LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORK (LOCF)

in the

UNDERGRADUATE PROGRAMME

B.Sc. Computer Science

With

Cognitive Systems

FOR THE STUDENTS ADMITTED FROM THE

ACADEMIC YEAR 2021 - 2022 AND ONWARDS

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.hindusthan.net/hicas/

DEPARTMENT OF COMPUTER SCIENCE WITH COGNITIVE SYSTEMS

PREAMBLE

Bachelor of Science in Computer Science with Cognitive Systems is a three years program spanning six semesters. Cognitive systems have substituted human competencies in diverse areas. Cognitive systems are technical systems capable of independently solving and developing strategies for human tasks. To accomplish this, these systems are equipped with cognitive capabilities for context comprehension, interaction, adaptation and learning. Cognitive systems can utilize artificial intelligence (AI) methods such as machine learning, neural networks and deep learning. Cognitive systems, which are already an indispensable element in many areas today, will have a major influence on growing numbers of industries and economic sectors in the future. This course is designed meticulously to fine tune Graduate research attributes and inculcate research interest among the students to pursue higher education or to get expertise in domain for employment. It also provides the scope for startup innovations in the domain.

VISION

To instigate the state-of-the-art technological trends and to cope up with the global challenges, this course provides a foundation. To understand the nuances of the cognitive system scenario and to get insights of environmental and ethical values, this course provides a holistic approach.

MISSION

The Mission of the course is to pursue a philosophy of subsequent acquisition of knowledge in cognitive systems. The significant aspect is to provide value-based education and to bring out the hidden potentials in students that equip them to approach life with optimism.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Under Graduates of Computer Science with Cognitive Systems program will,

PEO1: Provides sufficient understanding of the field of computer science including principles, analysis techniques, and design methodologies.

PEO2: To understand, assess and practice ethical behavior in IT & ITES industries

PEO3: Graduates will communicate effectively, work collaboratively and exhibit high levels of professionalism and ethical responsibility.

PEO4: Demonstrate adaptability or leadership by, for example, being promoted, moving up to a better job, or by taking a leadership role in a team.

PEO5: Graduate are successfully employed, pursue a graduate degree, or continue their professional education

PROGRAM OUTCOME (PO)

PO1: Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

PO2: Students will be able to use appropriately system design notations and apply system design engineering process in order to design, plan, and implement software systems

PO3: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

PO4: Indulge in sustainable computing practice to cope up state of the art technologies.

PO5: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

PO6: Ability Communicate effectively in a variety of professional contexts.

PO7: Students will be prepared for a career in an information technology oriented business or industry, or for graduate study in computer science or other scientific or technical fields

PROGRAM SPECIFIC OUTCOME (PSO)

PSO1: Ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional.

PSO2: Our graduates will exhibit technical, personal, ethical, and professional leadership in their businesses, professions, and communities..

PSO3: An ability to design, implement, and evaluate a software or a software/hardware system, component, , runtime efficiency, as well as appropriate constraints related to economic, environmental, social, ethical, health and safety, and sustainability considerations.

PSO4: An ability to apply design and development principles in the construction of software systems of varying complexity.

PSO5: To inculcate effective communication skills with professional attitude.

HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS),

COIMBATORE-641028

SCHEME OF EXAMINATIONS - CBCS & LOCF PATTERN

(For the Students admitted from the Academic year 2021-2022 and Onwards)

UG PROGRAMME

Programme: B.Sc. Computer Science with cognitive systems **Branch: Computer Science**

Part	Course Code	Course Type	Course Title	Credit points	Lecture Hours/ Week		Exam Duration (hours)	MAX. MARKS		
					Theory	Practical		I.E.	E.E	Total
			Semester – I							
I	**21LAT01/ 21LAH01/ 21LAM01/ 21LAF01**	MIL	Tamil-I/ Hindi-I/ Malayalam – I/ French-I	4	6		3	30	70	100
II	**21ENG01**	AECC	English – I	4	6		3	30	70	100
III	**21TCU01**	DSC	**Core-I** Operating System	4	4		3	30	70	100
III	**21TCU02**	DSC	**Core-II Practical- I-** Introduction to worksheets	4		4	3	40	60	100
III	**21TCU03**	DSC	**Core-III Practical- II-** Programming using operating system	2		4	3	40	60	100
III	**21TCU04**	GE	**Allied-I** Mathematics for Computing	4	5		3	30	70	100
IV	**21TCUE01**	AEE	Open Elective- I	2	3		3	100		100
IV	**21GSU01**	AECC	Environmental Studies	1	2		2	50	-	50
IV	**21TCUV01**	SEC	VAC – I/Life Skills-I @ / Communicative English	1*	2		2	50		50**
IV	-	SEC	SDR-Students Development Report	Assessment will be in the Fifth Semester						
V	-	AECC	Extension Activities NSS/NCC/SPORTS/YRC/SIS/SA	Assessment will be in the Fourth Semester						
Total				**25**	**28**	**8**		**350**	**400**	**750**

			Semester – II							
I	**21LAT02/ 21LAH02/ 21LAM02/ 21LAF02**	MIL	Tamil-II/ Hindi-II/ Malayalam-II/ French-II	4	6		3	30	70	100
II	**21ENG02**	AECC	English – II	4	6		3	30	70	100
III	**21TCU05**	DSC	**Core -IV** Computer Networks	4	4		3	30	70	100
III	**21TCU06**	DSC	**Core -V** Data Structures and Algorithm	4	4		3	30	70	100
III	**21TCU07**	DSC	**Core -VI Practical- III-** Programming using Computer Networks	2		4	3	40	60	100
III	**21TCU08**	DSC	**Core-VII Practical- IV-** Programming using HTML,CSS, JavaScript	3	1	2	3	40	60	100
III	**21TCU09**	GE	**Allied-II** Numerical Methods	4	5		3	30	70	100
III	**21TCU10**	SEC	Internship / Industrial Visit / **Mini Project** (Summer Course – 1)	1	-	-		100		100
IV	**21TCUV02**	SEC	VAC-II /Life Skills-II @ / **Language**	1*	2	-	2	50		50**
IV	**21TCUJ01**	SEC	**Aptitude / Placement Training**	Grade*	2		2	50		50**
Total				**26**	**30**	**6**		**330**	**470**	**800**

- denotes Extra credits which are not added with total credits.
- **denotes Extra marks which are not added with total marks.
- **VAC**-Value Added Course(Extra Credit Courses)
- *Grades depends on the marks obtained
- ≠ C-Completed/ NC- Not Completed

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

- Part IV& V not included in total marks and CGPA calculation.
- **I.E**-Internal Exam
- **E.E**-External Exam
- **J**-Job Oriented Course
- **E** Open Elective Papers

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 % (30 marks) in EE and 50 % in Total Marks

List of Papers	
Open Electives	Yoga for Human Excellence Human Health & Hygiene Indian Culture and Heritage Indian Constitution and Political System Consumer Awareness and Protection Professional Ethics and Human Values Human Rights, Women"s Rights& Gender Equality Disaster Management Green Farming Corporate Relations start a Business? Research Methodology and IPR General Studies for Competitive Examinations IIT JAM Examination (for Science only) CUCET Examination
VAC Papers	-
Courses offered by the Departments to other Programmes	Open Source Software Introduction to database and SQL

Syllabus Coordinator

Academic Council – Member Secretary

BOS-Chairman/Chairperson

PRINCIPAL

PRINCIPAL
Hindusthan College of Arts and Science
Hindusthan Gardens, Behind Nava India,
Coimbatore - 641 028.

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

Regulations

1. Internship / Institutional Training / **Mini-Project** is a Summer Course related to the discipline can be permitted to complete during the end of I and III semesters for one week and permitted to submit a report.
2. Project work/Dissertation is considered as a special course involving application of knowledge in solving / analyzing /exploring a real-life situation / difficult problem. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.
3. **Two core courses DSC- XVIII & DSC- XIX are the subjects which are to be related with NPTEL courses.**
4. **If the students who are all completed the NPTEL courses before semester -V, they can avail exemption from appearing exams of DSC- XVIII & DSC- XIX in Fast track scheme.**
5. NSS / NCC/Sports/YRC / SIS / SA is a mandatory as per New Education Policy and the students must attend minimum 150 hours within two years and will be evaluated during the end of second year and also certificate will be issued.

Extension Activities

NSS – National Service Scheme, as enrolled member with the College Unit.

NCC – National Credit Corps, as enrolled member with the College Unit.

SPORTS – Sports & Games Participation with College Team

YRC/RRC–Youth Red Cross / Red Ribbon Club, as enrolled member with the College Unit.

Rotaract Club - Rotaract Club, as enrolled member with the College Unit.

SIS – Special Interest Subjects, as approved by the Academic Council

SA – Social Activity for not less than 50 hours with NGGO like Aram Foundation / Shanthi Social Service / Siruthuli / KulangalPathukappuAmaipu /Old age Home / Nature Foundation / etc.

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

(For the students admitted during the academic year 2021-2022 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. Guidelines for Internet Security/Human Rights/Law of Ethics/Environmental studies (Part IV)

Components	Marks
Two Tests (each 2 hours) of 20 marks each [4 out of 7 descriptive type questions 4 x 5 = 20 Marks]	40
Two assignments (2 x 5)	10
Total	**50**

5. Guidelines for General Awareness (Part IV)

Components	Marks
Two Tests (each 2 hours) of 25 marks each [50 objective type questions 5 0 x 1/2 = 25 Marks]	50

6. Guidelines for Open Elective (Part IV)

No of Activities	Marks
Two Tests (each 3 hours) of 50 marks each [5 out of 8 descriptive type questions 5 x 10 = 50 Marks]	100

7. Value Added Courses / Aptitude/Placement courses:

Components	Marks
Two Test (each 1 hour) of 25 marks each 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 and 7are to be treated as 100% Internal papers.
4. For item No.07, 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 (2x12 = 24 marks)
Answer any **TWO** Questions out of **THREE** Questions
ALL Questions Carry **EQUAL** Marks
(Q.No: 11 to 13)

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 (5x6=30 Marks)
Answer **ALL** Question
ALL Questions Carry **EQUAL** Marks
(Q.No 11 to 15 Either or type)
(One question from each Unit)

SECTION- C (3x10=30 Marks)
Answer any **THREE** Questions out of **FIVE** Questions
ALL Questions carry **EQUAL** Marks
(Q.No 16 to 20) (One question from each Unit)

For UG (Question paper pattern) (Max. 70 marks)

Sec–A (10x1=10marks)	All Questions will be in K1 Level
Sec–B (5x6=30marks) Either or type	4 Questions will be in K1 Level, 3 Questions will be in K2, K3 each
Sec–C (3x10=30marks) Any 3 out of 5 questions	2 Questions will be in K2, 3 Questions will be in K3 & K4 level

Course Code:	21TCU01	Course Title						Batch:	2021-2022 & Onwards
		Operating System						Semester:	I
Hrs/Week:	4	L	5	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- To describe the operating system and their functions.
- To classify the mechanisms of OS to handle processes and threads and their communications.
- To gain knowledge and hardware and software communication.
- To identify Gain the management aspects of real time and mobile operating systems.
- To develop real-time algorithm for task scheduling.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Generalize the basic concepts of operating system	K1
CO2	Illustrate the roles and responsibilities of Windows	K2
CO3	Differentiate the types of File services	K2
CO4	Analyse the operations file systems and file management	K3
CO5	Explain the basic concepts of cloud infrastructure	K4

SYLLABUS

21TCU01	OPERATING SYSTEM	I
Unit No.	**Topics**	**Hours**
Unit I	Windows-Hardware Basics - Operating System Overview & Windows - Windows 10 Essential - Client OS – Windows 10 - Users & Groups; IP Configuration - Client OS – Windows 10 - Tools & Utilities Client OS – Windows 10 , Installation ,Features, Disk Management; File systems-Use Backup and Recovery tools and Discover Windows Apps-searching the web-Monitoring and Tracking system Performance.	**12**
Unit II	Windows Server 2012 Overview–Server roles and migration-Installing Windows server-Delegation of Server Administration- Zone creation & DHCP LAB – Advanced Server Storage Management - Server ADS - Concepts & FSMO - Server OS – Windows Server 2012 Roles & Features Configuring Remote Management-understanding Features on Demand.	**12**
Unit III	Windows Server 2012 –Monitoring & Managing Windows Server 2012 - Group Policy Management - File& Print Services - Storage & Backup Management-DNS-Configuring DNS-DNS record types-Monitoring and Troubleshooting DNS-Multiple server Management-Remote server administration tools	**10**
Unit IV	Windows File system – Windows Data center – VMware –Configuring Dynamic Memory, Smart paging, Resource Metering,-Guest Integration Services-Configuring Virtual Hard disks and Differencing Drives- Managing check points–Network Virtualization using Hyper-V –Configuring MAC Addresses- case studies	**13**
Unit V	Introduction to oracle VM Virtual Box-Creating and Running Virtual Machine-OVF Format- Import and Export the OVF Format-Preparing Cloud Infrastructure Integration- Cloud Profile Manager-Creating New cloud Instances from a custom Image-creating a soft keyboard with custom layout.	**13**

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

Teaching methods:

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

TEXT

1. William Stallings, "Operating systems", Pearson, Prentice Hall,6th edition.
2. Don Poulton & David Camardella," Installing and Configuring Windows server 2012", Pearson IT certification

REFERENCE BOOKS

1. Pramod Chandra P.Bhatt, "An Introduction to Operating Systems", Prentice Hall of India,2003.
2. Andrew S.Tanenbaum,"Modern Operating System", Prentice Hall of India,Second2001.
3. Achyuts.Godbole,"Operating Systems",Tata Mc Graw-Hill Publishing Company Ltd.2005.

MAPPING WITH PROGRAM OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M	M	M	S	M	M	S
CO2	M	S	M	S	M	M	S
CO3	S	M	M	S	S	M	M
CO4	M	M	M	M	M	S	M
CO5	S	M	S	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
S.SASIKALA	Dr.R.RANGARAJ	Co-ordinator Curriculum Development Cell Hindusthan College of Arts & Science, Coimbatore-641 028.

Dr.R.Rangaraj M.Sc.(CS),M.Phil.,Ph.D.,M.Sc(Psy). Professor & Head, PG & Research Dept. of Computer Science, Coimbatore - 641 028.

Course Code:	21TCU02	Course Title						Batch:	2021-2022 & Onwards
		PRACTICAL I: INTRODUCTION TO WORKSHEETS						Semester:	I
Hrs/Week:	4	L		T	4	P		Credits:	4

COURSE OBJECTIVE

- To develop essential skills in Microsoft Excel
- To classify the basic concepts of worksheets
- To explore essential skills in reporting on a particular task using graphs.
- It provides hands-on training for mathematical calculations
- To simulate the sorting and formatting skills

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Explain the basic concepts of Microsoft Excel	K1
CO2	Analyse the critical thinking skills to design and create spreadsheets.	K4
CO3	Classify the business requirements using spreadsheet vocabulary	K3
CO4	Calculate mathematical formulas	K2
CO5	Explain the working of Formatting and reporting	K3

SYLLABUS

21TCU02	PRACTICAL I: INTRODUCTION TO WORKSHEETS	II
Ex.No.	**Program List**	**Hours**
1	Create an Excel application for Table management	4
2	Deploy a Customized excel app for validation and custom controls	4
3	Create a simple program for Nesting and Functions in excel	5
4	Demonstrate an application for importing External Data in College management system	5
5	Write a simple program for applying Data table in Excel application	5
6	Create a simple program for demonstrate pivot table in Excel	5
7	Create a desktop application with visual basic properties for registration form	5
8	Demonstrate an application for Excel data into Visual basic application	5
9	Generate a ADO, DAO Application in visual basic	5
10	Create a simple application for college management system with ADO properties in Visual basic	5

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

Teaching methods:

PowerPoint Projection through LCD, Demonstration.

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M	S	M	M	S	S	M
CO2	S	M	M	S	S	S	M
CO3	M	S	S	M	M	M	M
CO4	M	M	M	S	M	S	M
CO5	S	S	S	M	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
K.S.SENTHILKUMAR	Dr.R.RANGARAJ	

Dr.R.Rangaraj
M.Sc.(CS),M.Phil.,Ph.D.,M.Sc(Psy).
Professor & Head,
PG & Research Dept. of Computer Science,
Hindusthan College of Arts & Science,
Coimbatore - 641 028.

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

Course Code:	21TCU03	Course Title						Batch:	2021-2022 & Onwards
		PRACTICAL II :PROGRAMMING USING OPERATING SYSTEM						Semester:	I
Hrs/Week:	4	L		T	4	P		Credits:	2

COURSE OBJECTIVE

- To classify the computer system in an efficient manner.
- To explain the installation of the Operating system with several configuration
- Implement operating system functions.
- To examine the Hardware and software Devices
- To describe the configuring system components

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Apply the concepts of Operating system	K1
CO2	Gain knowledge operating system concepts that includes architecture	K2
CO3	Connect the components and management aspects of concurrency	K3
CO4	Prioritize the important computer system resources	K3
CO5	Understand the concepts of management policies and algorithms.	K4

SYLLABUS

21TCU03	PRACTICAL II : PROGRAMMING USING OPERATING SYSTEM	II
Ex.No.	**Program List**	**Hours**
1	Creating and managing deployment images in VMware	4
2	Implement Monitoring, and maintaining virtual machine installations in VMWARE	4
3	Installing and Configuring Windows 7	5
4	Installing and Configuring Windows server 2012	5
5	Installing and Configuring ADDS and DNS	5
6	Creating and Managing objects in ADDS	5
7	Creating and Managing resources	5
8	Creating and Managing Group Policy in ADDS	5
9	Installing, Configuring and Managing DHCP	5
10	Installing, Configuring and Managing DNS	5

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

Teaching methods: PowerPoint Projection through LCD, Demonstration.

MAPPING WITH PROGRAM OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M	S	M	S	S	S	M
CO2	S	S	M	S	S	S	S
CO3	S	M	M	S	S	S	S
CO4	M	M	M	M	M	M	M
CO5	L	S	S	S	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
S.SASIKALA	Dr.R.RANGARAJ	

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

Dr.R.Rangaraj
M.Sc.(CS),M.Phil.,Ph.D.,M.Sc(Psy).,
Professor & Head,
PG & Research Dept. of Computer Science,
Hindusthan College of Arts & Science,
Coimbatore - 641 028.

Course Code:	21TCU05	Course Title						Batch:	2021-2022 & Onwards
		Computer Networks						Semester:	II
Hrs/Week:	4	L	4	T		P		Credits:	4

COURSE OBJECTIVE:

- To understand about advanced networking concepts
- To analyze simple system communication
- To Discuss about simple network connections
- To analyze about working of routing algorithms
- To discuss about LAN connections with bridges and hubs.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Discuss the key technological components of the computer network	K1
CO2	Discover how computer networks are organized with the concept of layered approach.	K2
CO3	Discover how routing protocols work	K3
CO4	Illustrate a simple LAN with hubs, bridges and switches.	K3
CO5	Explain the layers of computer networks	K4

SYLLABUS

21TCU05	COMPUTER NETWORKS	Sem:II
Unit No.	**Topics**	**Hours**
I	Introduction To Computer Networks: Introduction: Definition of a Computer Network; What is a Network?. Components of a computer network: Use of Computer networks; Networks for companies, Networks for people, Social Issues: Classification of networks; Based on transmission technology, Based on the scale, Local area networks, Metropolitan area networks, Wide area networks, Wireless networks	12
II	Network Software & Network Standardization: Introduction: Networks Software; Protocol hierarchy, Design issues for the layers, Merits and De - merits of Layered Architecture, Service Primitives: Reference models; The OSI Reference Model, The TCP/IP Reference Model, Comparison of the OSI & the TCP/IP Reference Models. Data transmission modes; Serial & Parallel, Simplex, Half duplex & full duplex, Synchronous & Asynchronous transmission.	12
III	Physical Layer: Introduction: Network topologies; Linear Bus Topology, Ring Topology, Star Topology, Hierarchical or Tree Topology, Topology Comparison, Considerations when choosing a Topology: Switching; Circuit switching, Message switching, Packet switching. Comparison of switching techniques: Multiplexing; FDM – Frequency division multiplexing, WDM – Wavelength division multiplexing, TDM – Time division multiplexing	12
IV	Data Link Layer: Introduction; Goal of DLL: Design issues of DLL; Services provided to the Network layer, Framing, Error control, Flow control, Link Management, ARQ strategies: Error Detection and correction; Parity bits,, Single bit error correction. Error Detection or Cyclic Redundant Code (CRC): Data Link layer protocols; Transmission control protocols, HDLC	12
V	Principles of Routing; Types of routing algorithms, Classes of routing algorithms, Properties of routing algorithms, optimality principle. Routing algorithms; shortest path algorithm, Flooding, Distance vector routing, Hierarchical routing, Link state routing, Transport Protocols; TCP protocol, UDP protocol: Networking Devices: Introduction; Goal of networking devices: Wireless Access Point (WAPs).	12

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. Andrew S Tanenbaum,"Computer Networks", Fourth Edition, PHI, 2002.

REFERENCE BOOKS

1. David J.Wetherall, Andrew S.Tanenbaum, "Computer Networks", 5th Edition, Pearson Education, 2012.
2. Behrouz A. Forouzan, "Data Communication and Networking", 4th Edition, Tata McGraw Hill, 2007.
3. SilviuAngelescu, "CCNA Certification All-In-One for Dummies", Wiley Publishing. Inc.

WEB RESOURCES

Web Link: < 1. https://www.geeksforgeeks.org/basics-computer-networking/

2. https://www.cisco.com/c/en_in/solutions/small-business/resourcecenter/networking/networking-basics.html>

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	M	M
CO2	S	S	S	S	M	S	S
CO3	S	S	S	S	M	S	M
CO4	S	M	S	M	M	S	M
CO5	M	S	M	M	S	M	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
V.DEEPA	DR.R.RANGARAJ	

Dr.R.Rangaraj
M.Sc.(CS),M.Phil.,Ph.D.,M.Sc(Psy)
Professor & Head,
PG & Research Dept. of Computer Science,
Hindusthan College of Arts & Science,
Coimbatore - 641 028.

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

Course Code:	21TCU06	Course Title						Batch:	2021-2022 & Onwards
		Data Structures and Algorithm						Semester:	II
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- To understand the concept of fundamental data structure.
- To design and implement various data structure algorithm for developing applications.
- To explain the types of software models
- To illustrate the importance of sorting
- To identify the types of trees and examine the designing methods

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Illustrate the fundamental concepts of data structures.	K1
CO2	Classify the concepts of trees and graphs.	K2
CO3	Analyze and experiment concepts of sorting.	K3
CO4	Apply and classify concepts of merging and Files.	K4
CO5	Discuss different type of database models	K4

SYLLABUS

21TCU06	DATA STRUCTURES AND ALGORITHM	II
Unit No.	**Topics**	**Hours**
I	**Introduction:** Introduction to Algorithm –Arrays -Stacks and Queues-Fundamentals-**Linked List:** -Singly Linked List – doubly linked list and Dynamic-Sparse Matrices- Polynomial addition.	9
II	**Trees:** Binary tree representations – Binary Tree Traversal – Threaded Binary Trees -Counting binary trees. **Graphs:** Terminology and representations - Traversals, Connected Components.	10
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.	10
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	10
V	**Index Techniques:** -Hashed Index-tree indexing-B trees. File organizations: Sequential organizations-Random Organization- Linked Organization-Inverted Files-Storage Management.	9

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. Ellis Horowiz, Sartaj Sahni and Sangu thevar, "Fundamentals of Data Structure", Galgotia Publications, 1ST Edition, 1981.

REFERENCE BOOKS

1.Shmuel Tomi Klein," Basic Concepts in Data Structures", Cambridge University, 1ST Edition, 2016.

2.Ellis Horowitz, Sartaj Sahni, Susan Anderson Freed, "Fundamentals Of Data Structures In C", Universities Press (India) Limited, 2017.

3.Mark Allen Weiss," Data Structure in Algorithm analysis in C", Pearson Education, Second Edition, Sixteenth Impression 2014.

WEB RESOURCES

Web Link:

https://lpuguidecom.files.wordpress.com/2017/04/fundamentals-of-data-structures-ellis-horowitz-sartaj-sahni.pdf

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	M	L	L	S	M
CO2	M	S	L	M	M	S	S
CO3	S	M	S	S	M	M	S
CO4	S	S	S	M	S	S	S
CO5	M	S	S	S	M	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
SANGEETHA.V	DR.R.RANGARAJ	

Dr.R.Rangaraj
M.Sc.(CS),M.Phil.,Ph.D.,M.Sc.(Psy).
Professor & Head,
PG & Research Dept. of Computer Science,
Hindusthan College of Arts & Science,
Coimbatore - 641 028.

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

Course Code:	21TCU07	Course Title						Batch:	2021-2022 & Onwards
		Practical -III : Programming using Computer Networks						Semester:	II
Hrs/Week:	4	L		T	4	P		Credits:	2

COURSE OBJECTIVES:

- To implement important computer network protocols
- To analyze various routing algorithms.
- To know the concept of data transfer between nodes.
- To analyze routing time slots.
- To implement simple data communication.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identify various network commands	K1
CO2	Illustrate simulation tools	K2
CO3	Evaluate various network protocols	K3
CO4	Evaluate the challenges in building networks and solutions to those.	K4
CO5	Implement simple data communication	K4

SYLLABUS

21TCU07	PRACTICAL III : : PROGRAMMING USING COMPUTER NETWORKS	II
Ex.No.	**Program List**	**Hours**
1	Simulate cyclic Redundancy check (CRC) error detection algorithm for noisy channel.	4
2	Simulate & implement STOP & WAIT Protocol for noisy channel.	4
3	Simulate & implement go back n sliding window protocol.	4
4	Simulate & implement selective repeat sliding window protocol.	4
5	Simulate & implement Dijkstra algorithm for shortest path routing.	4
6	Write a program for distance vector algorithm to find suitable path for transmission.	4
7	Write a suitable program to Implement Link state routing algorithm.	5
8	Using TCP/IP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.	5
9	Write a program for simple RSA algorithm to encrypt and decrypt the data.	5
10	Write a program for congestion control using Leaky bucket algorithm.	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

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	M	M	M
CO2	S	S	S	S	M	S	S
CO3	S	S	M	M	S	M	S
CO4	S	S	S	S	S	S	S
CO5	M	M	S	M	M	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
V.DEEPA	DR.R.RANGARAJ	

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

Dr.R.Rangaraj
M.Sc.(CS),M.Phil.,Ph.D.,M.
Professor & Head,
PG & Research Dept. of Computer Science,
Hindusthan College of Arts & Science,
Coimbatore - 641 028.

Course Code:	21TCU08	PRACTICAL – IV: PROGRAMMING USING HTML,CSS AND JAVASCRIPT						Batch:	2021-2022 &Onwards
								Semester:	II
Hrs/Week:	3	L	1	T	2	P		Credits:	3

COURSE OBJECTIVE

- This course covers HTML, CSS and Java Script for creating dynamic client-side web pages.
- To identify the tags used in HTML
- To impart practical knowledge in web design
- To create sophisticated DHTML documents incorporate with CSS
- To validate using Javascript

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understand and identify the tags used in HTML document.	K1
CO2	Apply the Cascading Style Sheet to web pages.	K2
CO3	Comprehend the CSS and HTML to forms and validations	K3
CO4	Demonstrate the client-side scripting using Java script.	K4
CO5	Deploy the DHTML with CSS	K4

SYLLABUS

21TCU08	PRACTICAL – IV: PROGRAMMING USING HTML,CSS AND JAVASCRIPT	II
Ex.No.	**Program List**	**Hours**
1	Practice use of image, video and sound in HTML documents.	3
2	Designing of web pages- Document layout, list and tables.	3
3	Practicing Hyperlink of web pages, working with frames.	3
4	Use of Form tags (Designing a registration form) <form>, <option>, <input>, Single and Multiple lines text fields, Password Field, Radio Button, Checkboxes, submit button, Select element, Text Area.	3
5	Write CSS script by deploying DHTML	3
6	Acquaintance with creating style sheet, CSS properties and styling.	3
7	Write a Program for computing student mark list using JavaScript	3
8	Program to implement text Editor using Java script	3
9	Validate a form using JavaScript.	3
10	Animate the background color of a document and Text using JavaScript.	3
11	Develop a Javascript program to check whether a person is eligible to vote.	3
12	Design a Javascript web Page to convert Dollars to Rupees.	3

Teaching methods: PowerPoint Projection through LCD, Demonstration.

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M	S	S	S	M	M	M
CO2	S	S	S	S	M	S	S
CO3	S	S	M	M	M	M	S
CO4	S	S	S	S	S	S	S
CO5	M	M	S	M	M	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
MS.S.LAKSHMIPRIYA	DR.R.RANGARAJ	Co-ordinator

Dr.R.Rangaraj
M.Sc.(CS),M.Phil.,Ph.D.,M.Sc.(Psy),
Professor & Head,
PG & Research Dept. of Computer Science,
Hindusthan College of Arts & Science,
Coimbatore - 641 028.

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