheme with some example scenario.
7. Configuration of NAT and PAT in router.
8. Configuring router with RIP Protocol.
9. Configuring router with EIGRP Protocol.
10. Configuration of ACL in router and use of Wildcard Mask.
11. Configuring router as gateway for traffic filtering with example scenario.
12. Troubleshooting Switching, Routing, WAN and ACL issues.

## **Examination Scheme:**

<b>IA</b>				<b>EE</b>	
<b>A</b>	<b>PR</b>	<b>LR</b>	<b>V</b>	<b>PR</b>	<b>V</b>
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# CLOUD COMPUTING LAB

**Course Code: BCA 444**

**Credit Units: 01**

1. Installation and configuration of Oracle Virtual Box for Windows XP and Andriod.
2. Installation Configuration of Hadoop.
3. Using Hadoop for counting word frequency with map reduce.
4. Cloud Security Management.
5. Performance evaluation of services over cloud – Google App & Amazon web service.

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# BIG DATA ANALYTICS LAB

**Course Code: BCA 445**

**Credit Units: 01**

1. Implement the following Data structures in Java
  - a) Linked Lists
  - b) Stacks
  - c) Queues
  - d) Set
  - e) Map
2. Perform setting up and Installing Hadoop in its three operating modes: Standalone • Pseudo distributed • fully distribute.  
Use web based tools to monitor your Hadoop setup.
3. Implement the following file management tasks in Hadoop: Adding files and directories • Retrieving files • Deleting files
4. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.
5. Write a Map Reduce program that mines weather data.
6. Implement Matrix Multiplication with Hadoop Map Reduce.
7. Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.
8. Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions, and indexes.

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# MINOR PROJECT

**Course Code: BCA 450**

**Credit Units: 03**

## **Course Objective:**

The BCA program aims at generating not only the skills and knowledge among students but also inculcate confidence so that they can deliver goods to any industry. In this course, students have to prepare internal project related to their programming subjects.

## **GUIDELINES FOR PROJECT FILE**

Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty guide. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation.

Research is genuine exploration of the unknown that leads to new knowledge, which often warrants publication. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student.

Sufficient time should be allowed for satisfactory completion of reports, taking into account that initial drafts should be critiqued by the faculty guide and corrected by the student at each stage.

The File is the principal means by which the work carried out will be assessed and therefore great care should be taken in its preparation.

## **In general, the File should be comprehensive and include**

- A short account of the activities that were undertaken as part of the project;
- A statement about the extent to which the project has achieved its stated goals.
- A statement about the outcomes of the evaluation and dissemination processes engaged in as part of the project;
- Any activities planned but not yet completed as part of the project, or as a future initiative directly resulting from the project;
- Any problems that have arisen that may be useful to document for future reference.

## **Report Layout**

The report should contain the following components

### **1. File should be in the following specification**

- A4 size paper
- Font: Arial (10 points) or Times New Roman (12 points)
- Line spacing: 1.5
- Top & bottom margins: 1 inch/ 2.5 cm
- Left & right margins: 1.25 inches/ 3 cm

### **2. Report Layout:** The report should contain the following components

Front Page

Table of Contents

Acknowledgement

Student Certificate

Company Profile

Introduction

Chapters

➤ **Title or Cover Page or Front Page**

The title page should contain the following information: Project Title; Student's Name; Course; Year; Supervisor's Name.

➤ **Table of Contents**

Titles and subtitles are to correspond exactly with those in the text.

➤ **Acknowledgement**

Acknowledgment to any advisory or financial assistance received in the course of work may be given.

➤ **Student Certificate**

Given by the Institute.

➤ **Company Certificate & Profile**

This is a certificate, which the company gives to the students. A Company Profile corresponds to a file with company-specific data. Company data can be stored there and included in a booking when needed.

➤ **Introduction**

Here a brief introduction to the problem that is central to the project and an outline of the structure of the rest of the report should be provided. The introduction should aim to catch the imagination of the reader, so excessive details should be avoided.

➤ **Chapters**

All chapters and sections must be appropriately numbered, titled and should neither be too long nor too short in length. The first chapter should be introductory in nature and should outline the background of the project, the problem being solved, the importance, other related works and literature survey. The other chapters would form the body of the report. The last chapter should be concluding in nature and should also discuss the future prospect of the project.

➤ **Appendices**

The Appendix contains material which is of interest to the reader but not an integral part of the thesis and any problem that have arisen that may be useful to document for future reference.

➤ **References / Bibliography**

This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system.

## **ASSESSMENT OF THE PROJECT FILE**

Essentially, marking will be based on the following criteria: the quality of the report, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project. Project execution is concerned with assessing how much work has been put in.

The File should fulfill the following *assessment objectives*:

1. Writing a critical literature review
  - Search for literature
  - Summarizing and presenting the literature
  - Evaluating key content and theories
2. Collecting and analyzing research material

- Choosing and designing research method
  - Conducting the research
  - Analyzing, sorting and classifying the data to make decision
3. Interpreting research method and draw conclusion
    - Findings
    - Recommendation
  4. Assigning the theories and writing the project report
    - Structuring the project in accordance with the given style
  5. Bibliography
    - This refer to the books, Journals and other documents consulting while working on the project

**Examination Scheme:**

<b>Components</b>	<b>MRP</b>	<b>V</b>	<b>S</b>	<b>FP</b>	<b>R</b>
<b>Weightage (%)</b>	20	20	20	20	20

MRP – Mid Report Presentation, V – Viva, S – Synopsis, FP – Final Presentation, R - Report

# OPEN ELECTIVE COMMUNICATION SKILLS - II

**Course Code: BCS 401**

**Credit Units: 01**

**Course Objective:**

To teach the participants strategies for improving academic reading and writing.

Emphasis is placed on increasing fluency, deepening vocabulary, and refining academic language proficiency.

**Course Contents:**

**Module I: Social Communication Skills**

Small Talk  
Conversational English  
Appropriateness  
Building rapport

**Module II: Context Based Speaking**

In general situations  
In specific professional situations  
Discussion and associated vocabulary  
Simulations/Role Play

**Module III: Professional Skills**

Presentations  
Negotiations  
Meetings  
Telephony Skills

**Examination Scheme:**

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

**Text & References:**

- Essential Telephoning in English, Garside/Garside, Cambridge
- Working in English, Jones, Cambridge
- Business Communication, Raman –Prakash, Oxford
- Speaking Personally, Porter-Ladousse, Cambridge
- Speaking Effectively, Jermy Comfort, et.al, Cambridge
- Business Communication, Raman –Prakash, Oxford

# BEHAVIOURAL SCIENCE - IV

## (GROUP DYNAMICS AND TEAM BUILDING)

**Course Code: BSS 403**

**Credit Units: 01**

### **Course Objective:**

To inculcate an elementary level of understanding of group/team functions  
To develop team-spirit and to know the importance of working in teams

### **Course Contents:**

#### **Module I: Group formation**

Definition and Characteristics  
Importance of groups  
Classification of groups  
Stages of group formation  
Benefits of group formation

#### **Module II: Group Functions**

External Conditions affecting group functioning: Authority, Structure, Org. Resources, Organizational policies etc.  
Internal conditions affecting group functioning: Roles, Norms, Conformity, Status, Cohesiveness, Size, Inter group conflict.  
Group Cohesiveness and Group Conflict  
Adjustment in Groups

#### **Module III: Teams**

Meaning and nature of teams  
External and internal factors effecting team  
Building Effective Teams  
Consensus Building  
Collaboration

#### **Module IV: Leadership**

Meaning, Nature and Functions  
Self leadership  
Leadership styles in organization  
Leadership in Teams

#### **Module V: Power to empower: Individual and Teams**

Meaning and Nature  
Types of power  
Relevance in organization and Society

#### **Module VI: End-of-Semester Appraisal**

Viva based on personal journal  
Assessment of Behavioural change as a result of training  
Exit Level Rating by Self and Observer

### **Examination Scheme:**

<b>Components</b>	<b>SAP</b>	<b>A</b>	<b>Mid Term Test (CT)</b>	<b>VIVA</b>	<b>Journal for Success (JOS)</b>
<b>Weightage (%)</b>	20	05	20	30	25

### **Text & References:**

- Organizational Behaviour, Davis, K.
- Hoover, Judhith D. Effective Small Group and Team Communication, 2002, Harcourt College Publishers
- Dick, Mc Cann & Margerison, Charles: Team Management, 1992 Edition, viva books
- LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
- Smither Robert D.; The Psychology of Work and Human Performance, 1994, Harper Collins College Publishers

# FRENCH - V

**Course Code:** FLT 401

**Credit Units:** 02

## Course Objective:

To enable students:

- To develop strategies of comprehension of texts of different origin
- To present facts, projects, plans with precision

## Course Contents:

**Module C: pp. 104 – 139: Unités 8,9**

### Contenu lexical: Unité 8: Découvrir le passé

1. parler du passé, des habitudes et des changements.
2. parler de la famille, raconter une suite d'événements/préciser leur date et leur durée.
3. connaître quelques moments de l'histoire

### Unité 9: Entreprendre

1. faire un projet de la réalisation: (exprimer un besoin, préciser les étapes d'une réalisation)
2. parler d'une entreprise
3. parler du futur

### Contenu grammatical:

1. Imparfait
2. Pronom « en »
3. Futur
4. Discours rapporté au présent
5. Passé récent
6. Présent progressif

## Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

## Text & References:

- le livre à suivre: Campus: Tome 1

# GERMAN - IV

**Course Code: FLG 401**

**Credit Units: 02**

## **Course Objective:**

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany.

Introduction to Advanced Grammar Language and Professional Jargon

## **Course Contents:**

### **Module I: Present perfect tense**

Present perfect tense, usage and applicability

Usage of this tense to indicate near past

Universal applicability of this tense in German

### **Module II: Letter writing**

To acquaint the students with the form of writing informal letters.

### **Module III: Interchanging prepositions**

Usage of prepositions with both accusative and dative cases

Usage of verbs fixed with prepositions

Emphasizing on the action and position factor

### **Module IV: Past tense**

Introduction to simple past tense

Learning the verb forms in past tense

Making a list of all verbs in the past tense and the participle forms

### **Module V: Reading a Fairy Tale**

Comprehension and narration

- Rotkäppchen
- Froschprinzessin
- Die Fremdsprache

### **Module VI: Genitive case**

Genitive case – Explain the concept of possession in genitive

Mentioning the structure of weak nouns

### **Module VII: Genitive prepositions**

Discuss the genitive prepositions and their usage: (während, wegen, statt, trotz)

### **Module VIII: Picture Description**

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

## **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

**Text & References:**

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmoe, Deutsch als Fremdsprache 1A, Grundkurs

## SPANISH - IV

**Course Code:** FLS 401

**Credit Units:** 02

### **Course Objective:**

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

### **Course Contents:**

#### **Module I**

Revision of earlier semester modules  
Introduction to Present Continuous Tense (Gerunds)

#### **Module II**

Translation with Present Continuous Tense  
Introduction to Gustar, Parecer, Apetecer, doler

#### **Module III**

Imperatives (positive and negative commands of regular verbs)

#### **Module IV**

Commercial/business vocabulary

#### **Module V**

Simple conversation with help of texts and vocabulary  
En la recepcion del hotel  
En el restaurante  
En la agencia de viajes  
En la tienda/supermercado

### **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- Español Sin Fronteras (Nivel – Elemental)

## CHINESE – IV

**Course Code:** FLC 401

**Credit Units:** 02

### **Course Objective:**

How many characters are there? The early Qing dynasty dictionary included nearly 50,000 characters the vast majority of which were rare accumulated characters over the centuries. An educate person in China can probably recognize around 6000 characters. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

### **Course Contents:**

#### **Module I**

Dialogue Practice

Observe picture and answer the question

Pronunciation and intonation

Character writing and stroke order.

Electronic items

#### **Module II**

Traveling – The Scenery is very beautiful

Weather and climate

Grammar question with – “bu shi .... Ma?”

The construction “yao ... le” (Used to indicate that an action is going to take place)

Time words “yiqian”, “yiwai” (Before and after).

The adverb “geng”.

#### **Module III**

Going to a friend house for a visit meeting his family and talking about their customs.

Fallen sick and going to the Doctor, the doctor examines, takes temperature and writes prescription.

Aspect particle “guo” shows that an action has happened some time in the past.

Progressive aspect of an actin “zhengzai” Also the use if “zhe” with it.

To welcome someone and to see off someone .... I cant go the airport to see you off... etc.

#### **Module IV**

Shipment. Is this the place to checking luggage?

Basic dialogue on – Where do u work?

Basic dialogue on – This is my address

Basic dialogue on – I understand Chinese

Basic dialogue on – What job do u do?

Basic dialogue on – What time is it now?

#### **Module V**

Basic dialogue on – What day (date) is it today?

Basic dialogue on – What is the weather like here.

Basic dialogue on – Do u like Chinese food?

Basic dialogue on – I am planning to go to China.

### **Examination Scheme:**

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- “Elementary Chinese Reader, Part-2” Lesson 31-38

# SYSTEM SOFTWARE

**Course Code: BCA 501**

**Credit Units: 03**

## **Course Objective:**

The objective of this course is to expose the student to the fundamentals of System Software. The topics include design and implementation of various system software's such as assembler, compiler, macro processors, Loaders, Linkers and operating systems. Also included is brief overview of software program development tools like editors, debug monitors and database management systems.

## **Course Contents:**

### **Module I**

System Software and Machine Architecture, Evolution of the components of a programming System-Assemblers, Loaders, Macros, Compilers and Formal Systems.

Assemblers-basic assembler functions, Machine-Dependent Assembler Functions, Machine-Independent Assembler Functions, Design of Two Pass Assembler. Implementation Examples-SPARC.

### **Module II**

Macros & Macro Processors-Macro Instructions, Macro calls and Expansion, Machine-Independent Macro Processor Features, Macro Processor Design Options, Implementation-A two pass algorithm, Implementation Examples-ANSI C Macro Processor

### **Module III**

Loaders & Linkers, Basic Loader Functions, Machine-Dependent Loader Features, Machine-Independent Loader Features, Compile & Go-Loaders, General Loader Scheme, Absolute Loaders, Self- Relocating Loaders, Direct-Linking Loaders, Binders, Overlays, Dynamic Linking, Bootstrap Loaders, Design of Direct Linking Loader, Implementation Examples-MS-DOS Linker.

### **Module IV**

Compilers, Basic Compiler Functions, Machine-Dependent Compiler Features, Machine-Independent Features, Compiler Design Options-Division into passes, Interpreters, P-code Compilers, Compilers-Compilers, Implementation Example-YACC Compiler-Compiler.

### **Module V**

Basic Operating System Functions, Machine-Dependent Operating System Features, Machine-Independent Operating System Features, Types of Operating System, Implementation Example-Unix. Software Tools for Program Development, Editors, Debug Monitors, User Interfaces, and Database Management Systems-basic concepts, levels of data description, use of DBMS.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Leland L. Beck, System Software-An Introduction to Systems Programming, Addison Wesley.

### **References:**

- D.M. Dhamdhare,, Systems Programming & Operating Systems, Mc Graw Hill
- John J. Donovan, Systems Programming, Mc Graw Hill.

# JAVA PROGRAMMING

**Course Code: BCI 502**

**Credit Units: 03**

## **Course Objective:**

The objective of the course is to give proficiency in developing applications and applets in Java, in-depth knowledge of object oriented concepts, developing GUI applications in Java, creation of packages, Event Handling, Layout Manager, SWING and String handling in Java

## **Course Contents:**

### **Module I: Introduction**

Concepts of OOP, Features of Java, How Java is different from C++, Data types, Control Statements, identifiers, arrays, operators. Variables, Applications and Applets

### **Module II: Java Programming**

Classes and methods, Constructor, Types of constructor, method overloading

Inheritance: Single Inheritance, Multilevel hierarchy, method overriding, Abstract classes, Interface, Final classes, Garbage Collection, String classes

### **Module III: AWT and Event Handling**

Introduction to AWT, Layout Manager, Event handling Mechanism, Event Model, Event Classes, Sources of Events, Event Listener Interfaces

AWT: Working with Windows, AWT Controls

Html basic tags, Applet Classes, Graphics,

### **Module IV: Exception Handling and Multithreading**

Exception handling, fundamentals exception types, uncaught exceptions, throws, throw, try and catch, final, built in exception, creating your own exception

Multithreading fundamentals, Creating, Implementing and Extending thread, thread priorities, synchronization suspending, resuming and stopping Threads

### **Module V: Java Packages**

Package creation, Additional Packages, Input Output Exploring java.io, Swing classes and controls, Advantages of Swing over AWT.

## **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Naughton, Schidt "The Complete Reference JAVA 2 " TMH

### **References:**

- Balaguruswamy "Programming in JAVA"
- Comer "Computer Networks & Internet"
- Deitel & Deitel "Java™ How to Program, 6/E"
- Frouzan "Data communications and Networking"
- Gary Cornell "Core Java" The Sun Micro Systems Series

# UNIX OPERATING SYSTEM AND SHELL PROGRAMMING

**Course Code:** BCI 503

**Credit Units:** 03

## Course Objective:

The Objective of this course is to expose the students to the fundamentals and the concepts of Unix and Shell Programming including UNIX Overview, Essential Unix Commands, Unix File System, UNIX Shell Programming and System Administration etc. This course is designed to understand the concepts of Unix System for Research and Development.

## Course Contents:

### Module I: Overview

UNIX Overview, UNIX System Organization, Kernel , Running a Command: the Shell, Files and Directories, Peripheral Devices and UNIX: Special Files.

### Module II: UNIX Commands & UNIX Editors

Login, password, hostname; creating an account; Virtual consoles; shell and commands; logout; changing password; Files and Directories; pathname; Directory Tree; current working directory; relative pathname; referring to home directories; Commands to move around; creating new directories; copying files; moving files; Deleting files and directories; looking at files: cat, more; Getting online help; manual pages. Wildcards; hidden files; Standard input and output; redirecting input and output; filter; pipes; file permissions; user and group; Interpreting file permissions; Permission Dependencies; Changing permissions. Managing file links; hard links; symbolic links; jobs and process: process ID; Job control; foreground and background jobs; suspend and interrupt a process; Back grounding and killing jobs; stopping and restarting jobs.

#### Vi Editor

Command mode, insert mode and last line mode; command to delete character, insert line; deleting text, command for moving the cursor; including other files; running shell commands; getting vi help; search and replace commands; changing and deleting text, Change word, Change line, Delete current line, Delete n lines, Delete remainder of Lines; copying and moving; Saving and Exiting.

### Module III: File System

UNIX File System, File Permissions, System Calls and Library Functions

### Module IV: UNIX Shell Programming

Interactive Shell Scripts, Shell Variables and Keywords, Positional Parameters and Command Line Arguments, Arithmetic in Shell Scripts, Taking Decisions, Loop Control Structure, Shell Metacharacters

### Module V: System Administration

Adding and Removing Users, Starting up and Shutting down the System, Disk Management, File System Mounting and Unmounting, Monitoring System Usage, Ensuring System Security

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

### Text:

- Maurice J. Bach, "Design of the Unix operating System" PHI.
- Prata. "Advanced UNIX-A Programmers Guide" BPB
- Kanetkar. "UNIX Shell Programming" BPB

### References:

- Sumitabha Das, "UNIX: Concepts and Application", TMH.
- Das. "UNIX- Concepts & Applications

# JAVA PROGRAMMING LAB

Course Code: BCI 522

Credit Units: 01

## PART-I

### List of JAVA Programme

1. Create a "Hello, World" program that simply prints out that statement.
2. Write a program that prints three arguments taken from the command line.
3. Write a program that prints values from 1 to 100.
4. Create a class with a default constructor (one that takes no arguments) that prints a message. Create an object of this class.
5. Write Java assignment statements to evaluate the following equations:
  - (i)  $\text{Energy} = \text{mass}(\text{acceleration} * \text{height} + (\text{velocity})^2 / 2)$
  - (ii)  $\text{Torque} = 2m_1m_2 / (m_1 + m_2) * g$
6. Design and write a Java program to define a class called Rectangle that contains members for representing its length and breadth. Provide members to get and set these attributes.
7. Design a class to represent a bank account. Include the following members:

Data members:  
Name of the depositor  
Account number  
Type of account  
Balance amount in the account

Methods:  
To assign initial values  
To deposit an amount  
To withdraw an amount after checking balance  
To display the name and balance
8. Write simple program to calculate the sum of digits of any number.
9. Write a simple program to display a "\*" I triangle shape.  
Output will be like this  
\*  
\* \* \*  
\* \* \* \* \*
10. Write a simple program to call a method called simple from a main function. The method simple should accept an integer as an argument and calculate the square of the number in the method simple.
11. Write a Java program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use method overloading to achieve this.
12. Write a program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MultDiv that extends from AddSub class to use the member data of the superclass. MultDiv should have methods to multiply and divide. A main method should access the method and perform the mathematical operations.
13. Write an interface with a method called display. Implement this method I a class to display two names.
14. Write an interface that has two methods called push and pop of a stack. Write a class to implement the two methods for a fixed size stack creation.
15. Write a small program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.
16. Write a program to handle Null Pointer Exception and use the finally clause to display a message to the user.
17. Write a Java program that takes a string and converts it into uppercase and lowercase letters.
18. Write a Java program to find the volume of a sphere and a cone.
19. Write a Java program to convert rupees to dollars.
20. Write a Java program to find x to the power y. Use overloading for different cases when x and y are combinations of integer and floating point numbers.

21. Create an abstract class called Figure that has an abstract method called draw (). Make the subclasses called Filled\_Rectangle, Filled\_Arc and override the draw method in which you would print the message regarding the current object.
22. Write a Java program that has integer variables a, b, c and result as float. Store some values in them and apply the formula result = a/(b-c). Catch the probable exception.
23. Write a Java program that accepts two strings as command line arguments. It checks for the number of command line arguments. If they are less or more it throws an exception giving an appropriate message.
24. Write applets to draw the following shapes:
  - (i) Cone
  - (ii) Cylinder
  - (iii) Cube
  - (iv) Square inside a circle
  - (v) Circle inside a square
25. Write an applet to display the following figure:
26. Write an applet to display a face.
27. Write an applet to display five buttons.
28. Write an applet to illustrate BorderLayout.
29. Write a Java program to create 5 threads by extending Thread class.
30. Write a Java program to create 5 threads by implementing Runnable interface.

**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# UNIX OPERATING SYSTEM AND SHELL PLPROGRAMMING LAB

**Course Code: BCI 523**

**Credit Units: 01**

## Unix Programmes

1. Write a Shell Script that takes a search string and filename from the terminal & displays the results.
2. Write a Shell Script that takes pattern and filename as command line arguments and displays the results appropriately i.e. pattern found/pattern not found.
3. Write a Shell Script that accepts only three arguments from the command line. The first argument is the pattern string, the second argument is the filename in which the pattern is to be searched and the third argument is the filename in which the result is to be stored.
4. Write a Shell Script that accepts a filename as a command line argument and finds out if its a regular file or a directory. If its a regular file, then performs various tests to see if it is readable, writeable, executable etc.
5. Write a Shell Script which creates the following menu and prompts for choice from user and runs the chosen command.
  - Today's date
  - Process of user
  - List of files
  - Quit to UNIX
6. Write a Shell Script that computes the factorial of a given number
7. Write a Shell Script that works like a calendar reminding the user of certain things depending on the day of the week.
8. Write a Shell Script that changes the extension of a group of files from txt to doc
9. Write a Shell Script that accepts both filename and a set of patterns as positional parameters to a script.
10. Write a Shell Script which will redirect the output of the date command without the time into a file.
11. Write a Shell Script (using while loop) to execute endlessly (until terminated by user) a loop which displays contents of current directory, disk space status, sleep for 30 seconds and display the users currently logged in on the screen.
12. Write a Shell Script that receives two filenames as arguments. It should check whether content of the two files is same or not. If they are same, second file should be deleted.
13. If a number is input through the keyboard, WASS to calculate sum of its digits.
14. Write a Shell Script that performs a count-down either from 10 (default) or from the value that is entered by the user.
15. Write a Shell Script which takes a command line argument of Kms and by default converts that number into meters. Also provide options to convert km to dm and km to cm.
16. Write a Shell Script using for loop, which displays the message "Welcome to the UNIX System"

17. Write a Shell Script to change the filename of all files in a directory from lower-case to upper-case.
18. Write a Shell Script that examines each file in the current directory. Files whose names end in **old** are moved to a directory named **old files** and files whose names end in **.c** are moved to directory named **cprograms**.
19. Write a Shell Script which searches all files in the given directory (to be taken as command line argument) for the file having the title (to be taken as command line argument), as the first line in the file.
  - a) Display the contents of the searched file.
  - b) In the end, print the file is ###, where  
 ### is small-sized if total no. of lines is <50  
 ### is medium-sized if total no. of lines between 50&100  
 ### is large-sized.
20. Write a shell script which reports names and sizes of all files in a directory (directory would be supplied as an argument to the shell script) whose size is exceeding 1000 bytes. The filenames should be printed in descending order of their sizes. The total number of such files should also be reported.
21. WASS for renaming each file in the directory such that it will have the current shell PID as an extension. The shell script should ensure that the directories do not get renamed.
22. WAP to calculate and print the first *m* Fibonacci numbers.
23. WASS that will receive any number of filenames as arguments. The shell script should check whether such files already exist. If they do, then it should be reported. The files that do not exist should be created in a sub-directory called **mydir**. The shell script should first check whether the sub-directory **mydir** exists in the current directory. If it doesn't exist, then it should be created. If **mydir** already exists, then it should be reported along with the number of files that are currently present in **mydir**.
24. A shell script receives even number of filenames. Suppose four filenames are supplied, then the first file should get copied into second file, the third file should get copied into fourth and so on. If odd number of filenames is supplied then no copying should take place and an error message should be displayed.
25. WASS to identify all zero-byte files in the current directory and delete them. Before proceeding with deletion, the shell script should get a conformation from the user.
26. WASS to compute the **GCD** and **LCM** of two numbers.
27. Two numbers are entered through the keyboard. WAP to find the value of one number raised to the power of another.
28. WASS that prompts the user for the password. The user has maximum of 3 attempts. If the user enters the correct password, the message "Correct Password" is displayed else the message "Wrong Password".
29. WASS that repeatedly asks the user repeatedly for the "Name of the Institution" until the user gives the correct answer.
30. WAP to generate all combinations of 1, 2 and 3 using **for loop**.

**Examination Scheme:****Examination Scheme:**

<b>IA</b>				<b>EE</b>	
<b>A</b>	<b>PR</b>	<b>LR</b>	<b>V</b>	<b>PR</b>	<b>V</b>
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# DOMAIN ELECTIVE

## DESIGNING AND SUPPORTING COMPUTER NETWORK

**Course Code:** BCI 531

**Credit Units:** 03

### **Course Objective:**

The objective of the course is to give an overview how to design and support computer network.

### **Course Contents:**

#### **Module I: Introducing Network Design Concepts**

Discovering Network Design Basics, Investigating Core Layer Design Considerations

Investigating Distribution Layer Consideration, Investigating Access Layer Design Considerations, Investigating Server Farms and Security, Investigating Wireless Network Considerations, Supporting WANs and Remote Workers

#### **Module II: Gathering Network Requirements**

Introducing Cisco Lifecycle Services, Explaining the Sales Process, Preparing for the Design Process, Identifying Technical Requirements and Constraints, Identifying Manageability Design Considerations

#### **Module III: Characterizing the Existing Network**

Documenting the Existing Network, Updating the Existing Cisco IOS, Upgrading Existing Hardware, Performing a Wireless Site Survey, Documenting Network Design Requirements

#### **Module IV: Identifying Application Impacts on Network Design**

Characterizing Network Applications, Explaining Common Network Applications

Introducing Quality of Service (QoS), Examining Voice and Video Options, Documenting Applications and Traffic Flows

#### **Module V: Creating the Network Design**

Analyzing the Requirements, Selecting the Appropriate LAN Topology, Designing the WAN and Remote Worker Support, Designing Wireless Networks, Incorporating Security

#### **Module VI: Using IP Addressing in the Network Design**

Creating an Appropriate IP Addressing Design, Creating the IP Address and Naming Scheme, Describing IPv4 and IPv6

#### **Module VII: Prototyping the Campus Network**

Building a Prototype to Validate a Design, Prototyping the LAN, Prototyping the Server Farm

#### **Module VIII: Prototyping the WAN**

Prototyping Remote Connectivity, Prototyping WAN Connectivity, Prototyping Remote Worker Support

#### **Module IX: Preparing the Proposal**

Assembling the Existing Proposal Information, Developing the Implementation Plan

Planning for the Installation, Creating and Presenting the Proposal

#### **Examination Scheme:**

<b>Components</b>	<b>CT</b>	<b>Assignment</b>	<b>P/V</b>	<b>Quiz</b>	<b>Attd</b>	<b>EE</b>
<b>Weightage (%)</b>	15	10	10	10	5	50

#### **Text & References:**

##### **Text:**

- CCNA-Discovery 4.0, module 4, Cisco Certified Networking Academy

##### **References:**

- Data Communication and Computer Network, Forozoun, TMH Publication
- Data Communication and Network, Stallings, PHI
- Computer Network, Tanenbaum, PHI

# DATA WAREHOUSING & DATA MINING

**Course Code:** BCI 532

**Credit Units:** 03

## **Course Objective:**

This course unit is divided into two parts: one on Data Warehousing and one on Data Mining. Both data warehousing and data mining are advanced recent developments in database technology which aim to address the problem of extracting information from the overwhelmingly large amounts of data which modern societies are capable of amassing. Data warehousing focuses on supporting the analysis of data in a multidimensional way. Data mining focuses on inducing compressed representations of data in the form of descriptive and predictive models. Course gives an in-depth knowledge of both the concepts.

## **Course Contents:**

### **Module I: Data Warehousing**

Introduction to Data Warehouse, its competitive advantage, Data warehouse Vs Operational Data, Things to consider while building Data Warehouse

### **Module II: Implementation**

Building Data warehousing team, Defining data warehousing project, data warehousing project management, Project estimation for data warehousing, Data warehousing project implementation

### **Module III: Techniques**

Bitmapped indexes, Star queries, Read only table spaces, Parallel Processing, Partition views, Optimizing extraction process

### **Module IV: Data Mining**

Introduction to Data Mining, benefits of Data Mining, How it helps in decision making, Data mining techniques, Introduction to Data Mart, Data Mart Tools, Data warehouse vs Data Mart, OLAP and its need, MOLAP and ROLAP

## **Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## **Text & References:**

### **Text:**

- Data Warehousing in the real world, Sam Anchory and Dennis Murray

### **References:**

- Data Mining, Pieter Adrians and Doif Zantinge

# ANDROID PROGRAMMING

**Course Code: BCI 533**

**Credit Units: 03**

## Course Objectives

This course facilitates students to develop competence and confidence in android programming and understand the entire Android Apps Development Cycle, as well as it would also enable the students to independently create new Android Applications.

## Course Contents

### Module –I: Introduction

Setting up development environment, Dalvik Virtual Machine & .apk file extension, Fundamentals, Basic Building blocks - Activities, Services, Broadcast Receivers & Content providers, UI Components - Views & notifications, Components for communication -Intents & Intent, Filters, Android API levels (versions & version names)

### Module –II: Android Structure

AndroidManifest.xml, Uses-permission & uses-sdk, Resources & R.java, Assets, Layouts & Drawable Resources, Activities and Activity lifecycle, First sample Application.

### Module –III: Emulator – Android Virtual Machine

Launching emulator, Editing emulator settings, Emulator shortcuts, Logcat usage, Introduction to DDMS, Hello World App, Creating your first project, The manifest file, Layout resource, Running your app on Emulator, Second App:- (switching between activities),- Develop an app for demonstrating the, communication between Intents, Explicit Intents, Implicit intents

### Module –IV: UI design

Time and Date, Images and media, Composite, Alert Dialogs & Toast, Popup, Examples, Option menu, Context menu, Sub menu, menu from xml, menu via code, Examples

### Module –V: Adapters and Widgtes

Adapters:-Array Adapters. Base Adapters, ListView and List Activity, Custom listview, Grid View using adapters, Gallery using adapters

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & Reference:

- Android Programming: The Big Nerd Ranch Guide (Big Nerd Ranch Guides) (By: Bill Philips & Brian Hardy)
- Android Recipes: A Problem-Solution Approach, Dave Smith & Jeff Friesen

# WEB PROGRAMMING

**Course Code: BCA 534**

**Credit Units: 03**

## **Course Objective:**

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus includes basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

## **Course Contents:**

### **Module I: Introduction to Web Programming**

Basic Terminology used in Web programming, Various Web Programming Languages and Tools used with their features and properties, static versus dynamic programming, role of backend (database) in web programming with their features, Security issues in web programming

### **Module II: Introduction to JavaScript**

What is JavaScript, Output, Statements, Syntax, Comments, Variables, Operators, Arithmetic, Assignment, Data Types, Functions, Objects, Events, String and Its Methods, Numbers and Its Methods, Array and Its Methods, Sort, Iteration, Date and Its Methods, Condition, Switch, Loops, User Defined Functions, JS Forms, Form Control Validations, Advanced JavaScript: getElementById and innerHTML.

### **Module III: Advanced CSS**

Box Model, Rounder Corners, Border Images, Backgrounds, Colors, Gradients, Shadow, Text Effects, 2D Transform, 3D Transform, Transition, Animations

### **Module IV: Introduction to XML**

What is XML, How to Use XML, Tree, Syntax, Elements, Attributes, Namespaces, Display, XMLHttpRequest, Parser, DOM, XPath, XSLT, XQuery, XLink, Validator, DTD, Schema, Server

### **Module V: Introduction to AJAX and JQuery**

Introduction AJAX, XMLHttpRequest, Request, Response, XML file, PHP, Database, Applications, Introduction to JQuery, Syntax, Selectors, Events, Effects, JQuery AJAX Introduction, JQuery Load, JQuery Get/Post.

## **Examination Scheme:**

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## **Text & References:**

- Harvey & Paul Deitel & Associates, Harvey Deitel and Abbey Deitel, "Internet and World Wide Web - How To Program", Fifth Edition, Pearson Education, 2011.
- Achyut S Godbole and Atul Kahate, "Web Technologies", Second Edition, Tata McGraw Hill, 2012.
- Thomas A Powell, Fritz Schneider, "JavaScript: The Complete Reference", Third Edition, Tata McGraw Hill, 2013.
- David Flanagan, "JavaScript: The Definitive Guide, Sixth Edition", O'Reilly Media, 2011

# DESIGNING AND SUPPORTING COMPUTER NETWORK LAB

**Course Code: BCI 541**

**Credit Units: 01**

## **Course Contents:**

1. Process of Core Layer Design Consideration
2. Process of Access Layer Design Consideration
3. Preparing the Design Process, technical requirements.
4. Documentation Design of Existing Network in the Enterprise.
5. Document ation Design of Network Design Requirements.
6. Documenting application and traffic flow in Enterprise network.
7. Selection of the Appropriate LAN Topology
8. Designing WAN and Wireless Network and Incorporating Security.
9. Creating an IP addressing Design with example enterprise network.
10. Prototype Design of LAN, Server Farm and WAN Connectivity.

## **Examination Scheme:**

<b>IA</b>				<b>EE</b>	
<b>A</b>	<b>PR</b>	<b>LR</b>	<b>V</b>	<b>PR</b>	<b>V</b>
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

## DATA WAREHOUSING & DATA MINING LAB

**Course Code:** BCI 542

**Credit Units: 01**

**Software Required:** Informatica Tool, Cognos, Todd.

### List of Programmes:

1. Write a program to implement text mining.
2. Write a program to implement web mining.
3. Write a program to develop snowflake schema.
4. Write a program to develop the tree schema with the help of binary tree.
5. Write a program to implement BFS and DFS with respect to 2-D modeling.
6. Write a program to implement the basic step of informatics tool.

### Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# ANDROID PROGRAMMING LAB

Course Code: BCI 543

Credit Units: 01

The experiments will be based on the topics covered in the corresponding theory Course.

1. Write a Program to Build a Simple Android Application
2. Java Andorid Program to Demonstrate Usage of String.xml File
3. Java Andorid Program to Demonstrate Activity Life Cycle
4. Write a Program to Change the Background of your Activity
5. Java Andorid Program to Perform all Operations using Calculators
6. Write a Program to Change the Image Displayed on the Screen
7. Write a Program to Create Multiple Activities within an Application
8. Write a Program to Demonstrate Action Button by Implementing on Click Listener
9. Write a Program to Demonstrate the Sound Button Application
10. Write a Program to Demonstrate the use of Scroll View
11. Write a Program to Demonstrate Radio Group Application
12. Write a Program to Demonstrate Alert Dialog Box
13. Write a Program to Set the Wallpaper of Your Device using Bitmap Class
14. Write a Program to Demonstrate the Menu Application
15. Write a Program to Demonstrate Toast in an Application
16. Write a Program for Dividing our Activity into Fully Encapsulated Reusable Components using Fragement
17. Write a Program to Demonstrate List View Activity
18. Write a Program to Draw on a Canvas
19. Write a Program to Demonstrate Count Down Timer Application
20. Write a Program to Demonstrate Layouts in an Activity and Nesting of Layouts
21. Write a Program to Demonstrate Grid View Layout in Android
22. Write a Program to Create Simple Menu in Android
23. Write a Program to Demonstrate Creating an Options Menu in Android
24. Write a Program to Demonstarte Menu Groups in Android
25. Write a Program to Demonstrate Checkable Menu Items in Android

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

## WEB PROGRAMMING LAB

Course Code: BCA 544

Credit Units: 01

**Practical I:** Create an HTML Form as follows:

**Practical II:** Use JavaScript to validate the various controls of the HTML form created in Practical I.

**Practical III:** Write a JavaScript function that accepts two arguments, a string and a letter and the function will count the number of occurrences of the specified letter within the string.

**Practical IV:** Write a JavaScript program which compute, the average marks of the following students Then, this average determine the corresponding grade.

**Practical V:** Create a Web Page to implement the advanced CSS like border, background, colors, gradient, shadow effect, text effect, transitions.

**Practical VI:** Create an XML file and show its practical implementation considering a real life situation.

**Practical VII:** Create a simple XML HttpRequest, and retrieve data from a text file.

**Practical VIII:** Load an XML file with AJAX. Retrieve the contents of an XML file.

**Practical IX:** Hide all headings on a page when they are clicked.

**Practical X:** Using jQuery insert some HTML after all paragraphs.

### Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

## SUMMER PROJECT – II

**Course Code:** BCA 551

**Credit Units:** 03

### **Course Objective:**

The objective of project work is to provide students, exposure about the technology they have learnt in previous and current semesters and their applications in real time situations. Appropriate application software as assigned by the project guide to be developed individually or in-groups.

They are supposed to follow the following technologies:

Networking

Internet

Java Programming

### **Guidelines:**

There are certain phases of every Intern's professional development that cannot be effectively taught in the academic environment. These facets can only be learned through direct, on-the-job experience working with successful professionals and experts in the field. The internship program can best be described as an attempt to institutionalize efforts to bridge the gap between the professional world and the academic institutions. Entire effort in internship is in terms of extending the program of education and evaluation beyond the classroom of a university or institution. The educational process in the internship course seeks out and focuses attention on many latent attributes, which do not surface in the normal classroom situations. These attributes are intellectual ability, professional judgment and decision-making ability, inter-disciplinary approach, skills for data handling, ability in written and oral presentation, sense of responsibility etc.

In order to achieve these objectives, each student will maintain a file (**Internship File**). The Internship File aims to encourage students to keep a personal record of their learning and achievement throughout the Programme. It can be used as the basis for lifelong learning and for job applications. Items can be drawn from activities completed in the course modules and from the workplace to demonstrate learning and personal development.

The File will assess the student's analytical skills and ability to present supportive evidence, whilst demonstrating understanding of their organization, its needs and their own personal contribution to the organization.

The **layout guidelines** for the Project & Seminar Report

#### **1. File should be in the following specification**

- A4 size paper
- Font: Arial (10 points) or Times New Roman (12 points)
- Line spacing: 1.5
- Top & bottom margins: 1 inch/ 2.5 cm
- Left & right margins: 1.25 inches/ 3 cm

#### **2. Report Layout:** The report should contain the following components

Front Page

Table of Content

Acknowledgement

Student Certificate

Company Profile (optional)  
 Introduction  
 Main Body  
 References / Bibliography

The File will include *five sections* in the order described below. The content and comprehensiveness of the main body and appendices of the report should include the following:

1. **The Title Page**--Title - An Internship Experience Report For (Your Name), name of internship organization, name of the Supervisor/Guide and his/her designation, date started and completed, and number of credits for which the report is submitted.
2. **Table of Content**--an outline of the contents by topics and subtopics with the page number and location of each section.
3. **Introduction**--short, but should include how and why you obtained the internship experience position and the relationship it has to your professional and career goals.
4. **Main Body**--should include but not be limited to daily tasks performed. Major projects contributed to, dates, hours on task, observations and feelings, meetings attended and their purposes, listing of tools and materials and their suppliers, and photographs if possible of projects, buildings and co-workers.
5. **References / Bibliography** --This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system

#### **ASSESSMENT OF THE INTERNSHIP FILE**

The student will be provided with the Student Assessment Record (SAR) to be placed in front of the Internship File. Each item in the SAR is ticked off when it is completed successfully. The faculty will also assess each item as it is completed. The SAR will be signed by the student and by the faculty to indicate that the File is the student's own work. It will also ensure regularity and meeting the delaines.

#### **STUDENT ASSESSMENT RECORD (SAR)**

##### **5. Range of Research Methods used to obtain information**

##### **6. Execution of Research**

##### **7. Data Analysis**

- Analyse Quantitative/ Qualitative information
- Control Quality

##### **8. Draw Conclusions**

##### **Examination Scheme:**

<b>Components</b>	<b>V</b>	<b>S</b>	<b>R</b>	<b>FP</b>
<b>Weightage (%)</b>	20	20	20	40

V – Viva, S – Synopsis, FP – Final Presentation, R - Report

# OPEN ELECTIVE COMMUNICATION SKILLS - III

**Course Code:** BCS 501

**Credit Units:** 01

**Course Objective:**

To equip the participant with linguistic skills required in the field of science and technology while guiding them to excel in their academic field.

**Course Contents:**

**Module I**

Reading Comprehension  
Summarising  
Paraphrasing

**Module II**

Essay Writing  
Dialogue Report

**Module III**

Writing Emails  
Brochure  
Leaflets

**Module IV: Introduction to Phonetics**

Vowels  
Consonants  
Accent and Rhythm  
Accent Neutralization  
Spoken English and Listening Practice

**Examination Scheme:**

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File

GD – Group Discussion

GP – Group Presentation

**Text & References:**

- Effective English for Engineering Students, B Cauveri, Macmillan India
- Creative English for Communication, Krishnaswamy N, Macmillan
- A Textbook of English Phonetics, Balasubramanian T, Macmillan

# **BEHAVIOURAL SCIENCE - V**

## **(INDIVIDUAL, SOCIETY AND NATION)**

**Course Code: BSS 503**

**Credit Units: 01**

### **Course Objective:**

This course aims at enabling students towards:

- Understand the importance of individual differences
- Better understanding of self in relation to society and nation
- Facilitation for a meaningful existence and adjustment in society
- To inculcate patriotism and National pride.
- To enhance personal and professional excellence

### **Course Contents:**

#### **Module I: Individual differences & Personality**

Personality: Definition & Relevance

Importance of nature & nurture in Personality Development

Importance and Recognition of Individual differences in Personality

Accepting and Managing Individual differences (Adjustment Mechanisms)

Intuition, Judgment, Perception & Sensation (MBTI)

BIG5 Factors

#### **Module II: Socialization**

Nature of Socialization

Social Interaction

Interaction of Socialization Process

Contributions to Society & Nation

#### **Module III: Patriotism and National Pride**

Sense of Pride and Patriotism

Importance of Discipline and hard work

Integrity and accountability

#### **Module IV: Human Rights, Values and Ethics**

Meaning of Human Rights

Human Rights Awareness

Importance of human rights

Values and Ethics- Learning based on project work on Scriptures like Ramayana, Mahabharata, Gita etc

#### **Module V: Personal and Professional Excellence**

Personal excellence:

Identifying Long-term choices and goals

Uncovering talent, strength and style

Alan P. Rossiter's eight aspects of Professional Excellence

Resilience during challenge and loss

Continued Reflection (Placements, Events, Seminars, Conferences, Projects, Extracurricular Activities, etc.)

#### **Module VI: End-of-Semester Appraisal**

Viva based on personal journal

Assessment of Behavioural change as a result of training

Exit Level Rating by Self and Observer

**Examination Scheme:**

<b>Components</b>	<b>SAP</b>	<b>A</b>	<b>Mid Term Test (CT)</b>	<b>VIVA</b>	<b>Journal for Success (JOS)</b>
<b>Weightage (%)</b>	20	05	20	30	25

**Text & References:**

- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressler, David and Cans, Donald: The Study of Human Interaction
- Lapiere, Richard. T – Social Change
- Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.
- Robbins O.B.Stephen;. Organizational Behaviour

# FRENCH - V

**Course Code:** FLT 501

**Credit Units:** 02

## **Course Objective:**

To furnish some basic knowledge of French culture and civilization for understanding an authentic document and information relating to political and administrative life

## **Course Contents:**

**Module D: pp. 131 – 156 Unités 10,11**

### **Contenu lexical:**

#### **Unité 10: Prendre des décisions**

1. Faire des comparaisons
2. décrire un lieu, le temps, les gens, l'ambiance
3. rédiger une carte postale

#### **Unité 11: faire face aux problèmes**

1. Exposer un problème.
2. parler de la santé, de la maladie
3. interdire/demander/donner une autorisation
4. connaître la vie politique française

### **Contenu grammatical:**

1. comparatif - comparer des qualités/ quantités/actions
2. supposition: Si + présent, futur
3. adverbe - caractériser une action
4. pronom "Y"

## **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

## **Text & References:**

- le livre à suivre: Campus: Tome 1

# GERMAN - V

**Course Code: FLG 501**

**Credit Units: 02**

## **Course Objective:**

To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.

To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Introduction to Advanced Grammar and Business Language and Professional Jargon

## **Course Contents:**

### **Module I: Genitive case**

Genitive case – Explain the concept of possession in genitive

Mentioning the structure of weak nouns

### **Module II: Genitive prepositions**

Discuss the genitive prepositions and their usage: (während, wegen, statt, trotz)

### **Module III: Reflexive verbs**

Verbs with accusative case

Verbs with dative case

Difference in usage in the two cases

### **Module IV: Verbs with fixed prepositions**

Verbs with accusative case

Verbs with dative case

Difference in the usage of the two cases

### **Module V: Texts**

A poem 'Maxi'

A text Rocko

### **Module VI: Picture Description**

Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;

Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

## **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

## **Text & References:**

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

## SPANISH - V

**Course Code:** FLS 501

**Credit Units:** 02

### **Course Objective:**

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

### **Course Contents:**

#### **Module I**

Revision of earlier semester modules

#### **Module II**

Future Tense

#### **Module III**

Presentations in English on  
Spanish speaking countries'

Culture

Sports

Food

People

Politics

Society

Geography

#### **Module IV**

Situations:

En el hospital

En la comisaria

En la estacion de autobus/tren

En el banco/cambio

#### **Module V**

General revision of Spanish language learnt so far.

### **Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

### **Text & References:**

- Español Sin Fronteras, Greenfield

# CHINESE – V

**Course Code: FLC 501**

**Credit Units: 02**

## **Course Objective:**

What English words come from Chinese? Some of the more common English words with Chinese roots are ginseng, silk, dim sum, fengshui, typhoon, yin and yang, Tai chi, kung-fu. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

## **Course Contents:**

### **Module I**

Drills

Dialogue practice

Observe picture and answer the question.

Pronunciation and intonation.

Character writing and stroke order

### **Module II**

Intonation

Chinese foods and tastes – tofu, chowmian, noodle, Beijing duck, rice, sweet, sour...etc. Learning to say phrases like – Chinese food, Western food, delicious, hot and spicy, sour, salty, tasteless, tender, nutritious, good for health, fish, shrimps, vegetables, cholesterol is not high, pizza, milk, vitamins, to be able to cook, to be used to, cook well, once a week, once a month, once a year, twice a week.....

Repetition of the grammar and verbs taught in the previous module and making dialogues using it.

Compliment of degree “de”.

### **Module III**

Grammar the complex sentence “suiran ... danshi....”

Comparison – It is colder today than it was yesterday.....etc.

The Expression “chule...yiwai”. (Besides)

Names of different animals.

Talking about Great Wall of China

Short stories

### **Module IV**

Use of “huozhe” and “haishi”

Is he/she married?

Going for a film with a friend.

Having a meal at the restaurant and ordering a meal.

### **Module V**

Shopping – Talking about a thing you have bought, how much money you spent on it? How many kinds were there? What did you think of others?

Talking about a day in your life using compliment of degree “de”. When you get up? When do you go for class? Do you sleep early or late? How is Chinese? Do you enjoy your life in the hostel?

Making up a dialogue by asking question on the year, month, day and the days of the week and answer them.

**Examination Scheme:**

<b>Components</b>	<b>CT1</b>	<b>CT2</b>	<b>C</b>	<b>I</b>	<b>V</b>	<b>A</b>
<b>Weightage (%)</b>	20	20	20	20	15	5

C – Project + Presentation

I – Interaction/Conversation Practice

**Text & References:**

- “Elementary Chinese Reader ” Part-II Lesson 39-46

# WEB TECHNOLOGIES

Course Code: BCA 601

Credit Units: 03

## Course Objective:

This course is aimed to provide a fundamental understanding of web site creation. HTML is the language used for designing most basic web pages. Syllabus includes basic and advanced features of HTML which includes images, links, tables, frames and forms etc. It also gives an overview of XML.

## Course Contents:

### Unit I: Flash basics

Motion tween, Motion Guide, Masking, Shape Tween, Working With Layers, **Animation & Effects**, 3D Animation in Flash CS5, Animated Car Banner, Bouncing Effect, Blur Effect, Burning Image Effect, Checkboard Effect, Circular Ripple Effect, Fade In Effect, Lighting Effects.

### Unit II: Corel draw basics

The Workspace, Configuring the Workspace, The Toolbox, Drawing Basics, Dockers, The Transformation Docker, The Shaping docker, Weld Command, Trim and Intersect command, Object manager docker, outlines and fills, about curves, Outline to object.

### Unit III: Photoshop basics

Interface Introduction, Panels & Workspaces, Raster Image principles, Dimension, & Resolution, Layers, Common file types, Colour, Making selections, Copy & paste, Transform tools, using brushes Go to page, Eraser tool & Layer masking, Shape tool.

### Unit IV

Type principals, Layer styles, Paths & the Pen tool, Smart objects, Colour adjustments, Adjustment layers, Filters, Blending modes.

### Unit V: Dreamweaver basics

Introduction, interface basics, view types, anchor links, insert divs, images, hotspots, meta tags, script tags, inserting table, frames, heading, content and formatting tags, form tag, input and select tag, template design in Dreamweaver, importing a website design, extensions.

## Examination Scheme:

Components	CT	Assignment	P/V	Quiz	Attd	EE
Weightage (%)	15	10	10	10	5	50

## Text & References:

### Text:

- HTML, DHTML, JavaScript, Perl, CGI, Ivan Bayross, BPB Publication.

### References:

- HTML Complete Reference, BPB Publication.

# INTRODUCTION TO PYTHON TECHNOLOGIES

Course Code: BCA602

Credit Units: 03

## UNIT I

### ALGORITHMIC PROBLEM SOLVING

Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion). Illustrative problems: find minimum in a list, insert a card in a list of sorted cards, guess an integer number in a range, Towers of Hanoi.

## UNIT II

### DATA, EXPRESSIONS, STATEMENTS

Python interpreter and interactive mode; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

## UNIT III

### CONTROL FLOW, FUNCTIONS

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays. Illustrative programs: square root, gcd, exponentiation, sum an array of numbers, linear search, binary search.

## UNIT IV

### LISTS, TUPLES, DICTIONARIES

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing – list comprehension; Illustrative programs: selection sort, insertion sort, mergesort, histogram.

## UNIT V

### FILES, MODULES, PACKAGES

Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.

#### Examination Scheme:

Components	CT1	A/C/Q	Attd	EE
Weightage (%)	10	15	5	70

#### Text & References:

Python Programming: An introduction to computer science.

#### Reference:

Learning Python: Powerful Object Oriented Programming.

# WEB TECHNOLOGIES LAB

Course Code: BCA 621

Credit Units: 01

## List of Programmes

1. Create the animation of flying bird in flash.
2. Create the animation of walking man with his arms and legs moving.
3. Create the animation of Virtual typewriter.
4. Show a example of Masking in flash.
5. Make an animation of bouncing ball using flash.
6. Create the animation of moving Car in flash.
7. Make the blinking colorful text in flash.
8. Make a scenery showing rising sun in it using flash.
9. Show a flower growing in a flower pot.
10. WAP to develop a student Registration Form using HTML.
11. WAP to show the scrolling text using Marquee Element using HTML.
12. WAP to draw a table with three rows and three columns.
13. WAP to show Image Mapping.
14. WAP to show the functionality of FORWARD and BACK button of History class using JavaScript.
15. WAP to show front level validation in a Registration Form.

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# INTRODUCTION TO PYTHON TECHNOLOGIES LAB

**Course Code: BCA622**

**Credit Units: 01**

1. Programs that take command line arguments (word count)
2. Find the most frequent words in a text read from a file.
3. Compute the GCD of two numbers.
4. First n prime numbers.
5. Find the square root of a number (Newtons method).
6. Find Exponentiation (power of a number).
7. Find the maximum of a list of numbers.
8. Multiply matrices
9. Linear search
10. Binary search
11. Selection sort
12. Insertion sort
13. Merge sort
14. Simulate elliptical orbits in Pygame
15. Simulate bouncing ball using Pygame

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	15	15	15	25	25

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

# MAJOR PROJECT

**Course Code: BCA 660**

**Credit Units: 15**

## **GUIDELINES FOR PROJECT FILE**

Project experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty guide. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation.

Project is genuine exploration of the unknown that leads to new knowledge, which often warrants publication. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student.

Sufficient time should be allowed for satisfactory completion of reports, taking into account that initial drafts should be critiqued by the faculty guide and corrected by the student at each stage.

The File is the principal means by which the work carried out will be assessed and therefore great care should be taken in its preparation.

### **In general, the File should be comprehensive and include**

- A short account of the activities that were undertaken as part of the project;
- A statement about the extent to which the project has achieved its stated goals.
- A statement about the outcomes of the evaluation and dissemination processes engaged in as part of the project;
- Any activities planned but not yet completed as part of the project, or as a future initiative directly resulting from the project;
- Any problems that have arisen that may be useful to document for future reference.

### **Report Layout**

The report should contain the following components:

#### **1. File should be in the following specification:**

- A4 size paper
- Font: Arial (10 points) or Times New Roman (12 points)
- Line spacing: 1.5
- Top & bottom margins: 1 inch/ 2.5 cm
- Left & right margins: 1.25 inches/ 3 cm

#### **2. Report Layout:** The report should contain the following components:

Front Page  
Table of Contents  
Acknowledgement  
Student Certificate  
Company Profile  
Introduction

Chapters  
Appendices  
References / Bibliography

➤ **Title or Cover Page or Front Page**

The title page should contain the following information: Project Title; Student's Name; Course; Year; Supervisor's Name.

➤ **Table of Contents**

Titles and subtitles are to correspond exactly with those in the text.

➤ **Acknowledgement**

Acknowledgment to any advisory or financial assistance received in the course of work may be given.

➤ **Student Certificate**

Given by the Institute.

➤ **Company Certificate & Profile**

This is a certificate, which the company gives to the students. A Company Profile corresponds to a file with company-specific data. Company data can be stored there and included in a booking when needed.

➤ **Introduction**

Here a brief introduction to the problem that is central to the project and an outline of the structure of the rest of the report should be provided. The introduction should aim to catch the imagination of the reader, so excessive details should be avoided.

➤ **Chapters**

All chapters and sections must be appropriately numbered, titled and should neither be too long nor too short in length.

The first chapter should be introductory in nature and should outline the background of the project, the problem being solved, the importance, other related works and literature survey. The other chapters would form the body of the report. The last chapter should be concluding in nature and should also discuss the future prospect of the project.

➤ **Appendices**

The Appendix contains material which is of interest to the reader but not an integral part of the thesis and any problem that have arisen that may be useful to document for future reference.

➤ **References / Bibliography**

This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system.

## **ASSESSMENT OF THE PROJECT FILE**

Essentially, marking will be based on the following criteria: the quality of the report, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project. Project execution is concerned with assessing how much work has been put in.

The File should fulfill the following *assessment objectives*:

**1. Range of Research Methods used to obtain information**

**2. Execution of Research**

### 3. Data Analysis

- Analyze Quantitative/ Qualitative information
- Control Quality

### 4. Draw Conclusions

#### Examination Scheme:

<b>Components</b>	<b>MRP</b>	<b>V</b>	<b>S</b>	<b>FP</b>	<b>R</b>
<b>Weightage (%)</b>	20	20	20	20	20

MRP – Mid Report Presentation, V – Viva, S – Synopsis, FP – Final Presentation, R - Report