

**CVM UNIVERSITY**  
**Course Structure: B.C.A.**  
**Semester - I**  
**Syllabus (Effective from June 2020)**

Type of Course	Course code	Course Title	T/ P	Credit	Class room/lab (hours per Week)	Marks			
						External	Exam Duration	Internal	Total
Core – 1	101150101	Programming Fundamental and Logic Development	T	3	3	60	3 hrs	40	100
	101150102	Programming Fundamental and Logic Development Lab	P	2	3	60	3 hrs	40	100
Core – 2	101150103	Computer Organization and Digital Electronics	T	3	3	60	3 hrs	40	100
	101150104	Computer Organization and Digital Electronics Lab	P	2	3	60	3 hrs	40	100
Core – 3	101150105	Design and Implementation of Web Technology- I	T	3	3	60	3 hrs	40	100
	101150106	Design and Implementation of Web Technology- I Lab	P	2	3	60	3 hrs	40	100
Core – 4	101150107	Statistics	T	3	3	60	3 hrs	40	100
	101150108	Statistics Lab	P	2	3	60	3 hrs	40	100
Ability	101150109	Communication Skills in English-I	P	2	2	60	2 hrs	40	100
Skill	101150110	Environmental Science	T	2	2	60	2 hrs	40	100
<b>Total Credits</b>				<b>24</b>					

**CVM UNIVERSITY**  
**Vallabh Vidyanagar**  
**Program & Subject : BCA**  
**Semester - I**

(Syllabus effective from June 2020)

**Paper Code : 101150101**

**Title : Programming Fundamental and Logic Development**

**Credit : 3**

**External Marks: 60**

**Contact Hrs/Week : 3**

**University Examinations Hrs:3**

**All units carry equal weightage**

<b>Unit</b>	<b>Description in detail</b>
<b>I</b>	<b>Concept of Algorithm, Flowchart and Languages, Basics of Programming</b> Concept of an algorithm and a flowchart, need and definition, Symbols used to draw a flowchart, Typical(primitive)examples of flowcharts and algorithms, High-levelandlow-levellanguages, Identifiers and Keywords, Variables, Constant, Usageofheaderfiles, Types of Errors, Program Structure, Comments, Datatypes,TYPEDEF, Literals.
<b>II</b>	<b>Programming Concepts , Conditional and Interactive Flow Control</b> Operators , Expressions &Type Conversion, Input/Output statements, Conditional flow control and Selection based flow statements, Loopstatements, breakand continue statements, exit function.
<b>II</b> <b>I</b>	<b>Arrays , Strings and Structure</b> Arrays – One , Two , Multidimensional Array. Strings and String related Library Functions. Working with Structures.
<b>IV</b>	<b>Standard Library Functions , User-DefinedFunctions</b> Standard Library Functions - Operations on Characters, String and Mathematical operations. Introduction to Functions, Function Declaration , Function Call and Function Definition, Return statement, Scope and Visibility of variables in Functions. Types of User-Definedfunctions, Actual and Formal arguments, Recursive functions.

**Basic Text & Reference Books:-**

1. Programming with C++, D Ravichandran, McGraw-Hill Education Private Ltd.
2. Object Oriented Programming in C++,E Balagurusamy, Tata McGraw-Hill Publishing Co. Ltd.
3. Object Oriented Programming in Turbo C++,Robert Lafore, Galgotia Pub.(P)Ltd.
4. Object Oriented Programming with ANSI and Turbo C++, Ashok Kamthane, Pearson
5. C++ : The Complete Reference, Herbert Schildt , McGraw Hill Education

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**Program & Subject : BCA**  
**Semester - I**

(Syllabus effective from June 2020)

**Paper Code : 101150102**

**Title : Programming Fundamental and Logic Development Lab**

**Credit : 2**

**Contact Hrs/Week : 3**

**External Marks: 60**

**University Examinations Hrs:3**

<b>Description in detail</b>	<b>Weightage (%)</b>
<b>Practical based on</b>	
Programming Fundamental and Logic Development	<b>100%</b>

**CVM UNIVERSITY**  
**Vallabh Vidyanagar**  
**Program & Subject : BCA**  
**Semester - I**

(Syllabus effective from June 2020)

**Paper Code : 101150103**

**Title : Computer Organization and Digital Electronics**

**Credit : 3**

**External Marks: 60**

**Contact Hrs/Week : 3**

**University Examinations Hrs:3**

**All units carry equal weightage**

<b>Unit</b>	<b>Description</b>
<b>I</b>	<b>Introduction to Computer Systems and Number Systems</b> Block diagram of a simple computer and significance of different functional units, evolution of computers, Application of computers, Number System: Binary, Octal, Decimal & Hexadecimal and their inter-conversions , Character Representation - Data Representation: positive, negative, maximum and minimum number representation (related to 8 bit number) - Real number representation - Binary arithmetic: Binary Addition, binary subtraction using 1's and 2's compliment
<b>II</b>	<b>Representation of Information and Processor Organization</b> Representation of integers, character codes (ASCII, Unicode), Error detection and correction codes, Instruction Execution Cycle, Categories Of Parallel Machines, Array Processors, Multifunctional Units, Pipeline Machines, Multiprocessors, CPU organization, DataPath
<b>III</b>	<b>Overview of I/O and Memory Devices</b> Overview Of I/O Devices: Hard Disk, Floppy Disk, CD-ROM (Introduction, Advantages, Disadvantages), Introduction To RAM, ROM, PROM, EEPROM, Printers (Line, Dot Matrix, Inkjet, Laser), VDU, Mouse, Keyboard, Scanners, Plotters, OCR (MICR, BARCODE READER)
<b>IV</b>	<b>Gates, Digital Logic Circuit and Boolean Algebra</b> Gates, Boolean algebra, Truth tables, Circuit equivalence, De Morgan's theorems, Usage of Karnaugh maps, Encoders, decoders, comparators, multiplexers, Demultiplexers

**Basic Text & Reference Books:**

1. Tanenbaum A S: Structured Computer Organization Prentice – Hall of India Pvt. Ltd.
2. Malvino Brown: Digital Computer Electronics, 3rd Edition.
3. Malvino and leach: Digital Principles and Applications, 4th Edition.
4. Rajaraman V: Computer Fundamentals Prentice-Hall of India Pvt. Ltd.
5. Sinha. P K: Computer Fundamentals BPB Publication.(Second Edition)
6. S.K. Basandra : Computer Today Galgotia Publication.
7. Peter Norton: Introduction to Computers TMH
8. William H.Gothmann:Digital Electronics–An Introduction to Theory and Practice,2<sup>nd</sup>
9. Hall Douglas V.: Microprocessors and Interfacing - Programming and Hardware., McGraw Hill Book Company, 1986.
10. M.M. Mano : Computer System Architecture, 3rd Edition, Pearson Education, 2000.

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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150104**

**Title : Computer Organization and Digital Electronics Lab**

**Credit : 2**

**Contact Hrs/Week : 3**

**External Marks: 60**

**University Examinations Hrs:3**

<b>Description in detail</b>	<b>Weightage (%)</b>
<b>Practical based on</b>	<b>100%</b>
Computer Organization and Digital Electronics	

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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150105**

**Title : Design and Implementation of Web Technology- I**

**Credit : 3**

**External Marks: 60**

**Contact Hrs/Week : 3**

**University Examinations Hrs:3**

**All units carry equal weightage**

<b>Unit</b>	<b>Description in detail</b>
<b>I</b>	<b>Web Page Designing - I</b> An introduction to HTML, HTML tags, Structure of an HTML document, Text and paragraph formatting, Ordered and unordered lists - nested lists, Hyperlinks, Images, Tables
<b>II</b>	<b>Web Page Designing – II</b> Frames, Framesets - Nested framesets, Designing HTML forms, Multimedia tags, Introduction to Cascading Style Sheets (CSS), Ways of specifying style – inline, internal, external
<b>III</b>	<b>Style Sheet</b> Basic syntaxes, ID and CLASS selectors, SPAN, DIV, Font, Color, Background, Text, Border, Margin, List, Layer, Position, Box, Column
<b>IV</b>	<b>XML</b> XML overview, Features of XML, Applications of XML, Syntax, Elements and Attributes, Namespaces, Schema, XSLT overview, Syntax

**Basic Text & Reference Books:-**

1. Ivan Bayross, “Web Enabled Commercial Applications Development using HTML, DHTML, Javascript, Perl CGI”, BPB, 2004.
2. Douglas E Comer: The Internet, PHI, Second Edition, May 2000.
3. Xavier C: World Wide Web Design with HTML, Tata McGraw Hill Publication, 2000.
4. Eric Meyer: Cascading Style Sheets – The Definitive Guide, O’Reilly – SPD, First Edition, 2000.
5. Deitel, Nieto, Lin, Sadhu: “XML How to program”, Pearson Education, 2005.
6. H.M Deital, T.R Nieto: “Internet & World Wide Web How to Program”, Fifth Edition, PHI
7. Manuals of suitable packages / Online resources

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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150106**

**Title : Design and Implementation of Web Technology- I Lab**

**Credit : 2**

**Contact Hrs/Week : 3**

**External Marks: 60**

**University Examinations Hrs:3**

<b>Description in detail</b>	<b>Weightage (%)</b>
<b>Practical based on</b>	<b>100%</b>
Design and Implementation of Web Technology – I	

**CVM UNIVERSITY**  
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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150110**  
**Title : Environmental Science**

**Credit : 2**

**External Marks: 60**

**Contact Hrs/Week : 2**

**University Examinations Hrs:2**

Unit	Description in detail
<b>I</b>	<b>Introduction to Environmental Studies</b> Definition, Scope and importance of Environmental Studies Multidisciplinary nature of environmental studies Component of Environment: Atmosphere, Hydrosphere, Lithosphere, Biosphere Biogeochemical cycles : Carbon cycle and Nitrogen cycle Concept of sustainability and sustainable development.
<b>II</b>	<b>Ecosystems</b> Definition, Structure of ecosystem – Abiotic and Biotic components ( Producers, Consumers and Decomposers) Functions of Ecosystem :Energy flow in an ecosystem , Food chains, Food webs with examples. Types of Ecosystem; Forest ecosystem ,Lake / Pond ecosystem, Desert ecosystem
<b>III</b>	<b>Natural Resources</b> Classification -Renewable & Non-renewable Resources and types Land resources & Land degradation, Soil erosion & Conservation Forest Resources - Forest wealth, Deforestation: Causes and impacts Water Resources- Use and over-exploitation of surface and ground water, floods and droughts Energy resources- use of alternate energy sources, growing energy needs Conservation of Natural resources
<b>IV</b>	<b>Biotic Interactions</b> Positive Interactions with suitable examples Mutualism , Commensalism , Proto-cooperation Negative Interactions with suitable examples Exploitation, Competition , Antibiosis

**Basic Text & Reference Books:**

1. Ecology and Environment by P.D. Sharma
2. Fundamentals of Ecology by E.P.Odum
3. Ecology by Mohan P. Arora
4. Fundamentals of Ecology by M.C. Dash
5. Environmental Science by S.C.Santra
6. An Introduction to Environmental Engineering & Science by Gilbert N Master
7. Encyclopedia of Environmental Pollution and Control by R. K. Trivedi
8. Ecology and Sustainable development by P.S. Ramkrishana
9. Environmental Conservation; Fundamentals of Forestry Vol 5 by S.S. Negi, Bishen Singh, Mahendra Pal Singh

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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150109**

**Title : Communication Skills in English-I**

**Credit : 2**

**External Marks: 60**

**Contact Hrs/Week : 2**

**University Examinations Hrs:2**

**Course objectives:**

The objectives of this course are to enable students to...

- a) Introduce themselves, describe person, place or situation,
- b) Use subject-verb agreement appropriate
- c) Read for information news features, articles, newspapers and texts
- d) Read to get the overall idea, and comprehend the passage.
- e) Use tenses correctly for communicative purpose
- f) Write leave application, apology and request letters
- g) Write paragraphs by developing points
- h) listen and understand short lectures, descriptions, and narrations

**Topics to be covered in journal**

1. Self-Introduction, Describing Objects / Scene / People
2. Tenses
3. Concord or Subject-Verb Agreement
4. Wh- Questions
5. Modal Auxiliaries
6. Active and Passive Voice
7. Letter of request and apology, Leave Application
8. Letter of Invitation / Accepting the Invitation / Declining the Invitation
9. Reading Comprehension
10. Listening Comprehension ('Look Ahead' – BBC Course)

**❖ Books / Audio-Visual Courses recommended**

1. **Corridors to Communication** by- Ranu Vanikar (Orient Longman)
2. Champa Tickoo and Jaya Sasikumar (2000). '**Writing with a Purpose**' ,Chennai, OUP
3. David Jolly (1988). **Writing Tasks:An Authentic Task Approach to Individual Writing Needs** (Cambridge University Press)
4. **Look Ahead** – (Audio-Visual BBC Course)
5. **Spoken English**—D Sasikumar and PV Dhamija. (Tata McGraw Hill Publication Ltd, New Delhi) (Units 1-13)
6. Grant Taylor. **English Conversation Practice**. (Tata McGraw Hill, New Delhi)
7. R P Bhatnagar and R T Bell (1999) **Communication in English**, (Orient Longman, Hyderabad)

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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150107**

**Title : Statistics**

**Credit : 3**

**Contact Hrs/Week : 3**

**All units carry equal weightage**

**External Marks: 60**

**University Examinations Hrs:3**

Unit	Description in detail
<b>I</b>	<b>Introduction to Statistics</b> Terminology: Population, sample, Parameter and Statistics Concept: (i) Primary and Second Data, (ii) qualitative and quantitative data (iii) discrete and continuous data Types of scales - nominal, ordinal, ratio and interval. Frequency Distribution :(i) Discrete (ii) Continuous Cumulative frequency distribution Diagrammatic and graphical representation: (i) Line chart (ii) Bar chart (iii) Pie chart (iii) Histogram
<b>II</b>	<b>Measures of central tendency and dispersion</b> <b>Measures of central tendency:</b> (i) Mean (ii) Median (iii) Mode (iv) Quartiles (all for grouped and ungrouped data). Combined mean. <b>Measures of Dispersion:</b> (i) Range (ii) Quartile Deviation (iii) Standard Deviation (all for grouped and ungrouped data) (iv) Coefficient of Variation (C.V).
<b>III</b>	<b>Correlation and Regression</b> <b>Correlation</b> Introduction, Meaning and Definition of Correlation, Types of correlation Correlation coefficient & its properties (without proof) Methods of studying correlation (Examples based on only observations) (i) Scattered Diagram (ii) Karl Pearson's product moment method (iii) Spearman's rank method <b>Regression</b> Introduction, Meaning, Definition of regression Regression coefficients and their Properties (without proof) Examples of regression Coefficient & regression lines (only for observations)
<b>IV</b>	<b>Analysis of Time Series:</b> Definition, meaning, Application, Components of Time Series. Methods of finding Trend Moving Average Method (with period 3, 4 & 5 years) Least Squares method (only Linear trend) Computation of seasonal indices by simple average method.

**Basic Text & Reference Books:**

1. S.C. Gupta: Fundamental of Statistics. Himalaya Publishing House.
2. N. D. Vohra, Business Statistics, Tata McGraw-Hill Education
3. Richard Levin and David Rubin (1997) Statistics for Management, Pearson.

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**Program & Subject : BCA**  
**Semester - I**  
**(Syllabus effective from June 2020)**

**Paper Code : 101150108**

**Title : Statistics Lab**

**Credit : 2**

**Contact Hrs/Week : 3**

**External Marks: 60**

**University Examinations Hrs:3**

<b>Description in detail</b>	<b>Weightage (%)</b>
<b>Practical based on</b>	<b>100%</b>
Statistics	

**CVM UNIVERSITY**  
**Proposed Structure: B.C.A.**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

Type of Course	Course code	Course Title	T/ P	Credit	Class room/lab (hours per Week)	Marks			
						External	Exam Duration	Internal	Total
Core – 1	101150201	Object Oriented Programming Concepts	T	3	3	60	3 hrs	40	100
	101150202	Object Oriented Programming Concepts Lab	P	2	3	60	3 hrs	40	100
Core – 2	101150203	DBMS Fundamentals	T	3	3	60	3 hrs	40	100
	101150204	DBMS Fundamentals Lab	P	2	3	60	3 hrs	40	100
Core – 3	101150205	Design and Implementation of web Technology- II	T	3	3	60	3 hrs	40	100
	101150206	Design and Implementation of web Technology- II Lab	P	2	3	60	3 hrs	40	100
Core – 4	101150207	Systems Analysis and Design	T	3	3	60	3 hrs	40	100
	101150208	Systems Analysis and Design Lab	P	2	3	60	3 hrs	40	100
Ability	101000201	Communication Skills in English II	P	2	2	60	2 hrs	40	100
Skill	101150210	Mathematics	T	2	2	60	2 hrs	40	100
	<b>Total Credit</b>			<b>24</b>					

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<b>Paper Code:</b> 101150201	<b>External Marks :60</b>	<b>Total Credit: 3</b>
<b>Title Of Paper:</b> Object Oriented Programming Concepts		
<b>Details</b>		<b>Weightage</b>
<b>Unit-1 Object Oriented Programming (OOP) Concepts</b> <ul style="list-style-type: none"> <li>- Structured programming vs. Object-oriented programming</li> <li>- Basic OOP concepts : objects , classes , encapsulation , data hiding , inheritance, polymorphism</li> <li>- Structure of a class</li> <li>- Creating classes with data-members and member functions</li> <li>- Private, protected and public members</li> </ul>		25 %
<b>Unit-2 Implementing OOP concepts using C++</b> <ul style="list-style-type: none"> <li>- Constructors</li> <li>- Static vs. non-static members</li> <li>- Different types of objects</li> <li>- Destructor</li> <li>- Array of objects</li> </ul>		25 %
<b>Unit-3 Functions, Function Overloading, Inheritance and Function Overriding</b> <ul style="list-style-type: none"> <li>- Parameter passing, Default arguments, Inline functions, Friend functions</li> <li>- Function Overloading</li> <li>- Inheritance</li> <li>- Role of access specifiers in inheritance</li> <li>- Function Overriding</li> <li>- Virtual function, Pure virtual function, abstract class</li> </ul>		25 %
<b>Unit-4 Pointer and Dynamic Memory Management</b> <ul style="list-style-type: none"> <li>- Pointers</li> <li>- Dynamic Memory Management</li> <li>- File Handling</li> <li>- File operations : open, read, write, seek and close</li> </ul>		25 %

**Reference Books:**

1. Programming with C++ by D. Ravichandran, Third Edition, McGraw Hill Education
2. Object-oriented Programming in C++ by E. Balagurusamy, Tata McGraw Hill
3. Object-oriented Programming in Turbo C++ by Robert Lafore, Galgotia Publication
4. Mastering C++ by K.R. Venugopal, RajkumarBuyya, Second Edition, McGraw Hill Education
5. C++: The Complete Reference by Herbert Schildt, Fourth Edition, McGraw Hill Education

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**Proposed Structure: BCA**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code:</b> 101150202	<b>External Marks :60</b>	<b>Total Credit: 2</b>
<b>Title Of Paper:</b> Object Oriented Programming Concepts Lab		

<b>Unit</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
	<b>Practical based on</b>	
	Object Oriented Programming Concepts	<b>100%</b>

**CVM UNIVERSITY**  
**Proposed Structure: BCA**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code:</b> 101150203	<b>External Marks :</b> 60	<b>Total Credit:</b> 3
<b>Title Of Paper:</b> DBMS Fundamentals		

<b>Unit No.</b>	<b>Topics</b>	<b>Weightage (%)</b>
<b>1</b>	<b>Introduction to DBMS and Relational Model:</b> Introductory concepts of DBMS : <ul style="list-style-type: none"> <li>- Introduction and applications of DBMS,</li> <li>- Purpose of database,</li> <li>- Database system architecture - users and DBA</li> <li>- Data Models</li> </ul> Relational Model: <ul style="list-style-type: none"> <li>- Relational algebra – Union (U), Difference ( - ), Intersection (<math>\cap</math>), Cartesian Product (x)</li> <li>- Functional dependency and dependency preservation</li> </ul>	25%
<b>2</b>	<b>Entity-Relationship model and Normalization:</b> <ul style="list-style-type: none"> <li>- Entity-Relationship model - Basic concepts, Relationship and relationship types, E-R diagrams, weak entity sets</li> <li>- Keys – Super key, Candidate key, Primary key, Foreign key</li> <li>- Introduction to UML</li> <li>- Codd's rules</li> <li>- Normalization–1Nf, 2NF, 3NF</li> </ul>	25%
<b>3</b>	<b>SQL Concepts – 1::</b> <ul style="list-style-type: none"> <li>- Basics of SQL</li> <li>- Types of SQL statements – DDL (Create, Alter, Drop), DML (Insert, Update, Delete), DCL (Grant, Revoke), TCL (Commit, Rollback, Savepoint)</li> <li>- SELECT – where, order by clause</li> <li>- Table structure – creation, alteration</li> <li>- Constraints – primary key, foreign key, unique, not null, check, default</li> <li>- Operators (Arithmetic, Relational, Logical, Range searching, Pattern matching, Set)</li> <li>- Functions – Introduction, types of function</li> <li>- Aggregate functions (sum, count, max, min, avg)</li> <li>- Scalar functions – numeric, date, string , conversion</li> </ul>	25%
<b>4</b>	<b>SQL Concepts - 2 :</b> <ul style="list-style-type: none"> <li>- Sub-queries</li> <li>- Group by and Having clause</li> <li>- Types of joins</li> <li>- View</li> <li>- Sequence</li> </ul>	25%

**Reference Books:**

1. An introduction to Database Systems, C J Date, Addition-Wesley.
2. Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGrawHill.
3. Understanding SQL by Martin Gruber, BPB
4. SQL-PL/SQL by Ivan bayross.
5. Oracle–The complete reference–TMH/oracle press
6. SQL/PL SQL for Oracle 9i, P. S. Deshpande, Dreamtech Press

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**Semester - II**  
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<b>Paper Code:</b> 101150204	<b>External Marks :60</b>	<b>Total Credit: 2</b>
<b>Title Of Paper:</b> DBMS Fundamentals Lab		

<b>Unit</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
	<b>Practical based on</b>	
	DBMS Fundamentals	<b>100%</b>

**CVM UNIVERSITY**  
**Proposed Structure: BCA**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code:</b> 101150205	<b>External Marks :60</b>	<b>Total Credit: 3</b>
<b>Title Of Paper:</b> Design and Implementation of Web Technology- II		

<b>Unit</b>	<b>Description in detail</b>
<b>I</b>	<b>Introduction to Scripting</b> Introduction to Scripting – Client Side Scripting vs. Server Side Scripting –How the Web works - Introduction to JavaScript – Applications and Advantages of JavaScript - Using JavaScript on a webpage, JavaScript basics – Syntax, Data Types, Variables, Literals, Type Casting
<b>II</b>	<b>Basics of Javascript</b> Operators, User interaction through dialog boxes, Built-in functions, Flow Control statements: Decision Making and Looping, Arrays, User-defined functions
<b>III</b>	<b>Advanced Javascript – I</b> Objects, Properties and Methods, Built-in objects: String, Math, Date, RegExp, Handling Errors, Introduction to Creating Objects and Classes
<b>IV</b>	<b>Advanced Javascript – II</b> Introduction to DOM, DOM Hierarchy, Understanding objects & Collections in DOM, HTML Form Hierarchy, HTML Form, Event handling, Introduction to AJAX.

**Basic Text & Reference Books:-**

1. **Ivan Bayross**, “Web Enabled Commercial Applications Development using HTML, DHTML, Javascript, Perl CGI”, BPB, 2004.
2. **Douglas E Comer**: The Internet, PHI, Second Edition, May 2000.
3. **Wilton P., Jeremy McPeak**: Beginning JavaScript, 4th Ed., Wiley Pub.
4. **Danny Goodman, Machael Morrison**: “JavaScript Bible”, 6th Ed., Wiley Pub.
5. Kogent Learning Solution Inc.,”HTML5 Black Book”
6. Manuals of suitable packages / Online resources

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**Proposed Structure: BCA**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code:</b> 101150206	<b>External Marks :60</b>	<b>Total Credit: 2</b>
<b>Title Of Paper:</b> Design and Implementation of Web Technology- II Lab		

<b>Unit</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
	<b>Practical based on</b>	
	Design and Implementation of Web Technology- II	<b>100%</b>

**CVM UNIVERSITY**  
**Proposed Structure: BCA**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code:</b> 101150207	<b>External Marks :</b> 60	<b>Total Credit: 3</b>
<b>Title Of Paper: Systems Analysis and Design</b>		

<b>Unit</b>	<b>Description in Detail</b>	<b>Weightage (%)</b>
<b>1</b>	<b>Systems Analysis and Systems Development Life Cycle (SDLC)</b> <ul style="list-style-type: none"> <li>- The concept of a system</li> <li>- The elements and characteristics of a system</li> <li>- Types of systems</li> <li>- Meaning of systems analysis</li> <li>- Role of a systems analyst</li> <li>- Stages of systems analysis : Problem identification, Feasibility study and cost benefit analysis, System requirement analysis</li> <li>- Stages of systems design : System design specification and programming, System implementation, follow up, maintenance, Evaluation of a system</li> </ul>	25%
<b>2</b>	<b>Structured Systems Analysis and Design Method and Input/output Design</b> <ul style="list-style-type: none"> <li>- Structured Systems Analysis and Design (SSADM) – need and Meaning</li> <li>- SSADM Methodology : System survey, Structured analysis,</li> <li>- Structured Design, Hardware study, System Implementation, Maintenance</li> <li>- Advantages of SSADM.</li> <li>- System design control</li> <li>- Input : Data capture objectives, Data verification and validation</li> <li>- Output : Design principles of output, Output objectives</li> </ul>	25%
<b>3</b>	<b>Data Flow Diagrams &amp; Fact Gathering Techniques</b> <ul style="list-style-type: none"> <li>- Fact finding techniques : Interviewing, Questionnaires, Record inspection, Observation</li> <li>- Data Flow Diagrams (DFDs) – meaning and significance</li> <li>- Symbols used in DFDs, constructing a DFD with illustration</li> <li>- Physical and logical DFDs</li> <li>- Introduction to Decision Table and Decision Tree - Structured English</li> </ul>	25%
<b>4</b>	<b>Computer Assisted System Engineering ( CASE ) Tools and Quality Assurance</b> <ul style="list-style-type: none"> <li>- CASE : an introduction</li> <li>- CASE components : Diagramming Tools, Information repository,</li> <li>- Interface generator, Code generator, Management tools</li> <li>- Benefits of CASE, limitations of CASE</li> <li>- Levels of Assurance</li> <li>- Testing strategies</li> </ul>	25%

**Main Reference Books :**

1. S. Parthasarthy& B. W. Khalkar : System Analysis & Design, 1st Edition, Master Ed. Cons., Nashik .
2. James A. Senn : Analysis & Design of Information System 2nd Edition, McGraw-Hill Int.

**CVM UNIVERSITY**  
**Proposed Structure: BCA**  
**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code: 101150208</b>	<b>External Marks :60</b>	<b>Total Credit: 2</b>
<b>Title Of Paper: Systems Analysis and Design Lab</b>		

<b>Unit</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
	<b>Practical based on</b>	
	Systems Analysis and Design	<b>100%</b>

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**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code : 101150210</b>	<b>External Marks :60</b>	<b>Total Credit: 2</b>
<b>Title of Paper: Mathematics</b>		

<b>Unit</b>	<b>Description in Detail1</b>	<b>Weightage (%)</b>
<b>I</b>	<b>Set theory</b> Sets and their representations; The empty set; finite and infinite sets; equal and equivalent sets; subsets; power set; universal set; Venn diagrams; complement of a set operations on sets; applications of sets.	<b>25%</b>
<b>II</b>	<b>Mathematical Logic</b> Basic Logical connections; Conjunction; Disjunction; Negation; Negation of Compound Statements; Truth tables. Tautologies; Logical Equivalence; Applications.	<b>25%</b>
<b>III</b>	<b>Matrices and Determinants</b> Definition of a matrix; Operations on matrices; Square Matrix and its inverse; determinants; properties of determinants; the inverse of a matrix; solution of equations using matrices and determinants; solving equations using determinants.	<b>25%</b>
<b>IV</b>	<b>Probability</b> Concept of probability; sample space and events; three approaches of probability; conditional probability and independence of events; bay's theorem.	<b>25%</b>

**Basic Text & Reference Books: -**

1. S.Lipschutz and Marc Lars Lipson: Discrete Mathematics, Schaum's series (International edition,1992)

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**Semester - II**  
**Proposed Syllabus (Effective from June 2020)**

<b>Paper Code : 101000201</b>	<b>External Marks :60</b>	<b>Total Credit: 2</b>
<b>Title of Paper: Communication Skills in English - II</b>		

**Course objectives:**

The objectives of this course are to enable students to...

- a)** Understand and use various notions and functions of language
- b)** Write a detailed report of any college activity or a press note
- c)** Draft E-mail effectively
- d)** Prepare Curriculum Vitae and Job Application
- e)** Learn and utilize Job Interview Skills successfully
- f)** Write letters of variety of complaints
- g)** Participate effectively in Group Discussion
- h)** Learn the Skill of Presentation
- i)** Take notes in the classroom and use them to prepare study material

**Topics to be covered in journal**

1. Notions and Functions of Language, Situational Dialogues
2. Report / Press Note Writing
3. E-mail Writing
4. Connectives
5. Writing Job Application and Resume
6. Interview Skills
7. Group Discussion
8. Presentation Skills
9. Formal Letter of Complaint
10. Note-Taking and Note-Making ('On We Go' - BBC Course)

❖ **Books / Audio-Visual Courses recommended**

- 1. Corridors to Communication** --By RanuVanikar (Orient Longman)
- 2.** ChampaTickoo and Jaya Sasikumar (2000) **Writing with a purpose**, Chennai, OUP.
- 3.** David Jolly (1988). **Writing Tasks: An Authentic Task Approach to Individual Writing Needs** (Cambridge University Press)
- 4. On We Go**(An Audio-Visual BBC Course)
- 5.** Grant Taylor. **English Conversation Practice** (Tata McGraw Hill, New Delhi)
- 6.** R. P. Bhatnagar and R T Bell (1999) **Communication in English**, (Orient Longman, Hyderabad)