# LEARNING OUTCOMES – BASED CURRICULUM FRAMEWORK (LOCF)

**in the**

**UNDERGRADUATE PROGRAMME**
**B.Sc Computer Technology**

**FOR THE STUDENTS ADMITTED FROM THE**

**ACADEMIC YEAR 2020 - 2021**

HINDUSTHAN EDUCATIONAL AND CHARITABLE TRUST

## HICAS

**HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**
**(Affiliated to Bharathiar University and Accredited by NAAC)**
**COIMBATORE-641028**
**TAMILNADU, INDIA.**
Phone: 0422-4440555
Website: www.hicas.ac.in/

# DEPARTMENT OF COMPUTER TECHNOLOGY

## PREAMBLE

Learning Outcomes–Based Curriculum Framework (LOCF) in the Undergraduate Programme B.Sc Computer Technology.

## VISION

To create professionally competent and socially responsible graduates capable to face challenges in global environment.

## MISSION

- To provide a strong theoretical and practical background in the field of Computer Technology.
- To impart the skills necessary to continue education to grow professional.
- To inculcate professional behavior, strong ethical values, innovative research capabilities and leadership abilities.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Under Graduates of Computer Technology program will

**PEO1 :** provide solutions to challenging problems in their profession by applying computer science theory and principles

**PEO2 :** engage in life-long learning and professional development to adapt to rapidly changing work environment

## PROGRAM OUTCOME (PO) :

**PO1 :** Having ability to apply knowledge of computing and mathematics appropriate to the discipline.

**PO2 :** Recognition of the need for and ability to engage in continuing professional development.

**PO3 :** Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

**PO4 :** Function effectively as a member or leader of a team engaged in activities appropriate to the computer technology discipline

## PROGRAM SPECIFIC OUTCOME (PSO):

**PSO1 :** Ability to apply the knowledge of computing mathematics and related concepts in the appropriate domain.

**PSO2 :** Ability to analyze a problem, identify and define the requirements necessary for its solution.

**PSO3 :**. Ability to use current techniques, skills and tools to develop for application development with Professional ethics.

HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)

COIMBATORE -641028

SCHEME OF EXAMINATIONS - CBCS & LOCF PATTERN

*(For the Students admitted from the Academic year 2020-2021 and onwards)*

UG PROGRAMME

**Programme: B.Sc Computer Technology**

| Part | Course Code | Course Type | Course Title | Lecture Hours/ Week | Exam Duration (hours) | MAX. MARKS | | | CREDIT POINTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | I.E | E.E | TOTAL | |
| **Semester - I** | | | | | | | | | |
| I | 20LAT01/ 20LAH01/ 20LAM01/ 20LAF01 | MIL | Tamil-I/ Hindi-I/ Malayalam – I/ French-I | 6 | 3 | 30 | 70 | 100 | 3 |
| II | 20ENG01 | AECC | English – I | 6 | 3 | 30 | 70 | 100 | 3 |
| III | 20CTU01 | DSC | Fundamentals of Computing and C Programming | 5 | 3 | 30 | 70 | 100 | 5 |
| III | 20CTU02 | DSC | Computer System Architecture | 4 | 3 | 30 | 70 | 100 | 4 |
| | 20CTIU02 | | Software Foundation Program Using C++ | | | 40 | 60 | 100 | |
| III | 20CTU03 | GE | **Allied:** Mathematics for Computing | 5 | 3 | 30 | 70 | 100 | 4 |
| III | 20CTU04 | DSC | **Practical - I :** Programming using C | 4 | 3 | 40 | 60 | 100 | 2 |
| IV | 20CTUV01 | ACC | **VAC-I** | 2 | 1 | 50 | - | 50 | Grade* |
| IV | 20CTUJ01 | AEE | **Communicative Skills** | 2 | 1 | 50 | - | 50 | Grade* |
| IV | 20CTUJ02 | AEE | **Soft skill** | 2 | 1 | 50 | - | 50 | Grade* |
| **Semester – II** | | | | | | | | | |
| I | 20LAT02/ 20LAH02/ 20LAM02/ 20LAF02 | MIL | Tamil-II/ Hindi-II/ Malayalam-II/ French-II | 6 | 3 | 30 | 70 | 100 | 3 |
| II | 20ENG02 | AECC | English – II | 6 | 3 | 30 | 70 | 100 | 3 |
| III | 20CTU05 | DSC | Data Structures and Algorithms | 4 | 3 | 30 | 70 | 100 | 3 |
| | 20CTIU05 | | Data Visualization | | | 40 | 60 | 100 | |
| III | 20CTU06 | DSC | Python Programming | 3 | 3 | 30 | 70 | 100 | 3 |
| III | 20CTU07 | GE | **Allied :** Numerical Methods | 5 | 3 | 30 | 70 | 100 | 4 |
| III | 20CTU08 | DSC | **Practical - II** :Programming using Python | 4 | 3 | 40 | 60 | 100 | 2 |
| IV | 20GSU01 | AECC | Value Education – Human Rights | 2 | 2 | 100 | - | 100 | 2 |
| IV | 20CTUV02 | ACC | **VAC-II** | 2 | 1 | 50 | - | 50 | Grade* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IV | 20CTUJ03 | AEE | **Communicative Skills** | 2 | 1 | 50 | - | 50 | Grade* |
| IV | 20CTUJ04 | AEE | **Soft Skill** | 2 | 1 | 50 | - | 50 | Grade* |
| **Semester – III** | | | | | | | | | |
| III | 20CTU09 | DSC | Database Management System | 5 | 3 | 30 | 70 | 100 | 5 |
| III | 20CTU10 | DSC | **Computer Networks** | 5 | 3 | 30 | 70 | 100 | 5 |
| III | 20CTU11 | DSC | **PC Hardware and Troubleshooting** | 4 | 3 | 30 | 70 | 100 | 4 |
| | 20CTIU11 | | **Design Thinking** | | | 40 | 60 | | |
| III | 20CTU12 | GE | **Allied:** Business Accounting | 5 | 3 | 30 | 70 | 100 | 4 |
| III | 20CTU13 | DSC | **Practical -III:** DBMS Applications | 6 | 3 | 40 | 60 | 100 | 3 |
| III | 20CTU14 | SEC | **Practical -IV: Networking** | 3 | 3 | 40 | 60 | 100 | 2 |
| IV | 20GSU02 | AECC | Environmental Studies | 2 | 2 | 100 | - | 100 | 2 |
| IV | 20CTUV03 | ACC | **VAC-III** | 2 | 1 | 50 | - | 50 | 1 |
| IV | 20CTUJ05 | SEC | **Aptitude / Placement Training** | 2 | 1 | 50 | - | 50 | Grade* |
| IV | 20CTUJ06 | SEC | **Online Classes** | 2 | 1 | - | - | - | C/NC** |
| **Semester – IV** | | | | | | | | | |
| III | 20CTU15 | DSC | JAVA Programming | 6 | 3 | 30 | 70 | 100 | 6 |
| III | 20CTU16 | DSC | **LINUX and Shell Programming** | 6 | 3 | 30 | 70 | 100 | 6 |
| | 20CTIU16 | | **Business Intelligence** | | | 40 | 60 | | |
| III | 20CTU17 | DSC | **Practical - V :** Programming using JAVA | 6 | 3 | 40 | 60 | 100 | 3 |
| III | 20CTU18 | GE | **Allied : Operations Research** | 5 | 3 | 30 | 70 | 100 | 4 |
| III | 20CTU19 | SEC | **Practical - VI : Web Technology** | 5 | 3 | 40 | 60 | 100 | 3 |
| IV | 20GSU03 | AECC | **Skill Based Subject** Internet Security | 2 | 2 | 100 | - | 100 | 2 |
| V | 20GSU04 | AECC | Extension Activity | - | - | 100 | - | 100 | Grade* |
| IV | 20CTUV04 | ACC | **VAC-IV** | 2 | 1 | 50 | - | 50 | 1 |
| IV | 20CTUJ07 | SEC | **Aptitude / Placement Training** | 2 | 1 | 50 | - | 50 | Grade* |
| IV | 20CTUJ08 | SEC | **Online Classes** | 2 | 1 | - | - | - | C/NC** |
| **Semester – V** | | | | | | | | | |
| III | 20CTU20 | DSC | .NET Programming | 6 | 3 | 30 | 70 | 100 | 5 |
| III | 20CTU21 | DSC | **Big Data Analytics** | 6 | 3 | 30 | 70 | 100 | 5 |
| | 20CTIU21 | | **Data Science** | | | 40 | 60 | | |
| III | 20CTU22 | DSC | **Practical - VII:** Programming using .NET | 6 | 3 | 40 | 60 | 100 | 3 |
| III | 20CTU23A | DSE | **Elective I : Cloud Computing (OR)** | 6 | 3 | 30 | 70 | 100 | 5 |
| | 20CTU23B | | **Elective I :** Soft Computing (OR) | | | | | | |
| | 20CTU23C | | **Elective I :** Mobile Computing | | | | | | |
| III | 20CTU24 | SEC | **Practical - VIII :Data Analytics** | 6 | 3 | 40 | 60 | 100 | 3 |
| | 20CTIU24 | | **Predictive Modelling** | | | | | | |
| IV | 20GSU05 | AECC | **Non-Major Elective** | - | 2 | 100 | - | 100 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | General Awareness | | | | | | |
| V | 20GSU06 | AECC | Law of Ethics | - | 2 | 100 | - | 100 | 2 |
| IV | 20CTUV05 | ACC | **VAC-V** | 2 | 1 | 50 | - | 50 | 1 |
| IV | 20CTUJ09 | SEC | **Aptitude / Placement Training** | 2 | 1 | 50 | - | - | Grade* |
| IV | 20CTUJ10 | SEC | **Online Classes** | 2 | 1 | - | - | - | C/NC** |
| **Semester – VI** | | | | | | | | | |
| III | 20CTU25 | DSC | Open Source Tools | 5 | 3 | 30 | 70 | 100 | 5 |
| III | 20CTU26A | DSE | **Elective II :Software Testing (OR)** | **5** | **3** | **30** | **70** | **100** | **5** |
| | 20CTU26B | | **Elective II :** Computer Installation & Servicing (OR) | | | | | | |
| | 20CTU26C | | **Elective II :**Artificial Intelligence and Expert Systems | | | | | | |
| III | 20CTU27 | DSC | **Practical - IX :** Open Source Tools | 6 | 3 | 40 | 60 | 100 | 3 |
| III | 20CTU28A | DSE | **Elective III :Computer Graphics and Multimedia (OR)** | **5** | **3** | **30** | **70** | **100** | **5** |
| | 20CTU28B | | **Elective III** :Compiler Design (OR) | | | | | | |
| | 20CTU28C | | **Elective III :** Neural Networks | | | | | | |
| III | 20CTU29 | SEC | **Practical - X :**Software Testing Tools | 5 | 3 | 40 | 60 | 100 | 3 |
| III | 20CTU30 | DSC | Project Work | 4 | - | 40 | 60 | 100 | 4 |
| IV | 20CTUV06 | ACC | **VAC-VI** | 2 | 1 | 50 | - | 50 | 1 |
| IV | 20CTUJ11 | SEC | **Aptitude / Placement Training** | 2 | 1 | 50 | - | - | Grade* |
| IV | 20CTUJ12 | SEC | **Online Classes** | 2 | 1 | - | - | - | C/NC** |
| | **Credits Grand Total** | | | | | | | | 144 |

- **VAC**-Value Added Course (Extra Credit Courses)
- * Grades depends on the marks obtained

| Range of marks | Equivalent remarks |
|---|---|
| 80 and above | Exemplary |
| 70 – 79 | Very good |
| 60 – 69 | Good |
| 50 – 59 | Fair |
| 40 – 49 | Satisfactory |
| Below 39 | Not Satisfactory = Not completed |

- Part IV & V not included in total marks and CGPA calculation.
- **I.E**-Internal Exam
- **E.E**-External Exam
- **JOC**-Job Oriented Course
- **C/NC**** -Completed/ Not Completed

**PASSING MINIMUM**

- Passing Minimum for UG 40% and for PG 50 %
- For UG : 35 % (25 marks) in EE and 40 % in Total Marks
- For PG 50 % (35 marks) in EE and 50 in Total Marks

| List of Open Elective Papers | |
|---|---|
| Open Electives | Courses offered by the Departments (Additional Credit Courses) |
| | A. Animation Techniques |
| | B. Digital Marketing |
| | C. Mongo Db |
| | D. PHP Programming |
| | E. Block Chain Technology |
| | F. Multimedia And Its Applications |
| | G. E Learning |
| | H. Network Administration & Troubleshooting |
| | I. VM Ware |
| | J. Project Management |

| List of Elective Papers/ DSE<br><br>(Can choose any one of the paper as electives) | | |
|---|---|---|
| | Course Code | Title |
| **DSE-I** | **20CTU23A** | **Elective I :Cloud Computing (OR)** |
| | **20CTU23B** | **Elective I :** Soft Computing (OR) |
| | **20CTU23C** | **Elective I :** Mobile Computing |
| **DSE-II** | **20CTU26A** | **Elective II :Software Testing (OR)** |
| | **20CTU26B** | **Elective II :** Computer Installation & Servicing (OR) |
| | **20CTU26C** | Elective II :Artificial Intelligence and Expert Systems |
| **DSE-III** | **20CTU28A** | **Elective III :Computer Graphics and Multimedia (OR)** |
| | **20CTU28B** | **Elective III :**Compiler Design (OR) |
| | **20CTU28C** | **Elective III :**Neural Networks |

## ABSTRACT FOR SCHEME OF EXAMINATIONS

(For the Candidates admitted during the academic year 2020 - 2021 and onwards)

| S.No. | Part | Course (MIL/AECC/AEE/DSC/DSE/SEC/GE/ACC) | Papers | Credit | Total Credits | Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| 1 | Part I | MIL | 2 | 3 | 6 | 100 | 200 |
| 2 | Part II | AECC | 2 | 3 | 6 | 100 | 200 |
| 3 | Part III | DSC | 19 | 2/3/4/5 | 76 | 100 | 1900 |
| | | GE | 4 | 4 | 16 | 100 | 400 |
| | | DSE | 3 | 5 | 15 | 100 | 300 |
| | | SEC | 4 | 2/3 | 11 | 100 | 400 |
| 4 | Part IV | ACC | 6 | 1 | 4 | 50 | 300 |
| | | SEC | 8 | - | - | 50 | 100 |
| | | AEE | 4 | - | - | 50 | 200 |
| | | AECC | 4 | 2 | 8 | 100 | 400 |
| 5 | Part V | AECC | 2 | 2 | 2 | 100 | 200 |
| | | Total | 58 | - | 144 | 950 | 4600 |

## UG Courses- Scheme of Evaluation (Internal & External Components)

(For the students admitted during the academic year 2020-2021 and onwards)

**1. Internal Marks for all UG**

| Components | Marks |
|---|---|
| Test I | 5 |
| Test II | 5 |
| Model Exam | 10 |
| Assignment | 5 |
| Attendance* | 5 |
| **TOTAL** | 30 |

***Split-up of Attendance Marks**

- 75-79 - 1 marks
- 80-84 - 2 marks
- 85-89 - 3 marks
- 90-94 - 4 marks
- 95-100 - 5 marks

**2. a) Components for Practical I.E.**

| Components | Marks |
|---|---|
| Test –I | 20 |
| Test - II | 20 |
| **Total** | 40 |

**b) Components for Practical E.E.**

| Components | Marks |
|---|---|
| Experiments | 50 |
| Record | 5 |
| Viva | 5 |
| **Total** | 60 |

**3. Institutional/ Industrial Training, Mini Project and Major Project Work**

| **Institutional /Industrial Training (I.E)** | | **Mini Project (I.E)** | **Major Project Work** | | |
|---|---|---|---|---|---|
| **Component** | **Marks** | **Marks** | **Component** | **Marks** | **Total Marks** |
| Work diary | 25 | - | I.E | | |
| Report | 50 | 50 | a)Attendance | 10 | |
| Viva-voce | 25 | 50 | b)Review/Work diary* | 30 | 40 |
| **Total** | 100 | 100 | E.E** a) Final report | 40 | |
| | | | b)Viva-voce | 20 | 60 |
| | | | | **Total** | 100 |

*Review is for Individual Project and Work Diary is for Group Projects
(group consisting of minimum 3 and maximum 5)

**Evaluation of report and conduct of viva voce will be done jointly by Internal and External Examiners

**4. Components for Value Education (Part IV):**

| S.No. | Components | Marks |
|---|---|---|
| a) | Attendance<br>96% and above - 30 marks<br>91% to 95% - 25 marks<br>86% to 90% - 20 marks<br>76% to 85% - 10 marks | 30 marks |
| b) | Participation in group activity | 30 marks |
| c) | Assignment (2 x 10) | 20 marks |
| d) | Test (1 hr for 20 marks)<br>2 out of 3 questions, 10 marks each | 20 marks |
| | **Total** | 100 marks |

# UG Courses- Scheme of Evaluation (Internal & External Components)

(For the students admitted during the academic year 2020-2021 and onwards)

**1. Internal Marks for all UG**

| Components | Marks |
|---|---|
| Test I | 5 |
| Test II | 5 |
| Model Exam | 10 |
| Assignment | 5 |
| Attendance* | 5 |
| **TOTAL** | 30 |

***Split-up of Attendance Marks**

- 75-79 - 1 marks
- 80-84 - 2 marks
- 85-89 - 3 marks
- 90-94 - 4 marks
- 95-100 - 5 marks

**2. a) Components for Practical I.E.**

| Components | Marks |
|---|---|
| Test –I | 20 |
| Test - II | 20 |
| **Total** | 40 |

**b) Components for Practical E.E.**

| Components | Marks |
|---|---|
| Experiments | 50 |
| Record | 5 |
| Viva | 5 |
| **Total** | 60 |

**3. Institutional/ Industrial Training, Mini Project and Major Project Work**

| **Institutional /Industrial Training (I.E)** | | **Mini Project (I.E)** | **Major Project Work** | | |
|---|---|---|---|---|---|
| **Component** | **Marks** | **Marks** | **Component** | **Marks** | **Total Marks** |
| Work diary | 25 | - | I.E | | |
| Report | 50 | 50 | a)Attendance | 10 | |
| Viva-voce | 25 | 50 | b)Review/Work diary* | 30 | 40 |
| **Total** | 100 | 100 | E.E** a) Final report | 40 | |
| | | | b)Viva-voce | 20 | 60 |
| | | | | **Total** | 100 |

*Review is for Individual Project and Work Diary is for Group Projects
(group consisting of minimum 3 and maximum 5)

**Evaluation of report and conduct of viva voce will be done jointly by Internal and External Examiners

**4. Components for Value Education (Part IV):**

| S.No. | Components | Marks |
|---|---|---|
| a) | Attendance<br>96% and above - 30 marks<br>91% to 95% - 25 marks<br>86% to 90% - 20 marks<br>76% to 85% - 10 marks | 30 marks |
| b) | Participation in group activity | 30 marks |
| c) | Assignment (2 x 10) | 20 marks |
| d) | Test (1 hr for 20 marks)<br>2 out of 3 questions, 10 marks each | 20 marks |
| | **Total** | 100 marks |

5. **Guidelines for Environmental Studies (Part IV)**

| Components | Marks |
|---|---|
| Two Tests (each 2 hours) of 30 marks each<br>[3 out of 5 descriptive questions 3 x 10 = 30 Marks] | 60 |
| Field visit and report (10 + 10)<br>(At least one field trip should be arranged) | 20 |
| Two assignments (2 x 10) | 20 |
| **Total** | 100 |

6. **Guidelines for Skill based subject - Internet Security (Part IV)**

| Components | Marks |
|---|---|
| Two Tests (each 2 hours) of 40 marks each<br>[4 out of 7 descriptive type questions 4 x 10 = 40 Marks] | 80 |
| Two assignments (2 x 10) | 20 |
| **Total** | 100 |

7. **Guidelines for General Awareness (Part IV)**

| Components | Marks |
|---|---|
| Two Tests (each 2 hours) of 50 marks each<br>[50 objective type questions 50 x 1 = 50 Marks] | 100 |

8. **Guidelines for Law of Ethics (Part V)**

| Components | Marks |
|---|---|
| Two Tests (each 2 hours) of 50 marks each<br>[5 out of 8 descriptive type questions 5 x 10 = 50 Marks] | 100 |

9. **Guidelines for Extension Activity (Part V)**

| No of Activities | Marks |
|---|---|
| 2 x 50 ( Each Activity for two days)<br>(Activities may be Educating Rural Children, Unemployed Graduates, Self Help Group etc) | 100 |

10. **Value Added Courses and Aptitude/Placement courses:**

| Components | Marks |
|---|---|
| Two Test (each 1 hour) of 25 marks each<br>QP is objective pattern (25x1=25) | 50 |
| **Total** | 50 |

**Guidelines:**

1. The passing minimum for these items should be 40%
2. If the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent Semesters
3. Item No's:4,5,6,7,8,9, 10 are to be treated as 100% Internal papers.
4. For item No.10, Tests conducted through online modules (Google Form/any other)

**UG PATTERN**

**QUESTION PAPER PATTERN FOR CIA I and CIA II EXAM**

**Reg.No:----------** **Q.P.CODE:**

**HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**

**---------- DEGREE CIA-I/CIA-II EXAMINATIONS ----------20---**

**(---------- SEMESTER)**

**BRANCH: ----------**

**SUBJECT NAME: ----------**

**Time: Two Hours** **Maximum:50 Marks**

**SECTION - A (6 x 1 = 6 Marks)**

Answer **ALL** Questions

**ALL** Questions Carry **EQUAL** Marks

**(Q.No: 1 to 6: Multiple choice/Fill up the blanks /True or False questions)**

**SECTION - B (4x 5 = 20 marks)**

Answer **ALL** Questions

**ALL** Questions Carry **EQUAL** Marks

**(Q.No: 7 to 10 Either Or type)**

**SECTION - C (3x 8 = 24 marks)**

Answer **ALL** Questions

**ALL** Questions Carry **EQUAL** Marks

**(Q.No: 11 to 13 : Either Or type)**

**QUESTION PAPER PATTERN FOR MODEL/END SEMESTER EXAMINATION**

**Reg.No:----------** **Q.P.CODE:**

**HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**

**---------- DEGREE MODEL EXAMINATIONS ----------20---------**

**(----------SEMESTER)**

**BRANCH : ----------**

**SUBJECT NAME:----------**

**Duration: Three Hours** **Maximum: 70 Marks**

**SECTION - A (10x1=10 Marks)**

Answer **ALL** Questions

**ALL** Questions Carry **EQUAL** Marks

**(Q.No 1 to 10 Multiple choice/Fill up the blanks /True or False questions)**

(Two questions from each unit)

**SECTION - B (5x4=20 Marks)**

Answer **ALL** Question

**ALL** Questions Carry **EQUAL** Marks

**(Q.No 11 to 15 Either or type)**

(One question from each Unit)

**SECTION- C (5x8=40 Marks)**

Answer **ALL** Questions

**ALL** Questions carry **EQUAL** Marks

**(Q.No 16 to 20 Either Or type)** (One question from each Unit)

## Track-2 Industry Integrated (IBM Data Science)

1. **Internal Marks : 40 Marks**

| Components | Marks |
|---|---|
| Two Test* | 10 |
| Practical # | 10 |
| Assignment $ | 10 |
| Project & | 10 |
| **TOTAL** | 40 |

*-Two internals will be conducted for 30marks. Both the exam marks will be converted to 10 mark

Internal: 30marks

2marks: 5 x 2 = 10(Description type)

5marks: 4 x 5 = 20(Description type)

Total: 30marks

$-Two assignments will be given in the semester which will be like a use case

&-One project to be done based on the subject. Marks will be divided based on the project execution and presentation

#-Practical exercise will be done in the lab based on scenario based question. Evaluation will be on the students input in the lab and viva

2. **External exam : 60 Marks**

Two marks: 5 x 2: 10 (Description type)

Ten marks: 5 x 10:50 (Description type)

Total: 60 marks

| Course Code: | 20CTU01 | Fundamentals of Computing and C Programming | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | I |
| Hrs/Week: | 5 | L | 5 | T | - | P | - | Credits: | 5 |

## COURSE OBJECTIVE

- Provide exposure to problem-solving through programming.
- Learn the fundamentals of computing techniques.
- Develop simple applications in 'C' language.
- Understand logics that help to create programs..

## COURSE OUTCOME

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Identify appropriate data types, variables, syntax and statements for solving simple problems. | K1 |
| CO2 | Understand program solving techniques using arrays, strings, pointers, functions, structures and union for a given scenario. | K2 |
| CO3 | Apply appropriate strategies and representations for handling compound data. | K3 |
| CO4 | Analyze programs and develop lifelong learning skills needed for computer language | K4 |

| 20CTU01 | Fundamentals of Computing and C Programming | I |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction to computers**: Characteristics and Limitations of computer-Block Diagram of Computer-Types of Computers-Uses of Computers-Computer Generations. **Input and output devices**: Keyboard and Mouse-Inputting Data in other ways-**Types of Software**: System Software-Application Software. **Memories:** Primary- Secondary and Cache memory. **Programming Languages:** Evolution of Programming Languages-- Translator programs –Problem Solving Techniques. | 9 |
| II | **Introduction to C**: Introduction –Structure of C Program –Writing the first C Program –File used in C Program –Compiling and Executing C Programs – Using Comments –Keywords –Identifiers – Data Types –Variables –Constants –I/O operations –Operators and Expressions -Programming Examples –Type Conversion and Type Casting. | 12 |

| | | |
|---|---|---|
| III | **Decision Control and Looping Statements:** Introduction to Decision Control Statements –Conditional Branching Statements –Looping Statements –Nested Loops –Jumps in loops – Goto Statement. **Functions**: Introduction –using functions –Function declaration –Function definition –Function call –Return statement –Categories of Functions–Recursive function. | 12 |
| IV | **Arrays:** Introduction –One dimensional- Declaration of Arrays –Two dimensional –Multi dimensional –Dynamic arrays – Character arrays and Strings. **Pointers:** Understanding pointers–Declaring Pointer Variables – Initialization of pointer variables - Accessing a variable through its pointer - Pointer Expressions –Pointers and Arrays- Array of Pointers-Pointers to Functions. | 13 |
| V | **Structure and Union**: Introduction- Defining a Structures- Declaring structure variables-Accessing Structure members-Initialization-Array of structures-Arrays within structures-Structure within structures-Unions. **Files:** Introduction to Files – Defining and opening a file- Closing a file-I/O operation on files-Random access to files-Command line arguments. | 14 |

***Note: Distribution of marks for Internal Examination -30 and External Examination –70***

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

**TEXT BOOK**

*1. E.Balagurusamy,"Computing Fundamentals and C Programming",TMH 7th reprint 2011*

**REFERENCE BOOKS**

*1.Balaguruswami, "Programming in ANSI C" , TMH 21st reprint 1998*
*2 .Y.Kanetkar ,"Let us C", BPB Publications*
*3. Brian W Kwenighan, Dennis M.Ritchie, "The C Programming Language" , Prentice Hall Software Series, 2nd Edition*

**WEB RESOURCES**

**Web Link:** *https://www.tutorialspoint.com/cprogramming/index.html*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | L |
| CO2 | M | S | M | L |
| CO3 | S | S | S | M |
| CO4 | S | M | S | M |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mr.M.Karthi | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph:D)
Associate Professor & HOD
Department of Computer ...
Hindusthan Coll...
Science (A...
Coimbatore - 64. 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU02 | Computer System Architecture | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | I |
| Hrs/Week: | 4 | L | 4 | T | - | P | - | Credits: | 4 |

## COURSE OBJECTIVE

- Learn the basic concepts of Computer Architecture and Organization.
- Impart the knowledge on data representation and logic circuits.
- Learn the concepts of Registers, Interrupts and computer instructions.
- Develop the skills to design the components CPU, IO and Memory.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Describe various data representation and logic circuits and components of Computers. | K1 |
| CO2 | Discuss the basic concepts of computer organization and Architecture | K2 |
| CO3 | Explain the internal components of combinational circuits , CPU, I/O and Memory. | K3 |
| CO4 | Analyze the design of Logic Circuits ,CPU, IO and Memory | K4 |
| **K1- Remember, K2-Understand, K3-Apply, K4-Analyze** | | |

## SYLLABUS

| 20CTU02 | COMPUTER SYSTEM ARCHITECTURE | I |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Data Representation:** Number Systems-Binary-Octal-Hexadecimal number-Complements-Floating Point Representation-Other Binary codes – Error Detection Codes - **Logic Circuits:** Logic Gates-Combinational Circuits-Half-Adder-Full-Adder- Flip-Flops-SR - JK – D and T flip-flop. | 9 |
| II | **Basic computer organization:** Instruction codes- Computer registers-Computer instructions - Timing and Control - Instruction cycle- Memory - Reference Instructions - Input-output and interrupt - Complete computer description. | 10 |

| | | |
|---|---|---|
| III | **Central processing unit:** Introduction - General Register Organization- Stack Organization- Instruction format - Addressing Modes - Data Transfer and Manipulation - Program Control - Reduced Instruction Set Computer (RISC) - Complex Instruction Set Computer (CISC) - comparison of RISC and CISC. **Pipelining:** Parallel processing - Pipelining - Arithmetic Pipeline - Instruction Pipeline - RISC Pipeline. | **10** |
| IV | **Input – Output organization:** Input-output interface - Asynchronous Data Transfer - Modes of Transfer - Priority Interrupt – DMA - Input-Output Processor (IOP) - CPU-IOP Communication - Serial Communication. | **10** |
| V | **Memory Organization:** Memory Sub System - Memory hierarchy - Main memory - Auxiliary memory - Flash memory - Associative memory - Cache memory - Virtual memory.<br>**Self Study :** Intel 8086 Microprocessor | **9** |

*Note: Distribution of marks for Internal Examination- 40 and External Examination –60*

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

**TEXT BOOK**


1. M. Morris Mano, "Computer System and Architecture", Pearson Education, Third Edition, (30 June 2017).


**REFERENCE BOOKS**


1. *Badri Ram , "Advanced Microprocessors and Interfacing",TMH, 2012.*
2. *W. Stallings, "Computer Organization & Architecture", Pearson Education,8th Edition.2012.*
3. *M. Carter , "Computer Architecture", Schaum's outline series, TMH, Special Indian Edition.*


**WEBRESOURCES**

*https://www.javatpoint.com/computer-organization-and-architecture-tutorial*

*https://www.tutorialspoint.com/computer_logical_organization/index.html*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | M |
| CO2 | M | S | M | L |
| CO3 | S | M | S | M |
| CO4 | S | M | M | L |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External Assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTIU02 | Software Foundation Program Using C++ | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | I |
| Hrs/Week: | 4 | L | 4 | T | - | P | - | Credits: | 4 |

## COURSE OBJECTIVE

- Learn the fundamentals of computing techniques and to develop the simple applications in 'C++' language.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Explain the basic concept of programming languages | K2 |
| CO2 | Understand the fundamentals of C++ programming language. | K1 |
| CO3 | Apply and experiment the concepts of pointers, arrays, structures and Files in C++ | K3 |
| CO4 | Analyze and develop application using C++ | K4 |

## SYLLABUS

| 20CTIU02 | Software Foundation Program Using C++ | I |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction to C++**: OOPS, Essentials of programming, Features of C++, Inheritance, polymorphism and Encapsulation, operator overloading, I/O in C++, Advanced topics | 9 |
| II | **Information Management**: Information as a service, IBM Information management software, order fulfillment system – Example case, Open source derby, cloudscape, DB2 9 pure XML technology, DB2 Express C, DB2 data server editions, Information Integration Business drivers | 10 |
| III | **Introduction to XML and related technologies:** Issues in information Exchange, XML, XML Namespaces, XML Schema, XPATH, XSL Transformation, Introduction to IDE, Eclipse, Eclipse architecture, Eclipse plugin architecture, Eclipse platform architecture, Eclipse case studies | 10 |

| | | |
|---|---|---|
| IV | **Java Development Tools:** JDT environment, creating and running a program, automating testing using junit, Use ant and Javadoc. | 10 |
| V | **Debugging Application:** Using the debugger, Start the debugger, setting breakpoints, setting through the code, inspecting variables and expression, Software in the real world | 9 |

***Note: Distribution of marks for Internal Examination- 40 and External Examination –60***

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1. *IBM Course ware*

## REFERENCE BOOKS

1. *"Object Oriented Programming with C++" by Balagurusamy*
2. *"C++ Weekend Crash Course" by Stephen R Davis*
3. *"The C++ Programming Language" by Bjarne Stroustrup*

## MAPPING WITH PROGRAM OUTCOMES

| PO / CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | L | M |
| CO2 | M | S | M | M |
| CO3 | S | M | S | S |
| CO4 | S | L | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows Track – 2 Industry Oriented (IBM Data Science) pattern of Internal and External Assessment, as mentioned in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| IBM | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU04 | Practical - I : Programming using C | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | I |
| Hrs/Week: | 4 | L | - | T | - | P | 4 | Credits: | 2 |

## COURSE OJECTIVES

- To learn the fundamentals of C Programming
- To gain knowledge about arrays, structures, pointers and functions
- To develop the ability to apply file I/O operations.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Choose the right data representation formats based on the requirements of the problem. | K1 |
| CO2 | Compare the various programming constructs and choose the right one for the task in hand. | K4 |
| CO3 | Construct programs that demonstrate effective use of C features including arrays, structures and pointer. | K3 |
| CO4 | Illustrate file access. | K2 |

## SYLLABUS

| 20CTU04 | PRACTICAL I : PROGRAMMING USING C | I |
|---|---|---|
| Ex. No. | Program List | |
| 1 | Program to develop a Simple Calculator using switch case. | |
| 2 | Program to print the Alphabet A to E and reverse the same decreasing one by one line by line using for Loop. | |
| 3 | Program to sort numbers in Ascending and descending order using Arrays.. | |

| | |
|---|---|
| 4 | Program to accept two number from user and swap the values using call by reference method |
| 5 | Program to find the Prime numbers between two integers using functions |
| 6 | Program to implement Matrix operations Addition, Subtraction and Multiplication – using functions. |
| 7 | Program to generating Fibonacci Numbers using recursive functions |
| 8 | Program for String manipulations without using string functions (string length, string comparison, string copy) (Using function pointers). |
| 9 | Define a structure Employee having elements emp_id, name, DOB, DOJ etc. Accept data and reprint it. (use structure within structure) |
| 10 | Program to implement dynamic memory allocation. |
| 11 | Program to write the content into a file, read the content from the same file and display it. |
| 12 | Program to read name and marks of n number of students from user and store them in a file. Again read the information from the file and display on the screen in a Mark Statement format. |

*Note: Distribution of marks for Internal Examination- 40 and for External Examination – 60*

**Teaching methods:** PowerPoint Projection through LCD and Execution Methods.

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | M | S | S |
| CO2 | M | S | M | M |
| CO3 | S | M | S | M |
| CO4 | S | S | M | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mr.M.Karthi | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU05 | Data Structures and Algorithms | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | II |
| Hrs/Week: | 4 | L | 4 | T | - | P | - | Credits: | 3 |

## COURSE OBJECTIVE

- Impart the basic concepts of data structures and algorithms.
- Understand algorithms and its analysis procedure.
- Inculcate knowledge on importance of data structures in context of writing efficient programs.
- Explore the concepts of File Organizations, Symbol tables, Searching and sorting techniques.

## COURSE OUTCOMES (CO)

| S.No | COURSEOUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Define basic types for data structure, implementation and application | K1 |
| CO2 | Illustrate the procedures for implementing data structures and algorithms. | K2 |
| CO3 | Develop programming skills to apply appropriate data structures in problem solving. | K3 |
| CO4 | Analyze Linear and Non-Linear data structures, file organization, searching and sorting techniques | K4 |
| **K1- Remember, K2-Understand, K3-Apply, K4-Analyze** | | |

## SYLLABUS

| 20CTU05 | Data Structures and Algorithms | II |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction to Algorithms** :Asymptotic Notations: Big-Oh, Omega and Theta-Best, Worst and Average case Analysis: Definition and an example –Arrays -Stacks and Queues- Fundamentals-**Linked List:**-Singly Linked List – doubly linked list and Dynamic-Sparse Matrices- Polynomial addition. | 11 |
| II | **Trees:** Binary tree representations – Binary Tree Traversal – Threaded Binary Trees - Counting binary trees. **Graphs:** Terminology and representations - Traversals, Connected Components. | 09 |
| III | **Internal sorting** - Searching-Insertion sort-Quick sort-Heap Sort-2 way merge sort-Sorting on several keys. **External Sorting**: Storage device- Magnetic tape – Disk storage – Sorting with disk- K-way merging -Sorting with tape-Balanced Merge sorts-Polyphase Merge. | 11 |
| IV | **Symbol tables:** Static tree table –Dynamic Tree tables-Hash tables -Hashing Functions-overflow handling-Theoretical evaluation of overflow techniques. **Files:** Files, Queries and Sequential organizations | 9 |
| V | **Index Techniques:**-Hashed Index-tree indexing-B trees. **File organizations:** Sequential organizations-Random Organization- Linked Organization- Inverted Files-Storage Management. | 8 |

*Note: Distribution of marks for Internal Examination -30 and External Examination –70*

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOK

*1. Ellis Horowiz, SartajSahni and Sanguthevar, "Fundamentals of Computer Algorithms(second edition) ", Galgotia Publications, January 2008.*

## REFERENCE BOOKS


1. *Ellis Horowitz, SartajSahni, Susan Anderson Freed, "Fundamentals Of Data Structures In C", Universities Press (India) Limited ,2017*
2. *MarkAllenWeiss, "DataStructure and Algorithm analysis in ", Pearson Education, Second Edition, Sixteenth Impression 2014.*
3. *Alfred V. Aho, John E. Hopcroft and Jeffry D. Ullman, Data Structures and Algorithms, Pearson Education, New Delhi, 2006.*


## WEB RESOURCES

*https://www.tutorialspoint.com/data_structures_algorithms/index.html*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | M |
| CO2 | M | S | S | L |
| CO3 | S | M | S | M |
| CO4 | S | S | S | L |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Ms.G.Priyanka | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTIU05 | Data Visualization | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | II |
| Hrs/Week: | 4 | L | 4 | T | - | P | - | Credits: | 3 |

## COURSE OBJECTIVE

- To manipulate and visualize data using R, python and Watson Studio.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Simplify the key techniques and theory used in visualization . | K4 |
| CO2 | Identify the fundamentals of R and Python programming languages. | K3 |
| CO3 | Classify the Data analysis ,Visualization using R and Python and Watson studio | K2 |
| CO4 | Formulate the large datasets into visual graphics | K6 |

## SYLLABUS

| 20CTIU05 | Data Visualization | II |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction to statistics**-Descriptive Statistics: Mean, Median, Mode- Inferential Statistics :Random Variables, Probability Distributions, Normal Distribution, Sampling and Sampling Distribution | 6 |

| | | |
|---|---|---|
| II | **Overview of R** - Descriptive data analysis using R – Data manipulation with R – Data visualization with R - R studio installation - Data manipulation with R (dplyr,data.table,reshape2package,tidyr package, Lubridate package) - Data Visualization with R (working with BaseR Graphics,ggplot2) | 12 |
| III | **Data Visualization in Watson Studio** – Adding data to data refiner - Visualization of data in Watson Studio. | 6 |
| IV | **Introduction python**-Python scripiting basics-Introduction to Jupyter notebook-Numpy and Pandas –Python and Anaconda installation - Pandas (text data, date time columns, indexing and selecting data, groupby ,Merge/join datasets) | 12 |
| V | **Visualization using python**-Data Visualization tools in python – Basic plots using Matplotlib - Specialized Visualization tools using Matplotlib - Advanced Visualization tools using Matplotlib-**Advanced visualization tool**-Seaborn functionalities – Spatial visualization and analysis in python in folium – Usage of Seaborn functionalities – Case studies. | 12 |

***Note: Distribution of marks for Internal Examination -40 and External Examination –60***

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1. *IBM Course ware*

## REFERENCE BOOKS


1. *Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython" , Oreilly, 2011*
2. *Andreas C. Muller, Sarah Guido, "Introduction to Machine Learning with Python: A Guide for Data Scientists", Oreilly, 2016*


## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | L |
| CO2 | M | S | M | L |
| CO3 | S | M | S | S |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows Track – 2 Industry Oriented (IBM Data Science) pattern of Internal and External Assessment, as mentioned in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| IBM | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU06 | Python Programming | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | II |
| Hrs/Week: | 3 | L | 3 | T | - | P | - | Credits: | 3 |

## COURSE OBJECTIVE:

- To identify the algorithmic problem solving Techniques.
- To describe the Fundamental elements of Python programming basics and paradigm.
- Understanding the concepts of condition and iteration flow controls.
- To Experiment about List, Dictionaries, Tuples, String and Files.

## COURSE OUTCOMES (CO):

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Enumerate the building block of algorithm and notations to Solve the problems. | K1 |
| CO2 | Interpret the Syntax and semantics of Python Programming Languages. | K2 |
| CO3 | Experiment with structuring the data using Lists, Dictionaries, and Tuples and string. | K3 |
| CO4 | Examine the overall concepts of python programming. | K4 |

## SYLLABUS

| 20CTU06 | Python Programming | Sem: II |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **ALGORITHMIC PROBLEM SOLVING**<br>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). | 7 |
| II | **DATA, EXPRESSIONS, STATEMENTS**<br>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. | 7 |
| III | **CONTROL FLOW, FUNCTIONS**<br>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, string functions and methods, Lists as arrays. | 7 |
| IV | **LISTS, TUPLES**<br>Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value. | 7 |
| V | **DICTIONARIES, FILES**<br>Dictionaries: operations and methods; advanced list processing - list comprehension; Files and exception: text files, reading and writing files, format operator; command line arguments. | 8 |

***Note: Distribution of marks for Internal Examination -30 and External Examination –70***
**Teaching methods:** Slides Projection through LCD, Assignments and Class Tests

## TEXT BOOKS


1. *Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist '', 2nd edition,*
2. *Updated for Python 3, Shroff/O'Reilly Publishers, 2016 http://greenteapress.com/wp/think-python*


## REFERENCE BOOKS


1. *Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python Network Theory Ltd., 2011.*


## WEB RESOURCES

**Web Link:** https://greenteapress.com/thinkpython2/thinkpython2.pdf

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | M | L | M | L |
| CO2 | M | M | L | M |
| CO3 | S | M | S | S |
| CO4 | M | S | S | M |

S-Strong, M- Medium, L – Low

## *ASSESSMENT PATTERN (if deviation from common pattern)*

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mr.D.Vijayakumar | Mrs.K.Mythili | |

K. MYTHILI ... Sc., M.Phil., (Ph.D)
Associate ...fessor & HOD
Department o... ...nology
Hindustha... ...ege
Scienc... ...)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU08 | Practical - II :Programming using Python | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | II |
| Hrs/Week: | 4 | L | - | T | - | P | 4 | Credits: | 2 |

## COURSE OBJECTIVE:

- Develop adequate skills in python programming.
- Understand the implementation of various applications using Python.

## COURSE OUTCOME:

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Write, test and debug Python Programs. | K1 |
| CO2 | Implement conditionals and loops for Python Programs. | K2 |
| CO3 | Use functions and represent compound data using lists ,Tuples and Dictionaries. | K3 |
| CO4 | Develop applications using Tkinter and Bio Python. | K4 |

| 20CTU08 | Practical II: Programming Using Python | II |
|---|---|---|
| Ex. No. | Program List | Hours |
| 1 | Program to find first n prime numbers. | 6 |
| 2 | Program to find the exponentiation of a number. | 4 |
| 3 | Program to identify the maximum from a list of numbers. | 4 |
| 4 | Program to perform Binary Search. | 5 |
| 5 | Program to implement Linear Search. | 5 |
| 6 | Program to perform selection sort. | 5 |
| 7 | Create an application to get the currently selected radio button value using UI with TKinter in python. | 6 |
| 8 | Create an application window has two text input fields and another one to display the result using TKinter in Python. | 5 |
| 9 | Gene Sequence mining using Python. | 4 |
| 10 | Bio computing in Python. | 4 |

*Note: Distribution of marks for Internal Examination- 40 and for External Examination – 60*

**Teaching methods:** PowerPoint Projection through LCD and Execution Methods.

## MAPPING WITH PROGRAM OUTCOMES

| CO / PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | L |
| CO2 | S | M | L | S |
| CO3 | S | S | M | S |
| CO4 | S | S | L | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mr.D.Vijayakumar | Mrs.K.Mythili | |

K. MYTHILI M Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU09 | Database Management System | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | III |
| Hrs/Week: | 5 | L | 5 | T | - | P | - | Credits: | 5 |

## COURSE OBJECTIVES

- Study the basic concepts and the applications of database systems. .
- Identify the basics of SQL and construct queries using SQL.
- Learn data modeling and relational database design principles.
- Explore the principles of transaction management.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Define the basic concepts of database systems. | K1 |
| CO2 | Discuss the terminologies in data modeling and database design. | K2 |
| CO3 | Apply the database design rules for the design and implementation of databases. | K3 |
| CO4 | Devise applications for data modeling, data base queries to implement DBMS concepts. | K4 |

**SYLLABUS**

| 20CTU09 | Database Management System | III |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction to Databases and Transactions:**<br>What is database system, purpose of database system, view of data, relational databases, database architecture, and transaction management. Data Models: The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees of data abstraction. | 12 |
| II | **Database Design ,ER-Diagram and Unified Modeling Language:**<br>Database design and ER Model: overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, weak entity sets, Codd's rules, Relational Schemas. Introduction to UML Relational database model: Logical view of data, keys, integrity rules.<br>Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF). | 12 |
| III | **Relational Algebra and Calculus:**<br>Relational algebra: Introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison.<br>Calculus: Tuple relational calculus, Domain relational Calculus, calculus vs algebra,computational capabilities. | 12 |
| IV | **Constraints, Views and SQL:**<br>What is a constraint, Types of constrains, Integrity constraints.<br>Views: Introduction to views, data independence, security, updates on views, comparison between tables and views.<br>SQL: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers. | 12 |
| V | **Transaction management and Concurrency control:**<br>Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods, optimistic methods, database recovery management. | 12 |

**Note: Distribution of marks for Internal Examination -30 and External Examination –70**

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOK

1. *A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts",fifth Edition McGraw-Hill ,Rob, Coronel, "Database Systems",Seventh Edition, Cengage Learning.*

## REFERENCE BOOKS

1. *Raghurama Krishnan, Johannes Gehrke Data base Management Systems, , McGrawHill Education, 3rd Edition, 2003.*

*2.C. J. Date, A. Kannan and S. Swamynathan, An Introduction to Database Systems, Pearson Education, Eighth Edition, 2009.*

*3.Abraham Silberschatz, Henry F. Korth and S. Sudarshan, Database System Concepts, McGraw-Hill Education (Asia), Fifth Edition, 2006.*

## WEB RESOURCES

*https://www.tutorialspoint.com/dbms/index.htm*
*https://www.javatpoint.com/dbms-tutorial*
*https://tutorialspoint.dev/computer-science/dbms*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | M |
| CO2 | S | S | M | M |
| CO3 | M | S | S | S |
| CO4 | S | M | S | S |

**S-Strong, M- Medium, L – Low**

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.R.Sivaranjani | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU10 | Computer Networks | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | III |
| Hrs/Week: | 5 | L | 5 | T | - | P | - | Credits: | 5 |

## COURSE OBJECTIVES

- Learn the basic terminology of computer networks and functions of TCP/IP and OSI Reference Model Layer
- Obtain the theoretical understanding of data communication and Layers.
- Introduce the various protocols of Data Link Layer, Medium Access Control Sublayer, Transport Layer, Network Layer and Application Layer.
- Study various Routing Algorithms, Wireless Communication Technology and Security Mechanisms in the design of Computer Networks.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Define the basic terminology of Computer Networks and Functions of TCP/IP and OSI Reference Model Layers. | K1 |
| CO2 | Illustrate the concepts of Data communication and Layers. | K2 |
| CO3 | Apply the various protocols of TCP/IP OSI Layers in design of Computer Networks. | K3 |
| CO4 | Analyze the techniques of Routing, Wireless Communications and Security Mechanisms | K4 |

## SYLLABUS

| 20CTU10 | COMPUTER NETWORKS | III |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction**: - Uses Of Computer Networks- Network Hardware- Network Software- Reference Models- The OSI Reference Model- The TCP/IP - Reference Model- A Comparison Of The OSI And TCP/IP Reference Models- Example Networks- The Internet Third-Generation Mobile Phone Networks- Wireless LANs:- RFID And Sensor Networks- **The Physical Layer** :The Theoretical Basis For Data Communication- Fourier Analysis-Bandwidth-Limited Signals- The Maximum Data Rate Of A Channel-Guided Transmission Media - Wireless Transmission- Communication Satellite - The Mobile Telephone System. | 10 |
| II | **The Data Link Layer:**- Data Link Layer Design Issues- Error Detection And Correction- Elementary Data Link Protocols- Sliding Window Protocols- **The Medium Access Control Sublayer**- Multiple Access Protocols- Aloha- Carrier Sense Multiple Access Protocols- Collision - Free Protocols- Limited-Contention Protocols- Wireless LAN Protocols-Ethernet- Wireless LANs- Broadband Wireless- **Bluetooth**- RFID- Data Link Layer Switching | 10 |
| III | **The Network Layer:**- Network Layer Design Issues- Routing Algorithms-The Optimality Principle -Shortest Path Algorithm- Flooding-Distance Vector Routing-Link State Routing-Hierarchical Routing-Broadcast Routing-Multicast Routing - Any cast Routing - Routing For Mobile Hosts-Routing In Ad Hoc Networks- Congestion Control Algorithms-Internetworking- The Network Layer In The Internet- IP Addresses – IP Version 6 -Internet Control Protocols- OSPF- BGP- Internet Multicasting-Mobile IP. | 15 |
| IV | **The Transport Layer:**- The Transport Service-Services Provided To The Upper Layers-Transport Service Primitives-Berkeley Sockets- Elements Of Transport Protocols- The Internet Transport Protocols: UDP-The Internet Transport Protocols: TCP- Performance Issues- Delay- Tolerant Networking. | 15 |
| V | **The Application Layer:** - DNS - The Domain Name System-Electronic Mail- **Network Security**- Cryptography- Symmetric-Key Algorithms-Public-Key Algorithms- Digital Signatures- Communication Security-Authentication Protocols- Email Security- Web Security. | 10 |

**Note: Distribution of marks for Internal Examination -30 and External Examination –70**

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOK


*1. Andrew S. Tanenbaum and David J. Wetherall - "Computer Networks"- Prentice hall India Pub- Fifth Edition-2011.*


## REFERENCE BOOKS


1 *Achyut. S. Godbole," Data Communications and Networks"- Tata McGraw-Hill Publishing Company- Fifth Edition-2007.*
2 *William Stallings-" Data and computer communications"- PHI- seventh edition-2000.*
3 *Uyless Black – "Computer Networks Protocols, Standards, And Interfaces" – PHI – Second edition-2015.*


## WEB RESOURCES

*https://www.youtube.com/watch?v=QKfk7YFILws&ab_channel=Geek%27sLesson*

*https://www.ece.uvic.ca/~itraore/elec567-13/notes/dist-03-4.pdf*

*https://nptel.ac.in/courses/106/105/106105183*

## MAPPING WITH PROGRAM OUTCOMES

| PO / CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | M | S | S | M |
| CO2 | S | S | S | S |
| CO3 | S | M | M | M |
| CO4 | L | S | M | M |

**S-Strong, M- Medium, L – Low**

## ASSESSMENT PATTERN

Follows common pattern of Internal and External Assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU11 | PC Hardware and Troubleshooting | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | III |
| Hrs/Week: | 4 | L | 4 | T | - | P | - | Credits: | 4 |

## COURSE OBJECTIVES

- Learn personal computer hardware including personal computer assembly and upgrading, setup and configuration, and troubleshooting.
- Develop technology skills of students required for troubleshooting motherboard and storage.
- Learn software and hardware troubleshooting techniques used to identify and correct computer problems.
- Inculcate knowledge on external I/O interfaces.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | List the fundamentals of PC technology and hardware components. | K1 |
| CO2 | Associate troubleshooting techniques to motherboard and storage . | K2 |
| CO3 | Illustrate principles of external I/O interfaces. | K3 |
| CO4 | Analyze various troubleshooting techniques to resolve hardware and software problems. | K4 |

## SYLLABUS

| 20CTU11 | PC Hardware and Troubleshooting | III |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | Fundamentals of PC Technology: Fundamental building blocks of the PC - Principles of CPU operation - Trouble shooting the CPU: Handling and replacing the CPU- CPU configuration- CPU troubleshooting checklist - Memory: How memory works - Troubleshooting memory - Advanced memory technologies: DRAM – DDRAM –PPRAM | 9 |
| II | Motherboards: Motherboard controllers and system resources - The I/O system bus - On board I/O devices – Chipsets - ROM BIOS - ROM POST - The power supply - Ventilation and cooling protection. | 9 |
| III | Magnetic storage Principles: Magnetic storage – How Magnetic field are used to Store – Head Sliders – Hard Disk Storage: Hard Disk Advancement and its Features – Removable Disk Storage: The Role of removable media drives – Optical Storage: Optical Technology – CD Construction and Technology - DVD Construction and Technology | 10 |
| IV | External I/O Interfaces: Introduction to I/O Ports - Serial Vs Parallel – Universal Serial Bus (USB) – Input Devices: Keyboards/Mouse Interface - Keyboard troubleshooting and Repair – Mouse troubleshooting – Wireless Input Devices – Power management features of wireless input devices – Troubleshooting wireless input devices | 10 |
| V | Troubleshooting tools and techniques: Tools of the trade - Basic PC handling techniques. Basic data recovery and disaster recovery: Disk structure and Data recovery: partitions- the master boot record- partition tables- extended partitions- file allocation tables - Disaster recovery | 10 |

**Note: Distribution of marks for Internal Examination -30 and External Examination –70**

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS


*1. Scott Mueller's, Upgrading & Repairing PCs:– Pearson Education, Inc, 19th Edition – 2010.*


## REFERENCE BOOKS


*1. Craig Zacker and John Rourke, The Complete Reference PC Hardware, Tata McGraw-Hill – 2001.*

*2. The Winn L.Rosch Hardware Bible, A Prentice Hall Computer, 6nd Edition-2003.*

*3. Kate J.Chase, PC Hardware and A+ Handbook, Microsoft Corporation – 2004.*


## WEB RESOURCES

*https://abiiid.files.wordpress.com/2010/12/pc-hardware-a-beginners-guide.pdf*

*http://www.computerhope.com/*

*http://www.brighthub.com/*

## MAPPING WITH PROGRAM OUTCOMES

| PO / CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | M | S | S |
| CO2 | S | S | S | M |
| CO3 | S | S | M | M |
| CO4 | S | M | S | M |

S - Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.M.Amalmary | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTIU11 | Design Thinking | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | III |
| Hrs/Week: | 4 | L | 4 | T | - | P | - | Credits: | 4 |

## COURSE OBJECTIVES

- Understand what came before design thinking and how it built upon previous approaches.
- See how design thinking is introduced in an organization and understand the transformation.
- Get an overview of the whole approach to design thinking
- Explore the technology specializations

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Define a strong understanding of the Design Process and how it can be | K1 |
| CO2 | Demonstrate to build empathy for target audiences from different "cultures" | K2 |
| CO3 | Experiment with research and understand the unique needs of a company around | K3 |
| CO4 | Test for innovative ideas through a rapid iteration cycle | K4 |

## SYLLABUS

| 20CTIU11 | DESIGN THINKING | III |
|---|---|---|
| Unit No. | Topics | Hours |
| I | **DESIGN THINKING HISTORY AND OVERVIEW:** Understand what came before Design thinking-Identify who did what to bring it about-Learn how it built upon previous approaches-How design thinking is introduced in an organization-Understand the transformation required-What outcomes are possible-Understand the whole approach to design thinking-Determinewhat is most important | 10 |
| II | **KEY HABITS:** Introduction to key habits-types-avoid common anti-patterns-Optimise for success with these habits-Introduction to loop-Importance of iteration-How to observe, Reflect &Make-Drill down and do tomorrow | 10 |

| | | |
|---|---|---|
| III | **USER RESEARCH AND MAKE**<br>Importance of user research-Appreciate empathy through listening-Key methods of user research-How make fits into the loop-Leverage observe information-Ideation, storyboarding & Prototyping. | 9 |
| IV | **USER FEEDBACK AND TEACHING**<br>User feedback and the loop-Different types of user feedback-How to carryout getting feedback-Understand the challenges of teaching EDT-Valuable hints and tips-Ready to teach the course | 10 |
| V | **LOGISTICS AND APPLICATIONS:**<br>Understand what type of room you need-Learn what materials and supplies you need-Learn how to setup the room-Domains that are applicable-Digital versus physical-Explore some technology specialization | 9 |

**Note: Distribution of marks for Internal Examination -40 and External Examination –60**

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOK

*1. IBM Course ware*

## REFERENCE BOOKS

1. *Tom Kelley Creative Confidence-.,2013*
2. *Tim Brown: Change by Design-.,2009*
3. *Nigel Cross: Design Thinking-., Kindle Edition*

## WEB RESOURCES

https://www.tutorialspoint.com/design_thinking/design_thinking_introduction.html
https://www.slideshare.net/marknb00/hitd-201-design-thinking-lecture-1-introduction
https://lecturenotes.in/m/22928-design-thinking

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | L | - |
| CO2 | S | S | M | L |
| CO3 | S | S | S | S |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| IBM | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU13 | Practical -III: DBMS Applications | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | III |
| Hrs/Week: | 6 | L | - | T | - | P | 6 | Credits: | 3 |

## COURSE OJECTIVES

- Understand and gain knowledge in database concepts.
- Design and develop applications using front end tools and back end DBMS.
- Understand the practical applicability of database management system concepts
- Working on existing database systems, designing of database, creating relational database, analysis of table design

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Find the underlying concepts of database | K1 |
| CO2 | Experiment with Database model and determining the DDL and DCL commands | K3 |
| CO3 | Demonstrating PL/SQL functions | K2 |
| CO4 | Analyze the Design and Validate by building applications. | K4 |

## SYLLABUS

| 20CTU13 | Practical -III: DBMS Applications | III |
|---|---|---|
| Ex. No. | Program List | Hours |
| 1 | To create, alter and drop tables with integrity constraints | 6 |
| 2 | To demonstrate the retrieval and modification of data from a database using SQL | 7 |
| 3 | To demonstrate the application of single row functions in SQL | 7 |
| 4 | To demonstrate the application of group functions in SQL | 7 |
| 5 | To demonstrate the application of querying multiple tables in SQL | 7 |
| 6 | To demonstrate the application of SQL | 7 |
| 7 | To demonstrate the application of views in SQL | 7 |

| | | |
|---|---|---|
| 8 | To understand the utility and structure of PL/SQL programmes | 8 |
| 9 | To demonstrate the transaction management using PL/ SQL programmes | 8 |
| 10 | To understand the structure and applications of Cursor in PL/SQL | 8 |

Note: Distribution of marks for Internal Examination- 40 and for External Examination– 60

**Teaching methods:** PowerPoint Projection through LCD and Execution Methods.

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | S | M |
| CO2 | S | M | S | L |
| CO3 | M | S | M | S |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.R.Priyaranjani | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU14 | Practical – IV :Networking | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | III |
| Hrs/Week: | 3 | L | - | T | - | P | 3 | Credits: | 2 |

## COURSE OBJECTIVES

- Impart knowledge about Computer Networks, various protocols used in Communication.
- Manage and configure Cisco Switches and Routers to implement WAN technologies
- Illustrate Client - Server architectures and prototypes by the means of correct standards and technology.
- Demonstrate different routing and switching algorithms

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Build enterprise network for given user requirements in an application. | K3 |
| CO2 | Define a network in recent methodology and also to make remote connectivity as one's own work, as a member and leader in a team. | K1 |
| CO3 | Classify packet/file transmission between nodes. | K4 |
| CO4 | Demonstrate protocol and network operation in a simulated environment. | K2 |

## SYLLABUS

| 20CTU14 | Practical – IV :Networking | III |
|---|---|---|
| **Ex. No.** | **Program List** | **Hours** |
| **1** | Program to determine class, Network and Host ID | 4 |
| **2** | Program to Configure DHCP and DNS Server | 4 |
| **3** | Program to implement the File Transfer Protocol | 4 |
| **4** | Program to downloading the file from HTTP Server | 4 |
| **5** | Program to Configure SNMP | 5 |
| **6** | Program to implement the RIP Routing Protocol | 5 |
| **7** | Program to implement the Multicasting service. | 5 |
| **8** | Study on Network interfacing and communication of physical objects, devices and peripherals | 5 |

**Note: Distribution of marks for Internal Examination- 40 and for External Examination – 60**

**Teaching methods:** PowerPoint Projection through LCD and Execution Methods.

## MAPPING WITH PROGRAM OUTCOMES

| PO / CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | M | S | S | S |
| **CO2** | M | S | S | S |
| **CO3** | M | M | M | L |
| **CO4** | M | S | S | S |

**S - Strong; M-Medium; L-Low**

*ASSESSMENT PATTERN*

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU15 | JAVA Programming | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | IV |
| Hrs/Week: | 6 | L | 6 | T | - | P | - | Credits: | 6 |

## COURSE OBJECTIVES

- To describe the basic knowledge of object-oriented programming, the fundamental Concepts of java and its advanced concepts
- To understand the overview of standalone Java applications and web Applications.
- To illustrate the key aspects of java Standard API library such as IO, Applets and Thread, GUI based controls and File concepts.
- To Experiment the overall concepts Java Programming.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Observes the knowledge about the principles of Java programming. | K1 |
| CO2 | Relate the concepts of Object Oriented Programming to Develop Java applications. | K2 |
| CO3 | Develops the robust & concurrent application using Multithreading, Applets, Threads and Exception handling concepts. | K3 |
| CO4 | Examines and Experiment Java applications with Graphical User Interface (GUI) and Files. | K4 |

## SYLLABUS

| 20CTU15 | JAVA Programming | IV |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Introduction to Java**<br>Features of Java - History of Java- Structure – Java Tokens – Statements – Java Virtual Machine - Data Types - Variables - Operators - Decision Making and Branching - Decision Making and Looping | 14 |
| II | **Object Oriented concepts:**<br>Classes, Objects and Methods: Methods & variables - Constructor-Overloading - Static members - Final Classes – Abstract method- Arrays, Strings and Vectors. – Interfaces: Multiple Inheritance –Extending interfaces-implementing | 15 |

| | | |
|---|---|---|
| | interfaces. Packages: Putting Classes together-creating, accessing & using packages. | |
| **III** | **Multithreaded Programming:** creating Threads -Extending Threads -Thread life cycle- Thread Exception- Priority-Implementing Runnable interface.<br><br>**Managing Errors and Exceptions:** Introduction- Exception handling – Exceptions- Multiple Catch statement-using finally statement– Applet Programming – Graphics Programming. | **14** |
| **IV** | **Files:**<br><br>Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files. **Advanced concepts of Java:**AWT Class and Controls: Introduction -AWT class - AWT controls-Labels, Buttons, CheckBox, List, TextField, TextArea– AWT managers and menus – Layout manager - MenuBar& Menus - Event handling by AWT components. | **15** |
| **V** | **Java Bean :**<br><br>Introduction: Java Bean - Socket Programming – Servlets - Java Server Pages, JDBC. Networking : Classes and Interface – Inet Address – Inet4 and Inet6 Address – TCP/IP Client Sockets – URL – TCP/IP Server Sockets- Datagrams. | **14** |

*Note: Distribution of marks for Internal Examination -30 and External Examination –70*

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS


1. *Balagurusamy.E, " Programming with Java" , TMH, 6th Edition, 2019.*
2. *Herbert Schildt, "The Complete Reference Java", Paperback, 7th Edition,2011*


## REFERENCE BOOKS


1. *John R. Hubbard, "Programming with Java" , TMH, 2nd Edition. 2004*
2. *Patrick Naughton& Herbert Schildt, "The Complete Reference Java 2", TMH, 3rd Edition.2005.*
3. *James Gosling, Bill Joy, Guy Steele, Gilad Bracha, and Alex Buckley , "The Java Language Specification", Java SE 8, March 2014.*

## WEB RESOURCES

*https://www.tutorialspoint.com/java/index.htm*

*https://www.edureka.co/blog/advanced-java-tutorial*

*https://www.javatpoint.com/*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | S |
| CO2 | M | S | S | S |
| CO3 | S | S | S | M |
| CO4 | S | S | S | M |

S-Strong, M- Medium, L – Low

## *ASSESSMENT PATTERN*

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU16 | LINUX and Shell Programming | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | IV |
| Hrs/Week: | 6 | L | 6 | T | - | P | - | Credits: | 6 |

## COURSE OBJECTIVES

- Educate the principles of operating system including File handling utilities, Security by file permissions, Process utilities, Disk utilities and Networking Commands.
- Familiarize shell programming, pipes, input and output redirection
- Develop the ability to formulate regular expressions and use them for pattern matching
- Learn the essential facts of SHELL programming in order to solve the SHELL script problems.

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Define the basics of operating system. | K1 |
| CO2 | Identify various Linux commands to manipulate system operations. | K2 |
| CO3 | Develop shell scripts using the shell programming structures | K3 |
| CO4 | Analyze the execution of shell commands. | K4 |

## SYLLABUS

| 20CTU16 | LINUX and Shell Programming | IV |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **INTRODUCTION TO OPERATING SYSTEMS ANDLINUX:** Basics of Operating Systems: Definition – Generations of Operatingsystems – Types of Operating Systems, OS Service - A brief history of LINUX. | 14 |
| II | **LINUX UTILITIES**: Architecture of LINUX - features of LINUX - introduction to vi editor. **Linux commands**- PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip, file handling utilities, security by file permissions, | |

| | | |
|---|---|---|
| | process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin.Text Processing utilities and backup utilities,tail,head,sort,nl,uniq,grep,egrep,fgrep,cut,paste,join, tee, pg, comm, cmp, diff, tr, awk, cpio | **15** |
| **III** | **Introduction to Shells:** Linux Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command- Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options, Shell/Environment Customization. | **15** |
| **IV** | **Filters:** Filters and Pipes, Concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, Files with Duplicate Lines, Count Characters, Words or Lines, Comparing Files. | **14** |
| **V** | **Grep:** Operation, grep Family, Searching for File Content. **Sed: Scripts,** Operation, Addresses, commands, Applications, grep and sed. | **14** |

***Note: Distribution of marks for Internal Examination -30 and External Examination –70***

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion andActivity.

## TEXT BOOKS


1. *Richard Petersen, Linux: The Complete Reference, Sixth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.*
2. *Silberschatz, Peter B. Galvin and Greg Gagne, , Operating System Concepts, Wiley - Indian Edition, 2012*


## REFERENCE BOOKS


1. *Robert Love, O'Reilly ,Linux System Programming, 2nd Edition SPD.2008*
2. *W. Richard. Stevens, Advanced Programming in the UNIX Environment, 3rd edition, Pearson Education, New Delhi, India.(2005),*
3. *Daniel P. Bovet ,Understanding the Linux Kernel: From I/O Ports to Process Management ,O'Reilly, Kindle Edition, 2012*


## WEB RESOURCES

*www.shellscript.sh/*

*https://linuxconfig.org/bash-scripting-tutorial-for-beginners*

*https://www.geeksforgeeks.org/introduction-linux-shell-shell-scripting*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | M | S | S | S |
| CO2 | S | S | S | M |
| CO3 | M | M | S | M |
| CO4 | S | S | M | S |

S-Strong, M- Medium, L – Low

## *ASSESSMENT PATTERN*

Follows common pattern of Internal and External Assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Dr.C.Thirumoorthi | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTIU16 | Business Intelligence | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | IV |
| Hrs/Week: | 6 | L | 6 | T | - | P | - | Credits: | 6 |

## COURSE OBJECTIVES

- To understand concept and regular terminology of reporting applications.
- Identify the benefits of Descriptive analytics using Cognos BI
- Analyzing and visualizing the data using Cognos BI
- Organize big data sets into meaningful structures, incorporating data profiling and quality standards

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Illustrate and manage Business performance | K2 |
| CO2 | Define how business performance's activities will be achieved by using modeling, provisioning and visualization | K1 |
| CO3 | Solve Basic features of cognos BI | K3 |
| CO4 | Formulate calculations , Filters ,Prompt and security in Cognos BI | K4 |

## SYLLABUS

| 20CTIU16 | Business Intelligence | IV |
|---|---|---|
| Unit No. | Topics | Hours |
| I | **INTRODUCTION:**<br>IBM Cognos 10 Family -BI Enterprise Components, BI Architecture (high level)BI Security, BI Groups and Roles -Framework Manager UI, View the top-level objects and reports-Package as a report author. | 15 |
| II | **DATA STRUCTURE:**<br>Data Sources and Model Types-Differentiate Data Entities- Relational Models-Operational vs. Reporting -Operational Databases- Example of an Operational and Reporting Database Query-Create a Star Schema from an Operational Model- Operational Data -Reporting Data- Fact Table-Dimension Tables-Define Relationships - Identify Issues with a Star Schema-Cardinality- Relationships-. | 14 |

| | | |
|---|---|---|
| III | **REPORTS:**<br><br>Introduction to the Reporting Application - Report Studio- Explore the Environment Explorer Bar and Report Templates- Generate the Report-Create List Reports - Group Data-Format List Column- Include List Headers and Footers-Focus Reports using Filters- Create Filters- Filter Your Data with Advanced Detail Filters-Create Crosstab Reports-Create a Crosstab Report- Add Measure to Crosstab Reports-Format Crosstab Reports¬ | **14** |
| IV | **GRAPHICAL REPORT**<br><br>Data Graphically - Chart Report- Charts Containing Peer and Nested Items-Reuse Custom Chart Palettes-Data driven Baselines and Markers to Charts-Focus Reports using Prompts - Parameters and Prompts-Create a Parameter Item on the Report-Build a Prompt Page- Prompt Item to a Report-Extend the Model to add Staff Location Metadata-Rearrange the diagram. | **14** |
| V | **DATA SOURCE:**<br><br>Extend Reports using Calculations - Derive Additional Information from the Data Source-Run-time Date/Time Functions to Report - String Functions - Customize Reports with Conditional Formatting-Change Displays Based on Conditions-Steps for Conditional Formatting-Drill Through from One Report to Another. Navigate to Related Data in IBM Cognos BI-Set Up Drill-Report-Values Passed to Target Parameters-Create a Report using Relational Data-Relational Data Tree-List Object-Introduction to BI Administration BI Administration Workflow, Portal and Configuration¬-Create a Report from a Dimensionally-modeled Relational Data Source. | **15** |

***Note: Distribution of marks for Internal Examination -40 and External Examination –60***

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

**TEXT BOOK**

*1. IBM Course ware*

**REFERENCE BOOKS**

*R2: IBM COGNOS BI V 10.1 – Hand Book(RED BOOK)*

## WEB RESOURCES

*https://www.tutorialspoint.com/management_information_system/business_intelligence_system.htm*
*https://www.geektonight.com/business-intelligence-notes-pdf/*
*https://www.guru99.com/business-intelligence-definition-example.html*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | L | - |
| CO2 | S | S | M | L |
| CO3 | S | S | S | S |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| IBM | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science
Coimbatore-641 028.

| Course Code: | 20CTU17 | Practical – V: Programming Using Java | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | IV |
| Hrs/Week: | 6 | L | - | T | - | P | 6 | Credits: | 3 |

## COURSE OJECTIVES

- Understand and Develop Standalone Java Programs.
- Design and Develop GUI Applications using AWT, Applet and Swing.
- Design event driven GUI and web related applications which mimic the real word scenarios.
- Propose the use of Networking technologies by implementing them in the Java programming language to solve the given problem.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Relate Java problems using object-oriented concepts | K1 |
| CO2 | Demonstrate java applications using packages & collection interfaces. | K2 |
| CO3 | Develop concurrent Applications using Multithreading | K3 |
| CO4 | Categorize Event driven and Graphical User Interface programming using AWT and Applet | K4 |

## SYLLABUS

| 20CTU17 | Practical – V: Programming Using Java | IV |
|---|---|---|
| **Ex. No.** | **Program List** | **Hours** |
| **1** | Write the java program for the manipulation of string class. | 6 |
| **2** | Write a java program to implement the multiple inheritance using interfaces. | 6 |
| **3** | Write a java program to demonstrate the use of packages. | 6 |
| **4** | Write a java program to implement the concept of Multithreading. | 6 |
| **5** | Write a java program to create an Exception and throw the exception. | 6 |
| **6** | Write a java program to implement the concept of Applet & AWT Events. | 6 |
| **7** | Develop a GUI program using Swing components. | 6 |
| **8** | Write a java program which open an existing file and append the text to that file. | 6 |
| **9** | Develop a program to Analyze the Gene sequence. | 6 |
| **10** | Write a program for calculating Biocomputing. | 6 |
| **11** | Write a Socket Program to Perform file transfer from Server to the Client. | 6 |
| **12** | Write a Program to implement Remote Procedure call under Client / Server Environment | 6 |

***Note: Distribution of marks for Internal Examination- 40 and for External Examination – 60***

**Teaching methods:** PowerPoint Projection through LCD and Execution Methods.

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | S | L |
| CO2 | S | S | S | M |
| CO3 | S | S | S | M |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | 20CTU19 | Practical – VI :Web Technology | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | IV |
| Hrs/Week: | 5 | L | - | T | - | P | 5 | Credits: | 3 |

## COURSE OJECTIVES

- Evaluate problems and analyze data using current technologies in a wide variety of business and organizational contexts.
- Build dynamic web pages using JavaScript (Client side programming)
- Create XML documents and Schemas.
- Incorporate best practices for building applications by using ASP.

## COURSE OUTCOMES (CO)

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Develop a webpage and publishing them. | K3 |
| CO2 | Demonstrate software systems of varying complexity usingJavascript and ASP. | K2 |
| CO3 | Categorize well formed/ Valid XML Document. | K4 |
| CO4 | Choose web application development software tools like Javascript, ASP, XML and identify the environments currently available on the market to design web sites as a member and leader in a team. | K1 |

## SYLLABUS

| 20CTU19 | Practical – VI :Web Technology | IV |
|---|---|---|
| Ex. No. | Program List | Hours |
| 1 | Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient. | 6 |
| 2 | Using Java Script's Window and document objects and their properties and various methods like alert (), eval (), Parselnt () etc. methods to give the dynamic functionality to HTML web pages. | 6 |
| 3 | Writing Java Script snippet which make use of Java Script's inbulit as well as user defined objects like navigator, Date Array, Event, Number etc. | 6 |
| 4 | Write a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 100ms in RED COLOR, when | 6 |

| | | |
|---|---|---|
| | the font size reaches 50pt it displays "TEXT-SHRINKING" in BLUE color. Then the font size decreases to 5pt. | |
| 5 | Develop and demonstrate a HTML5 file that includes JavaScript script that uses functions for the following problems: a. Parameter: A string b. Output: The position in the string of the left-most vowel c. Parameter: A number d. Output: The number with its digits in the reverse order | 6 |
| 6 | Design an XML document to store information about a student.The information must include Reg No, Name, and Name of the College, Branch,<br>Year of Joining, and email id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document | 6 |
| 7 | Design a personal web page using ASP. | 6 |
| 8 | Perform different Text file operations using Textstream Object in ASP. | 6 |
| 9 | Write a Program in ASP to get data using a form, validate the data and returns the same data for correction if any using the same form | 6 |
| 10 | Display a different content each time a user visits a page Using ASP 3.0. | 6 |

*Note: Distribution of marks for Internal Examination- 40 and for External Examination – 60*

**Teaching methods:** PowerPoint Projection through LCD and Execution Methods.

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | M | S | M | S |
| CO2 | S | S | S | S |
| CO3 | S | M | M | L |
| CO4 | M | S | S | S |

S-Strong, M- Medium, L – Low

## *ASSESSMENT PATTERN*

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | | Animation Techniques | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | |
| Hrs/Week: | 2 | L | 2 | T | - | P | - | Credits: | |

**COURSE OBJECTIVE:**

- Understand about Animation techniques
- To familiarize the students with various approaches, methods and techniques of Animation Technology.
- To develop competencies and skills needed for becoming an effective Animator

**COURSE OUTCOME:**

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | List the basic concepts of Animation Techniques | K1 |
| CO2 | Explain 2D and 3D Animation Techniques | K4 |
| CO3 | Develop Animation using Flash | K3 |
| CO4 | Demonstrate Time line based Animation | K2 |

| | Animation Techniques | 2 |
|---|---|---|
| Unit No. | Topics | Hours |
| I | What is mean by Animation – Why we need Animation – History of Animation – Uses of Animation – Types of Animation – Principles of Animation – Some Techniques of Animation – Animation on the WEB – 3D Animation – Special Effects - Creating Animation. | 8 |
| II | Traditional 2D Animation Concept – Types of 2D Animation – Techniques of 2D Animation – Color – Text – Formation – Size – Script Animation – Time Line Effects – Application of 2D Animation – Characterization 2D – Principle of 2D Animation – Concept Development.<br>3D Animation & its Concepts – Types of 3D Animation – Skeleton & Kinetic 3D Animation – Texturing & Lighting of 3D Animation – 3D Camera Tracking – Applications & Software of 3D Animation. | 8 |
| III | Creating Animation in Flash: Introduction to Flash Animation – Introduction to Flash – Working with the Timeline and Frame-based Animation- Frame by frame animation, flip books, power of frames - Working with the Timeline and Tween-based Animation motion tween, Motion editor, shape tweens, Masks, Animating bones, using bitmap images– Understanding Layers - Actionscript. | 8 |

**Teaching methods:**

Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1 . *Ranjan Parekh. Principles of Multimedia. Tata McGraw Hill Publishing, 2008.*
2. *Shalini Guptha & Adity Gupta, Flash 8 in Simple Steps –2007, dreamtech.*

## REFERENCE BOOKS

1. *Todd Perkins, Flash Professional CS5 Bible. Wiley Dreamtech India Pvt Ltd, 2010.*
2. *Tom Meade, Shinsaku Arima, MAYA 8.0 THE COMPLETE REFERENCE - TMH.*

## MAPPING WITH PROGRAM OUTCOMES

| PO<br>CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | L |
| CO2 | S | M | S | L |
| CO3 | S | S | S | S |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.D.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | | Digital Marketing | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | - |
| Hrs/Week: | 2 | L | 2 | T | - | P | - | Credits: | |

**COURSE OBJECTIVE:**

- To provide the knowledge of digital marketing and its importance for marketing success, to develop a plan, digital channels and Google Ad Words campaigns.
- The social media planning and implement the knowledge Analytics of digital marketing.

**COURSE OUTCOME:**

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Remember and Comprehend basic marketing concepts. | K1 |
| CO2 | Classify the importance of conversion and working with digital relationship marketing. | K2 |
| CO3 | Build the confluence of marketing, operations, and human resources in real-time delivery. | K3 |
| CO4 | Examine and evaluate issues in adapting to globalised markets that are constantly changing and increasingly networked. | K4 |

| | Digital Marketing | Sem: |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | Principles of Digital Marketing: Basics of Marketing-What is Digital Marketing?-Comparison of Traditional and Digital Marketing-Statistics of Digital Marketing- Benefits of Digital marketing-Latest Digital marketing trends-Digital marketing platforms-Digital Marketing strategy for websites-Career opportunities in digital marketing | 8 |
| II | Social Media Marketing: Introduction to social media marketing-Facebook marketing-Facebook advertising-YouTube marketing-Twitter marketing-LinkedIn marketing-Instagram Marketing-Document Sharing Site<br><br>Email Marketing: What is Email Marketing-Benefits of email marketing-Basic terminology in email marketing-Email Marketing software. | 8 |
| III | Google AdSense and Affiliate Marketing: Online money earning strategies-Success stories of online entrepreneurs-Planning a website for Adsense-What is Adsense?-Types of Bidding-Implementing Ads in a Website-What is Affiliate Marketing-Types of Affiliate Marketing-Making Money using Affiliate Marketing-Popular Affiliate Networks-Freelancing Business Strategies. | 8 |

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment.

## TEXT BOOKS

1. *Kevin Urrutia & Wilson Lin, "Digital Marketing Made Easy", FORBES, Kindle Edition.*

## REFERENCE BOOKS

1.https://www.amazon.com/dp/B08B5JW2SR/ref=rdr_kindle_ext_tmb

## WEB RESOURCES

1. *https://blendinfotech.com/digital-marketing-course-syllabus/India*
2. *https://www.deccansoft.com/Documents/SyllabusDocs/7f53e17e-b4a1-45d2-b3b0-bafd2a504d27_Syllabus_of_Digital_Marketing.pdf*

## MAPPING WITH PROGRAM OUTCOMES

| CO \ PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | L | M | M | L |
| CO2 | M | L | L | M |
| CO3 | M | S | L | S |
| CO4 | S | M | S | L |

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mr.G.Ravishankar | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code | | PHP Programming | | | | | | Batch | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester | |
| Hrs/Week | 2 | L | 2 | T | - | P | - | Credits | |

**COURSE OBJECTIVE:**

To provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP

**COURSE OUTCOME :**

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Identify Client and Server side Scripting languages | K3 |
| CO2 | Demonstrate PHP programs that use various PHP library functions, and that manipulate files and directories | K2 |
| CO3 | Analyze and solve various database tasks using the PHP language | K4 |
| CO4 | Construct a complete website | K6 |

| | PHP Programming | |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | Introducing PHP: What is PHP – What is Mysql – Developing a Web Application Platform: Html Embeddedness – Cross platform compatibility – stability – Fast Feature Development – Strong User Communities. Server side Scripting Overview – Static HTML – Client Side technologies – Server Side Scripting – what is Server-side Scripting | 8 |
| II | Getting Started with PHP : Installing PHP : Installation procedures – Installing PHP on CentOS - Installing PHP on Debian - Installing PHP From Source – Microsoft Windows and Apache- Other Web servers – Developments tools – Canonical PHP Tags – Hello world – Jumping IN & Out of PHP Mode – including files | 8 |
| III | Learning PHP Syntax and variables – Comments – Variables – Variable scope – Constants – Type Declaration – Automatic Type conversion – The simple types – Integers – Double – Boolean – NULL – Strings – Echo and print. Boolean Expression – Operators – Branching – Looping – Simple Mathematic Functions – Randomness. | 8 |

**Teaching methods:**

Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1. *Steve Suehring Tim Converse and Joyce Park - PHP6 and MySQL Bible- Wiley-India.New Delhi 2009.*

## REFERENCE BOOKS

1. *Dacie Cristian- Pack Pub AJAX and PHP - 2006*
2. *Scouarnec Yann- Stolz Jeremy Jeremy and Glass Michael - Beginning PHP5- APACHE- MYSQL Web Development - Wiley-In New Delhi- 2005*

## MAPPING WITH PROGRAM OUTCOMES

| CO / PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | S |
| CO2 | M | S | M | S |
| CO3 | S | M | S | M |
| CO4 | S | M | L | L |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Dr.C.Thirumoorthi | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028

| Course Code: | | Block Chain Technology | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | |
| Hrs/Week: | 2 | L | 2 | T | - | P | - | Credits: | |

## COURSE OBJECTIVE:

This course covers the technical aspects of public distributed ledgers, blockchain systems, cryptocurrencies, and smart contracts.

## COURSE OUTCOME:

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Apply the Knowledge how to securely interact with them | K3 |
| CO2 | Design, build, and deploy smart contracts and distributed applications | K6 |
| CO3 | Explain how block chain systems work and its Applications | K2 |
| CO4 | Analyze ideas from block chain technology into their own projects. | K4 |

| Unit No. | Topics | Sem: Hours |
|---|---|---|
| I | **Blockchain :**<br><br>Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain application, Soft & Hard Fork, Private and Public blockchain. | 8 |
| II | **Distributed Consensus:**<br><br>Nakamoto consensus, Proof of Work, Proof of Stake, Proof of Burn, Difficulty Level, Sybil Attack, Energy utilization and alternate. **Cryptocurrency:** Bitcoin protocols - Mining strategy -GHOST. | 8 |
| III | **Cryptocurrency Regulation:**<br><br>Stakeholders, Roots of Bit coin, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy. **Applications:** Internet of Things, Medical Record Management System, Domain Name Service and future of Blockchain. | 8 |

**Teaching methods:**
Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1. *Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Princeton University Press (July 19, 2016).*

## REFERENCE BOOKS

1. *Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies*

2. *Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System*

## MAPPING WITH PROGRAM OUTCOMES

| PO<br>CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | M | S | S | M |
| CO2 | S | M | M | L |
| CO3 | M | S | M | L |
| CO4 | L | M | L | M |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.T.Kavipriya | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | | Multimedia and its Applications | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | |
| Hrs/Week: | 2 | L | | T | | P | | Credits: | |

## COURSE OBJECTIVE:

- Introduce the fundamental elements of multimedia.
- Acquire the Knowledge on representations, perceptions and applications of multimedia.
- Develop Software skills and hands on digital media.

## COURSE OUTCOME:

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Classify the technologies behind multimedia applications | K2 |
| CO2 | Explain the key concepts in current multimedia technology and to create quality multimedia software titles. | K5 |
| CO3 | Analyze Video and Animation Techniques | K4 |
| CO4 | Develop the skills to build multimedia projects. | K3 |

| Unit No. | Topics | Sem: Hours |
|---|---|---|
| I | **Introduction to Multimedia Computer Fonts and Hypertext :**<br><br>What is multimedia, Components of multimedia, Web and Internet multimedia applications. Usage of text in Multimedia, Families and faces of fonts, International character sets and hypertext, Digital fonts techniques. | 8 |
| II | **Audio and Image fundamentals and representations:**<br><br>Digitization of sound, frequency and bandwidth, decibel system, data rate, audio file format, Sound synthesis, MIDI, Adding sound to your multimedia project, Audio software and hardware. Colour Science , Colour, Colour Models, Colour palettes, Dithering, 2D Graphics, Image Compression and File Formats , Use of image editing software, Gamma correction, Photo Retouching. | 8 |
| III | **Video and Animation :**<br><br>Video Basics , How Video Works, Broadcast Video Standards, Video Recording and Tape formats, Shooting and Editing Video (Use Adobe remier for editing), Video Compression and File Formats. Animation: Cell Animation, Computer Animation, Morphing. Some Authoring Tools, Macromedia Director & Flash. | 8 |

**Teaching methods:**
Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1. *Tay Vaughan, "Multimedia making it work", Tata McGraw-Hill, 2008.*
2. *Rajneesh Aggarwal & B. B Tiwari, " Multimedia Systems", Excel Publication, New Delhi, 2007.*

## REFERENCE BOOKS

1. *Parekh Ranjan, "Principles of Multimedia", Tata McGraw-Hill, 2007*
2. *Anirban Mukhopadhyay and Arup Chattopadhyay, "Introduction to Computer Graphics and Multimedia", Second Edition, Vikas Publishing House.*

## MAPPING WITH PROGRAM OUTCOMES

| PO<br>CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | M | S | L |
| CO2 | M | M | S | M |
| CO3 | S | S | M | L |
| CO4 | M | S | M | L |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.K.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 0..

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code | | E Learning | | | | | | Batch | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester | |
| Hrs/Week | 2 | L | 2 | T | - | P | - | Credits | |

**COURSE OBJECTIVE:**

- Augment the quality of learning and teaching
- Meet the learning style or needs of students to the novel scenario
- Application Ability to use learned material in new situations.

**COURSE OUTCOME:**

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Find knowledge about the various E-learning Techniques | K1 |
| CO2 | Explain the importance of E-learning | K2 |
| CO3 | Apply the deployment of E-learning | K3 |
| CO4 | Examine and evaluate issues in E-learning | K4 |

| | E Learning | |
|---|---|---|
| Unit No. | Topics | Hours |
| I | **E-Learning – Introduction**<br>History of E-Learning, Benefits of E-Learning, Unleashing E-Learning, E-Learning for Whom, E-Learning Checklist, Benefits of E-Learning , Methods of E-Learning | 8 |
| II | **Potential of E Learning**<br>Advantages And Disadvantages of E-Learning, Preparing for E-Learning , Types of E-Learning Training, Benefits of E-Learning for Organization | 8 |
| III | **Deployment of E Learning and Tools**<br>Using an LMS, Learning theories, Application of Learning theory (education) to E-Learning, Teacher use of technology, Exemplification of E Learning tools | 8 |

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment.

## TEXT BOOKS

1. ***Text Book*** *Sasikala, "Perspectives of E-Learning", TPH Publishers*

1. *Dr.S.Sasikala, "Perspectives of E-Learning", TPH Publishers.*

## REFERENCE BOOKS

1. *W. Allen, " Guide to E-Learning: Building Interactive, Fun, and Effective Learning Programs for Any Company", KOBO*
2. *Richard E. Mayer and Ruth C. Clark, E-Learning and the Science of Instruction: Proven Guidelines for Consumer and Designers of Multimedia Learning, Wiley*

## WEB RESOURCES

**Web Link:**

**https://elearningindustry.com/deploy-effective-corporate-compliance-training-with-user-friendly-lms-fr ebook**

## MAPPING WITH PROGRAM OUTCOMES

| CO / PO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | M | S | L | M |
| CO2 | L | L | S | L |
| CO3 | M | M | L | S |
| CO4 | S | M | S | L |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Dr.S.Sasikala | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and Science (Autonomous)

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code | | Network Administration & Troubleshooting | | | | | | Batch | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester | |
| Hrs/Week | 2 | L | 2 | T | - | P | - | Credits | |

## COURSE OBJECTIVE:

- Explore the various technologies of computer networks and Network administration
- Define key terms and critical concepts of trouble shooting.
- Enumerate the phases of the security systems development life cycle and Describe the information security roles of professionals within an organization

## COURSE OUTCOME:

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Recall the Technologies of Networking | K1 |
| CO2 | Apply and experiment the concepts network administration. | K3 |
| CO3 | Categorize the essential systems administration skills related to server operating systems, system and network service administration, computer and information security, and directory services administration. | K4 |
| CO4 | Relate the network security and troubleshooting concepts and network access control mechanisms. | K2 |

| | Network Administration & Troubleshooting | |
|---|---|---|
| Unit No. | Topics | Hours |
| I | **Network Topologies and Technologies:** Network Topologies: Bus, Star, Ring, Point-to-point, Ethernet networks and Standards, WIFI, Token Ring Networks, Wireless Access Point, Advanced features of NIC. | 8 |
| II | **Network Operating System Fundamentals:** Operating system fundamentals, Network Operating System-Role of Client and Server Operating System, Centralized User Account and computer management, Server and Network Fault Tolerance. Operating System Virtualization, Installing an OS | 8 |
| III | **Network Management and Administration:** Managing user and group accounts – Storage and file system management – Working with shared files and printers – Backup and fault tolerance. **Troubleshooting:** Network troubleshooting tools – Troubleshooting situations – Disaster recovery. | 8 |

**Teaching methods:** Lecturing, PowerPoint Projection through LCD, Assignment.

## TEXT BOOKS

***Book*** *Sasikala, "Perspectives of E-Learning", TPH Publishers*

*Gregory Tomsho, "Guide to Networking Essentials 6e", Cengage Learning*

## REFRENCE BOOKS

1. *Michael Parmer, " Hands On Networking Essentials", Cengage Learning*
2. *Paul Browning, CISCO CCNA simplified, Cisco Press*

## MAPPING WITH PROGRAM OUTCOMES

| PO / CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | M | L |
| CO2 | S | M | S | L |
| CO3 | S | S | S | S |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows common pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Mrs.K.Mythili | Mrs.K.Mythili | |

K. MYTHILI M.Sc., M.Phil., (Ph.D)
Associate Professor & HOD
Department of Computer Technology
Hindusthan College of Arts and
Science (Autonomous)
Coimbatore - 641 028.

Co-ordinator
Academic Audit Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

| Course Code: | | VM Ware | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | |
| Hrs/Week: | 2 | L | 2 | T | - | P | - | Credits: | |

**COURSE OBJECTIVE:**

- Identify the need for Data Center Virtualization.
- Describe the Components and Features of Vsphere

**COURSE OUTCOME:**

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Explain the concepts of Virtualization Technology. | K5 |
| CO2 | Discuss Vsphere components and their function. | K6 |
| CO3 | Demonstrate an ESXi host. | K2 |
| CO4 | Build Vmware Applications. | K3 |

| | VM Ware | |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | Introduction to Virtualization Technologies - VMware workstation - VMware player - Virtual box. Introduction to VMware Virtualization - Introduce Virtualization - Introduce Virtual machines - Introduce vSphere components . VMware ESX and ESXi ( ESX/ESXi - Introduce the architecture of ESX and ESXi - Manually configure ESX/ESXi - VMware vCenter Server - Install and configure vCenter Server components -Manage vCenter Server inventory objects. | 8 |
| II | Networking - Create, configure, and manage vNetwork standard switches - Create, configure, and manage network connections - Create, configure, and manage port groups - Storage - Configure ESX/ESXi with iSCSI, NFS,.- Create and manage vSphere datastores. Virtual Machines -Deploy virtual machines using the Create New Virtual Machine wizard, templates, cloning, and VMware vCenter Converter - Modify and manage virtual machines - Perform Storage vMotion migrations 8. Access Control - Control user access through roles and permissions. | 8 |

| | | |
|---|---|---|
| **III** | Resource Monitoring - Control virtual machine access to CPU, memory, and I/O resources-Introduce VMkernel methods for optimizing CPU and memory usage - Monitor resource usage using vCenter Server performance graphs and alarms - Data Protection -Back up and recover virtual machines using VMware Data Recovery . Scalability - Manage multiple vCenter Server inventories using VMware vCenter Linked Mode - Manage ESX/ESXi configuration compliance using Host Profiles - Create, configure, and manage vNetwork distributed switches, network connections, and port groups - Perform VMware vMotion migrations -Configure and manage a VMware Distributed Resource Scheduler cluster. High Availability - Configure and manage a VMware High Availability cluster - Configure fault-tolerant virtual machines using VMware Fault Tolerance. | **8** |

**Teaching methods:**
Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## REFERENCE BOOKS

Mastering VMware vSphere 6 | Edition:Repreint 2015 | Sybex | GrantOrchard AND JoshAtwell AND NickMarshall AND ScottLowe(2015)

## WEB RESOURCES

www.vmware.com

## MAPPING WITH PROGRAM OUTCOMES

| PO<br>CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | M | L | M | L |
| **CO2** | S | L | M | S |
| **CO3** | S | M | L | L |
| **CO4** | M | L | M | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

Follows pattern of Internal and External assessment, suggested in the Regulations.

| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| Dr.C.Thirumoorthi | Mrs.K.Mythili<br>K. MYTHILI M.Sc., M.Phil., (Ph.D)<br>Associate Professor & HOD<br>Department of Computer Technology<br>Hindusthan College of Arts and Science (Autonomous)<br>Coimbatore - 641 028. | Co-ordinator<br>Academic Audit Cell<br>Hindusthan College of Arts & Science,<br>Coimbatore-641 028 |

| Course Code: | | Project Management | | | | | | Batch: | 2020-2021 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Semester: | - |
| Hrs/Week: | 2 | L | 2 | T | - | P | - | Credits: | |

**COURSE OBJECTIVE:**

- To Deliver successful projects that support organization's strategic goals and create project plans that address real-world management challenges
- To Develop the skills for tracking and controlling and deliverables

**COURSE OUTCOME:**

| S.No | COURSE OUTCOME | BLOOMS LEVEL |
|---|---|---|
| CO1 | Find the exposure for organizing and managing a project. | K1 |
| CO2 | Classify the model from the conventional product to the modern world. | K2 |
| CO3 | Analyze and design the software architecture. | K4 |
| CO4 | Apply, identify, select and develop the model project. | K3 |

| | Project Management | |
|---|---|---|
| **Unit No.** | **Topics** | **Hours** |
| I | **Basics of Project Management:** Introduction, Need for Project Management, Project Management Knowledge Areas and Processes, The Project Life Cycle, The Project Manager (PM), Phases of Project Management Life Cycle, Project Management Processes. | 8 |
| II | **Project Identification and Selection:** Introduction, Project Identification Process. Project Planning: Introduction, Project Planning, Need of Project Planning. | 8 |
| III | **Organizational Structure and Organizational Issues:** Introduction, Concept of Organizational Structure, Roles and Responsibilities of Project Leader, Relationship between Project Manager and Line Manager, Leadership Styles for Project Managers. | 8 |

**Teaching methods:**

Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

## TEXT BOOKS

1. Project Management Absolute Beginner's Guide 3rd Edition by Greg Horine.

## REFERENCE BOOKS

1. A Guide to the Project Management Body of Knowledge the PMBOK Guide 5th Edition.

## WEB RESOURCES

**Web Link:** *http://ptgmedia.pearsoncmg.com/images/9780789750105/samplepages/0789750104.pdf*

## MAPPING WITH PROGRAM OUTCOMES

| PO / CO | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| CO1 | S | S | S | M |
| CO2 | S | S | S | S |
| CO3 | S | S | S | M |
| CO4 | S | S | S | S |

S-Strong, M- Medium, L – Low

## ASSESSMENT PATTERN

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| Course Designed by | Verified by HOD | Approved by CDC coordinator |
|---|---|---|
| B.Yazhini | Mrs.K.Mythili | |

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Associate Professor & HOD
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