JAVA PROGRAMMING

Course Code: BTCCS 20301 Credit Units: 04

Course Objective:
The objective is to impart programming skills used in this object oriented language java. The course explores all the basic concepts of core java programming. The students are expected to learn it enough so that they can develop the web solutions like creating applets etc.

Course Contents:

Module I
Concepts of OOP, Features of Java, How Java is different from C++, Data types, Control Statements, identifiers, arrays, operators. Inheritance: Multilevel hierarchy, method overriding, Abstract classes, Final classes, String Class.

Module II
Defining, Implementing, Applying Packages and Interfaces, Importing Packages. Fundamentals, Types, Uncaught Exceptions, Multiple catch Clauses, Java’s Built-in Exception.

Module III
Creating, Implementing and Extending thread, thread priorities, synchronization suspending, resuming and stopping Threads, Constructors, Various Types of String Operations. Exploring Various Basic Packages of Java: Java.lang, Java. util, Java.i.o

Module IV
Event handling Mechanism, Event Model, Event Classes, Sources of Events, Event Listener Interfaces AWT: Working with Windows, AWT Controls, Layout Managers

Module V
Applet Class, Architecture, Skeleton, Display Methods.
Swings: Japplet, Icons, labels, Text Fields, Buttons, Combo Boxes.

Examination Scheme:

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Text & References:

Text:
- JAVA The Complete Reference by PATRICK NAUGHTON & HERBERT SCHILD, TMH
- Introduction to JAVA Programming a primar, Balaguruswamy.

References:
- “Introduction to JAVA Programming” Daniel/Young PHI
JAVA PROGRAMMING LAB

Course Code: BTCCS 20321  Credit Units: 01

Course Contents:

SOFTWARE REQUIRED: JDK1.3

Assignments will be provided for the following:

- Java programs using classes & objects and various control constructs such as loops etc, and data structures such as arrays, structures and functions
- Java programs for creating Applets for display of images and texts.
- Programs related to Interfaces & Packages.
- Input/Output and random files programs in Java.
- Java programs using Event driven concept.
- Programs related to network programming.

Examination Scheme:

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Course Objective: VHDL is commonly used as a design-entry language for field-programmable gate arrays and application-specific integrated circuits in electronic design automation of digital circuits. The course aims to discuss the syntax of the language to model a digital system.

Course Contents:

Module I

Module II
Data Types; Pre-Defined Data Types, User-Defined Data Types, Subtypes, Arrays, Port Array, Records, Signed and Unsigned Data Types, Data Conversion

Module III
Sequential codes: PROCESS: Signals and Variables, IF, WAIT, CASE, LOOP, CASE versus IF, CASE versus WHEN, Bad Clocking, Using Sequential Code to Design Combinational Circuits Description and design of sequential circuits using VHDL,

Module IV
Standard combinational modules, Design of a Serial Adder with Accumulator, State Graph for Control Network, design of a Binary Multiplier, Multiplication of a Signed Binary Number, Design of a Binary Divider.

Module V
Micro programmed Controller, Structure of a micro programmed controller, Basic component of a micro system, memory subsystem. Overview of PAL, PLA, FPGA, CPLD.

Examination Scheme:

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Text & References:

Text:
- Volnei A. Padroni, “Circuit Design with VHDL.”

References:
- VHDL Programming by Examples by Douglas L. Perry, TMH, 2000
- Hardware Description Languages by Sumit Ghose, PHI, 2000
- Digital System Design with VHDL by Mark Zwolinski; Prentice Hall Pub. 1999
- Designing with FPGA & CPLDs by Zeidman; CMP Pub. 1999
- HDL Chip Design by Douglas J. Smith; Doone Pub. 2001
SOFTWARE ENGINEERING

Course Code: BTCCS 30502 Credit Units: 03

Course Objective:
The basic objective of Software Engineering is to develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high-quality software at low cost and with a small cycle time. Software Engineering is the systematic approach to the development, operation, maintenance, and retirement of software.
The course provides a thorough introduction to the fundamentals principles of software engineering. The organization broadly be based on the classical analysis-design-implementation framework.

Course Contents:

Module I: Introduction:
Software life cycle models: Waterfall, Prototype, Evolutionary and Spiral models, Overview of Quality Standards like ISO 9001, SEI-CMM

Module II: Software Metrics and Project Planning:

Module III: Software Requirement Analysis, design and coding

Module IV: Software Reliability, Testing and Maintenance:
Failure and Faults, Reliability Models: Basic Model, Logarithmic Poisson Model, Software process, Functional testing: Boundary value analysis, Equivalence class testing, Decision table testing, Cause effect graphing, Structural testing: path testing, Data flow and mutation testing, unit testing, integration and system testing, Debugging, Testing Tools, & Standards. Management of maintenance, Maintenance Process, Maintenance Models, Reverse Engineering, Software RE-engineering

Module V: UML
Introduction to UML, Use Case Diagrams, Class Diagram: State Diagram in UML, Activity Diagram in UML, Sequence Diagram in UML, Collaboration Diagram in UML

Examination Scheme:

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Text & References:

Text:

References:
COMPUTER ARCHITECTURE

Course Code: BTCCS 30503  Credit Units: 04

Course Objective:
This course deals with computer architecture as well as computer organization and design. Computer architecture is concerned with the structure and behavior of the various functional modules of the computer and how they interact to provide the processing needs of the user. Computer organization is concerned with the way the hardware components are connected together to form a computer system. Computer design is concerned with the development of the hardware for the computer taking into consideration a given set of specifications.

Course Contents:

Module I: Register Transfer Language
Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic Logic shift Unit.

Module II: Basic Computer Organizations and Design
Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt, Design of Accumulator Logic. Hardwired and Microprogrammed control: Control Memory, Address Sequencing, Design of Control Unit

Module III: Central Processing Unit
Introduction, General Register Organization, Stack Organization, Instruction representation, Instruction Formats, Instruction type, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer RISC and CISC

Module IV: Memory and Intrasystem Communication and Input-output organisation
Memory: Memory types and organization Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory, Memory Management Hardware

Module V: Pipelining , Vector Processing and Multiprocessors
Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

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</tbody>
</table>

Text & References:

Text:

References:
• Tennenbaum,” Structured Computer Organization,” PHI
DATA COMMUNICATION AND COMPUTER NETWORKS

Course Code: BTCCS 30504 Credit Units: 03

Course Objective:
The objective is to acquaint the students with the basics of data communication and networking. A structured approach to explain how networks work from the inside out is being covered. The physical layer of networking, computer hardware and transmission systems have been explained. In-depth application coverage includes email, the domain name system; the World Wide Web (both client- and server-side); and multimedia (including voice over IP).

Course Contents:

Module I

Introduction: Introduction to computer networks, evolution of computer networks and its uses, reference models, example networks

The physical layer: Theoretical basis for data communication, transmission media, wireless transmission, telecom infrastructure, PSTN, communication satellites, mobile telephone system

Module II

The data link layer: Data link layer design issues, error detection and correction, data link protocols, sliding window protocols, example of data link protocols- HDLC, PPP Access

Module III

Medium access layer: Channel allocation problem, multiple access protocols, ALOHA, CSMA/CD, IEEE Standard 802 for LAN and MAN, Bridges

Module IV

The network layer: Network layer concepts, design issues, static and dynamic routing algorithms, shortest path routing, flooding, distance vector routing, link state routing, , multicast routing, congestion control algorithm, internetworking, Ipv4

Module V

The transport layer: The transport services, elements of transport protocols, TCP and UDP
The application layer: Brief introduction to presentation and session layer, DNS, E-mail, WWW

Examination Scheme:

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</table>

Text & References:

Text:
- Computer networks: Tanenbaum, Andrew S, Prentice Hall
• Data communication & networking: Forouzan, B. A.

References:
• Computer network protocol standard and interface: Uyless, Black
• Data and Computer Communications, Seventh Edition (7th.) William Stallings
• Publisher: Prentice Hall
• Computer Networking: A Top-Down Approach Featuring the Internet (3rd Edition) by James F. Kurose
VHDL PROGRAMMING LAB

Course Code: BTCCS 30521 Credit Units: 01

Course Contents:

SOFTWARE REQUIRED: Mentor Graphics

Topics covered in lab will include:
- Designing Basic Gates.
- Designing Combinational circuits like adder, multiplexer, PLA
- Designing Sequential Circuits like flip-flops, counters, registers.

Examination Scheme:

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SOFTWARE ENGINEERING LAB

Course Code: BTCCS 30522  Credit Units: 01

Course Contents:

SOFTWARE REQUIRED: Rational Rose

Assignments will be provided for the following:

- Use of Rational Rose for visual modeling.
- Creating various UML diagrams such as use case, sequence, collaboration, activity, state diagram, and class diagrams.

Examination Scheme:

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## Course Contents:

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<th>S. NO.</th>
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<th>EQUIPMENT REQUIRED</th>
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<tbody>
<tr>
<td>1)</td>
<td>Design 4 bit combinational circuit shifter for left right and circular shift (using MUX).</td>
<td>Digital trainer kit with P/S</td>
</tr>
<tr>
<td>2)</td>
<td>To design a BCD adder (4 bit)</td>
<td>IC Name</td>
</tr>
<tr>
<td>3)</td>
<td>To design combinational circuit that performs following logic operations. AND, OR, XOR, NOT using MUX.</td>
<td>4 bit binary adder – 7483</td>
</tr>
<tr>
<td>4)</td>
<td>Design a 4 bit combinational circuit decrementer using 4 full adder circuit.</td>
<td>Decoder (2 x 4) - 74139</td>
</tr>
<tr>
<td>5)</td>
<td>Transfer of Data from different registers to a common by using MUX.</td>
<td>MUX (2 x 1) Quad – 74157</td>
</tr>
<tr>
<td>6)</td>
<td>Transfer of data from different registers to a common bus by using decoders and tristate buffers.</td>
<td>MUX (4 x 1) Dual – 74153</td>
</tr>
<tr>
<td>7)</td>
<td>Verify arithmetic operations by using MUX and full adders.</td>
<td>Register (4 bit) – 74195</td>
</tr>
<tr>
<td>8)</td>
<td>Transfer of data from one register to another register by using bus.</td>
<td>Bidirectional – 74194</td>
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### Part – B

(Experiments based on PC trainer kit)

<table>
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<th>EQUIPMENT REQUIRED</th>
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<tr>
<td>9)</td>
<td>Write a program to initialise CRT controlled and displays a pass message on screen.</td>
<td>AND, OR, NOT, XOR, GATE</td>
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<tr>
<td>10)</td>
<td>Write a program to transmit a character and display it on a video monitor.</td>
<td>AND – 7408</td>
</tr>
<tr>
<td>11)</td>
<td>Write a program to initialise key board and display a scan code of the key pressed in seven segment display.</td>
<td>OR – 7432</td>
</tr>
<tr>
<td>12)</td>
<td>Write a program to generate beeps of different frequencies as generated at the time of reset.</td>
<td>NOT – 7404</td>
</tr>
<tr>
<td>13)</td>
<td>Write a program to initialise printer on a dual display cared at address O36C and print data from a specified address.</td>
<td>XOR – 7486</td>
</tr>
<tr>
<td>14)</td>
<td>Write a program to refresh dynamic memory of the PC and read back from the same memory.</td>
<td>NAND – 7400</td>
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### Examination Scheme:

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Course Code: BTCCS 30524  Credit Units: 01

Equipments required:
Switch Network Cables, Patch Chord- Fiber optical and twisted pair cable, LAN cards, RJ-45 connectors etc.
Platforms required: Linux Server

Course Contents:
- Introduction and Installation of Linux
- Administrating Linux
- Setting up a Local Area Network
- Connecting to the Internet
- Setting up Print Server
- Setting up File Server
- Setting up Mail Server
- Setting up FTP Server
- Setting up Web Server
- Setting up MySQL Database Server

Examination Scheme:

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COMMUNICATION SKILLS - III

Course Code: BTCBS 30501  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:

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</table>

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
Course Objective:
To inculcate in the students 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 Behavioral change as a result of training
Exit Level Rating by Self and Observer

Text & References:

- Organizational Behaviour, Davis, K.
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressers, David and Cans, Donald: The Study of Human Interaction
- LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
Course Code: BTCFR 30501  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:

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Text & References:

- le livre à suivre : Campus: Tome 1
GERMAN - V

Course Code: BTCGR 30501 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 propositions 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

Modules 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

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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