LEARNING OUTCOMES–BASED CURRICULUM FRAMEWORK (LOCF)

in the

UNDERGRADUATE PROGRAMME

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2021 - 2022 AND ONWARDS

HINDUSTHAN EDUCATIONAL AND CHARITABLE TRUST

HICAS

HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)
(Affiliated to Bharathiar University and Accredited by NAAC)
COIMBATORE-641028
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PREAMBLE

Learning Outcome Based Curriculum Framework for Undergraduate education in Bachelor of Science in Information Technology

The intent of thisprogramme is to produce graduates who are able to have higher-level thinking and creativity through Information and Communication Technology.

VISION

"To become a globally recognized centre of excellence in the field of Information Technology, providing technology excellence that advances learning, teaching, research to produce budding IT professionals, researchers, innovators and entrepreneurs."

MISSION

The Department of Information Technology (IT) strives to provide quality and competency-based education and research activities through necessary infrastructure and fine-tune the younger generation to congregate the challenges ahead with courage.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Under Graduates of B.Sc. Information Technology program will,

PEO1 - Apply the knowledge of mathematics, science and computing in the core Information Technology.

PEO2 - Initiate life-long learning to acquire new technologies and adapt to the changing needs of IT industry.

PEO3 - Enable students to develop communication, teamwork and leadership skills necessary to build their career.

PEO4- Able to adapt innovative practices and contribute towards research and technological development in the field of Information Technology through Total Quality Education

PEO5 - Exhibit professional excellence, ethics, soft skills, leadership qualities as a responsible citizen with societal interest.

PROGRAM OUTCOMES (PO)

PO1 - Apply the knowledge of mathematics, science and electronic hardware to provide solutions for all kinds of problems in the respective domain.

PO2 - Identify and analyze the complex and real world problems based on the knowledge acquired in the core field.

PO3 - Design an innovative interface method to bring the complete solutions using statistical methods and visualize the results for decision making.

PO4 - Apply the modern tools and technologies to formulate, design, implement and demonstrate a self-designed solution.

PO5 - Apply the scientific knowledge and to provide innovative ideas to shape our society in a better way.

PO6 - Identify and develop solutions to environmental related problems and to enhance the people's quality of life.

PO7 - Understand the societal and ethical responsibilities of the professionals in their respective discipline.

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO1: Apply the knowledge of computing and mathematics appropriate to the discipline.

PSO2: Apply current techniques, skills, and tools necessary for computing practice and to integrate IT-based solutions into the user environment effectively.

PSO3: Use design and development principles in the construction of software systems of varying complexity.

PSO4: An ability to use knowledge in various domains to identify real world problems and hence to provide solution to new ideas and innovations.

PSO5: Design, document and develop robust applications by considering human, financial and environmental factors using cutting edge technologies to address individual and organizational needs.

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. **Branch: INFORMATION TECHNOLOGY**

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	21ITU01	DSC	**Core-I-** Programming with C	4	4		3	30	70	100
III	21ITU02	DSC	**Track – 1 - Core -II**	4	4		3	30	70	100
	21ITMU02		**Track –2 - Core -II**					50	50	
III	21ITU03	DSC	**Core –III - Practical – I** : Programming using C	2		4	3	40	60	100
III	21ITU04	GE	**Allied-I** Mathematics for Computing	4	5		3	30	70	100
IV	21ITUE01	AEE	Open Elective – I	2	3		3	100	-	100
IV	21GSU01	AECC	**Skill Based Subject** Environmental Studies	1	2		2	50		50
IV	21ITUV01	SEC	VAC – I / Life Skills-I @ / Communicative English	1*	2		2	50	-	50**
IV	-	SEC	**SDR – Student 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**	**32**	**4**	**Track 1**	**340**	**410**	**750**
							Track 2	**360**	**390**	
			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	21ITU05	DSC	**Track – 1 - Core -IV**	4	4		3	30	70	100
	21ITMU05		**Track – 2 - Core -IV**					50	50	
III	21ITU06	DSC	**Core -V -** Data Structures and Algorithms	4	4		3	30	70	100

III	21ITU07	DSC	**Core -VI** – Software Engineering	3	3		3	30	70	100
III	21ITU08	DSC	**Core -VII - Practical – II** : Data Structures using PYTHON	2		4	3	40	60	100
III	21ITU09	GE	**Allied-II** Numerical Methods	4	5		3	30	70	100
III	21ITU10	SEC	Internship / Industrial Visit / **Mini Project**	1	-	-		100		100
IV	21ITUV02	SEC	VAC – II/ Life Skills-II @ / **Language**	1*	2		2	50	-	50**
IV	21ITUJ01	SEC	**Aptitude / Placement Training**	Grade*	2		2	50		50**
Total				**26**	**36**	**4**	**Track 1**	**320**	**480**	**800**
							Track 2	**340**	**460**	
			Semester – III							
III	21ITU11	DSC	**Core -VIII -** Programming with JAVA	5	5		3	30	70	100
III	21ITU12	DSC	**Track – 1 – Core - IX**	5	5		3	30	70	100
	21ITMU12		**Track – 2 - Core – IX**					50	50	
III	21ITU13	DSC	**Core – X** – PC Architecture	3	3		3	30	70	100
III	21ITU14	DSC	**Core-XI - Practical – III:** Programming using JAVA	3		5	3	40	60	100
III	21ITU15	DSC	**Core -XII - Practical – IV :** Mobile Application Development	3		5	3	40	60	100
III	21ITU16	GE	**Allied-III** Operation Research	4	5		3	30	70	100
IV	21ITUE02	AEE	Open Elective-II	2	3		3	100		100
IV	21GSU02	AECC	**Skill Based Subject** Human Rights	1	2		2	50		50
IV	21ITUJ02	SEC	**Aptitude / Placement Training**	Grade*	2		2	50		50**
IV	21ITUJ03	SEC	**Online Course**	-	1			-	-	C/NC≠
Total				**26**	**26**	**10**	**Track 1**	**350**	**400**	**750**
							Track 2	**370**	**380**	
			Semester – IV							
III	21ITU17	DSC	**Track – 1 - Core -XIII**	5	5		3	30	70	100
	21ITMU17		**Track – 2 - Core -XIII**					50	50	
III	21ITU18	DSC	**Core-XIV** - Network Security and Cryptography)	4	4		3	30	70	100

III	21ITU19	DSC	**Core -XV** - Web Based Office Applications ##	4	4		3				100
			Theory					30	70	100	
			Practical					40	60	100	
III	21ITU20	DSC	**Core-XVI - Practical –V** - RDBMS Applications	2		4	3	40	60	100	
III	21ITU21	DSC	**Core -XVII - Practical – VI** - Network Security and Cryptography	2		4	3	40	60	100	
III	21ITU22	GE	**Allied-IV** Business Accounting	4	5		3	30	70	100	
III	21ITU23	DSE	Electives / **DSE-I**	3	3		3	30	70	100	
III	21ITU24	SEC	Internship / Institutional Training / **Mini-Project**	1	-		-	100	-	100	
IV	21ITUV03	ACC	VAC–III	1*	2		2	50	-	50**	
IV	21ITUJ04	SEC	**Aptitude / Placement Training**	Grade*	2		2	50		50**	
IV	21ITUJ05	SEC	**Online Course**		1		-	-	-	C/NC≠	
IV	21GSU03	AECC	**Skill Based Subject** Internet Security	1	2		2	50	-	50	
V	21GSU04	AECC	Extension Activities NSS/NCC/SPORTS/YRC/SIS/SA#	2	-		-		-	C/NC≠	
Total				**28**	**28**	**8**	**Track 1**	**380**	**470**	**850**	
							Track 2	**400**	**450**		
			Semester – V								
III	21ITU25	DSC	**Core-XVIII** - .NET Programming	5	5		3	30	70	100	
III	21ITU26	DSC	**Track – 1 - Core -XIX**	4	4		3	30	70	100	
	21ITMU26		**Track – 2 - Core -XIX**					50	50		
III	21ITU27	DSC	**Core -XX** - Internet of Things ##	5	5		3				100
			Theory					**30**	**70**	100	
			Practical					**40**	**60**	100	
III	21ITU28	DSC	**Core -XXI** - Practical VII : Programming using .NET	3		5	3	40	60	100	
III	21ITU29	DSC	**Track -1- Core -XXII**	3		5	3	40	60	100	
	21ITMU29		**Track- 2- Core – XXII**		5			50	50		
III	21ITU30	DSE	Electives / **DSE-II**	3	3		3	30	70	100	
IV	21ITUE03	AEE	Open Elective-III	2	3		3	100	-	100	
IV	21GSU05	AECC	**Skill Based Subject** General Awareness	1	1		2	50	-	50	
IV	21GSU06	AECC	**Skill Based Subject** Law of Ethics	1	-		2	50	-	50	
IV	21ITUV04	ACC	VAC–IV	1*	2		2	50	-	50**	
IV	21ITUJ06	SEC	**Aptitude / Placement Training**	Grade*	2		2	50	-	50**	
IV	21ITUJ07	SEC	**Online Course**	-	1		-	-	-	C/NC≠	

IV	21ITUJ08	SEC	**SDR- Student Development Report**	2*	-	-	-	-	-	-
Total				**27**	**31**	**10**	**Track 1**	**400**	**400**	**800**
							Track 2	**440**	**360**	
			Semester – VI							
III	21ITU31	DSE	Electives / **DSE-III**	4	5		3	30	70	100
III	21ITU32	DSE	Electives/**DSE-IV**	4	5		3	30	70	100
III	21ITU33	SEC	**Project Work /Student Research / Paper**	5	5			40	60	100
III	21ITU34	DSC	**Core-XXIII Self-Study Course**	3	-	-	3	30	70	100
Total				**16**	**15**			**130**	**270**	**400**
Grand Total										

- *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%
- For UG : 35 % (25 marks) in EE and 40 % in Total Marks

ABSTRACT FOR SCHEME OF EXAMINATION

(For the candidates admitted during the academic year 2021 - 2022 and onwards)

Part	Course	Papers	Credit	Total Credits	Marks	Total Marks
Part I	Languages/ **(MIL)**	2	4	**8**	100	**200**
Part II	English/**AECC-I**	2	4	**8**	100	**200**
Part III	Core /**DSC**	23	2/3/4/5	**82**	100	**2300**
	Allied /**GE**	4	4	**16**	100	**400**
	Electives/**DSE**	4	3/4	**14**	100	**400**
	Project **SEC**	1	5	**5**	100	**100**
	Internship/Institutional Training/Mini-Project (Summer Courses #)	*2*	*1*	**2**	*100*	**200**
Part IV	Open Electives /**AEE**	3	2	**6**	100	**300**
	AECC –EVS/ HR/IS/GA/LE	5	1	**5**	50	**250**
	Job Oriented Course / Value Added Course	*2*	*1*	*2**	*50*	***100****
	Skill Based/ Placement/Aptitude **SEC**	4	Grade	Grade	50	**200****
	Online courses / **SEC**	3	C/NC	C/NC	-	-
	Life Skills / **SEC**	2	1	2*	50	**100****
	SDR- Student Development Report	*1*	*2*	*2**	-	-
Part V	Extension Activities NSS / NCC/Sports/YRC / SIS / SA - **AECC**	1	C/NC	**2**	-	-
	Total			**148 (6 Extra Credits)**		**4350 + (400**)**

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 EqualityDisaster 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**	a) Digital Marketing b) Network Reconnaissance c) VM Ware d) Animation and its Technique e) Multimedia and its Applications f) Network Administration and Trouble shooting g) Project Management h) Mongo DB i) Block Chain Technology j) E-Learning

Track 1 – Regular

Track 2–Industry Integrated (Microsoft and HP)

Semester	Track 1		Track 2	
	Sub. Code	Title of the Paper	Sub. Code	Title of the Paper
I	21ITU02	Digital Fundamentals and Architecture	21ITMU02	Linux Administration with Scripting
II	21ITU05	Programming with PYTHON	21ITMU05	Introduction to Programming using Python
III	21ITU12	Operating System in Practice	21ITMU12	Big Data and Data Science – R Programming
IV	21ITU17	Relational Database Management System	21ITMU17	Database Administration Fundamentals
V	21ITU26	Computer Vision and Image Processing – Fundamentals and Applications	21ITMU26	Machine Learning
V	21ITU29	Practical – VIII : Computer Vision with OpenCV and PYTHON	21ITMU29	Artificial Intelligence

List of Elective Papers/ DSE (Can choose any one of the paper as electives)		
	Course Code	Title
Electives/ **DSE-I**	21ITU23A	**Elective – I :**Compiler Design
	21ITU23B	**Elective – I :**Distributed Computing
Electives/ **DSE-II**	21ITU30A	**Elective – II :**Business Intelligence
	21ITU30B	**Elective – II :**Mobile Computing
Electives/ **DSE-III**	21ITU31A	**Elective – III :**Big Data Analytics
	21ITU31B	**Elective – III :**M- Commerce
	21ITU31C	**Elective – III :**Social Media Mining
Electives/ **DSE-IV**	21ITU32A	**Elective – IV :**Cloud Computing
	21ITU32B	**Elective – IV :**Multimedia Techniques
	21ITU32C	**Elective – IV :**Principles of Geographic Information System

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Regulations

1. Internship / Institutional Training / **Mini-Project** is related to the discipline can be permitted to complete during the end of I and III semesters for minimum seven days each and permitted to submit a report.

Internship / Institutional Training	Not more than seven days
Mini project	Depends on the departments

2. Project work is considered as a special course involving application of knowledge in problem solving / analyzing /exploring a real-life situation. A Project work may be given in lieu of a discipline specific elective paper.

3. **FAST TRACK SYSTEM:**

Two core courses DSE- III & DSE- IV are the subjects which are to be related with NPTEL courses.

The Students have the options of taking two subjects of the sixth semester of **B.Sc IT, M.Sc IT & B.Sc Data Science and Analytics programme** through NPTEL / Swayam portal from the list given or offered by NPTEL and approved by the department for which credit transfer is permitted. The students should inform the department prior to the registration of the course and get due approval for the same. If the student completes these courses before the start of the sixth semester, the student can be considered for a fast track programme, and do the project work alone during the sixth semester apart from the self-study paper. Once the student submits the successful course completion credentials as required by the college for the NPTEL/SWAYAM online courses, then the credit transfer will be considered for qualifying the degree.

4. **If the students who are all completed the NPTEL courses before Semester –V for UG, Semester –III for PG they can avail exemption from appearing exams of DSE- III & DSE- IV in Fast track scheme.**
5. NSS / NCC/Sports/YRC / SIS / SA is mandatory for all students as per New Education Policy and the students must attend the allocated hours within two years and complete the programme. They will be evaluated during the end of second year (Fourth Semester) and also a certificate will be issued.
6. SDR – Student Development Report to be received by the department from the students till end of the fifth semester. (Evidences of Curriculum activities and Co-curriculum activities)
7. For online courses minimum of 2 certificates in any of the online platform is mandatory.

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 / Kulangal Pathukappu Amaipu /Old age Home / Nature Foundation / etc.

SEC-Skill Enhancement Course (Life Skills/ Aptitude/Placement Training/online course/Internship/SDR)

ECC- Ability Enhancement Compulsory Course (Environmental Studies/ Human Rights/Internet Security/ General Awareness/ Law of Ethics/Extension Activities)

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 Report Viva-voce	25 50 25	- 50 50	I.E a)Attendance b)Review/Work diary*	 10 30	 40
Total	**100**	**100**	E.E** a) Final report b)Viva-voce	40 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**

Regulation for Theory + Practical Paper(s) :

Internal :

Theory components will be considered for **Internal 30 Marks** and converted to **15 Marks.**
Practical components will be considered for **Internal 40 Marks** and converted to **15 Marks.**

External :

Theory components will be considered for **External 70 Marks** and converted to **35 Marks.**
Practical components will be considered for **External60 Marks** and converted to **35 Marks.**

Track-2 Industry Integrated with Microsoft & HP

1. **50-50 Pattern Policy:**

   a) **50 Marks Internals**

Components	Marks
Class Assignment#	25
Class Attentiveness$	15
Class Attendance*	10
TOTAL	50

***Split-up of Attendance Marks**

- Below 75 = 0 mark
- Above 75-80 - 6 marks
- Above 80-85 - 7 marks
- Above 85-90 - 8 marks
- Above 90-95 - 9 marks
- Above 95-100 -10 marks

\# - Minimum 10 Assignments

$ - Interactive Session, Seminar participation, Attentiveness in Class

Components will be considered for Internal 50 Marks and divided by 2 and **Converted to 25 marks.**

   b) **Continuous Assessment Test:**

   i. Tests will be conducted under 50 marks Pattern
   ii. Objective questions 50 x 1 mark each = 50 Marks
   iii. Best of 2 Continuous Assessment Test will be considered for Internal 50 Marks and divided by 2 and **Converted to 25 marks.**

(a+ b = 25+25= 50 marks)

2. **50 Marks Externals**
   - Online Exam with objective Pattern will be conducted
   - Question Pattern will be objective with scenarios
   - Approximately : 38 to 50 questions carry 100 marks = 100/2 = **50 Marks**
3. **Final Exam (Global Certification Exam)**
   - 50-50 Pattern will be followed
   - Online Exam will be conducted for remaining 50 Marks
   - Course completion Certificate will be issued for candidates securing more than 50% marks
   - Global Certification will be issued for candidates securing more than 70% marks
   - In case of Failure a candidate can take the exam after 24 hours after getting the results.

Course Code:	21ITU01	Course Title						Batch:	2021-2022 & onwards
		Programming with C						Semester:	I
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVES

- To impart adequate knowledge on the need of programming languages and problem solving techniques.
- To develop an in-depth understanding of functional and logical concepts of C Programming.
- To familiarize the basic syntax and semantics of C Language.
- To develop programs using pre-processor directives and Files.
- Introduces the more advanced features of the C language.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recollect various programming constructs and to develop C programs.	K1
CO2	Understand the fundamentals of C programming	K2
CO3	Choose the right data representation formats based on the requirements of the problem.	K3
CO4	Compare different Operations on arrays, functions, pointers, structures, unions and files.	K4
CO5	Illustrate the concepts of various data structures.	K3
K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze		

SYLLABUS

21ITU01	Programming with C	Sem: I
Unit No.	**Topics**	**Hours**
I	**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.	10
II	**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.	10
III	**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.	10
IV	**Structure and Union**: Introduction- Defining a Structures- Declaring StructureVariables-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.	9
V	**Dynamic Memory Allocation and Linked List:** Introduction-Allocating a block of memory-Multiple block of memory-Altering the size of block-Concept of linked list-Advantage-Types-Pointers revisited-Creating linked list-Inserting-Deleting-Application of linked list.	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 BOOK

Text Book:

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

REFERENCE BOOKS

1.E.Balaguruswami, " Programming in ANSI C", TMH 21st reprint 1998
2 .Y.Kanetkar, "Let us C", BPB Publications, 15thEdition 2017 revised.
3. Brian W Kwenighan, Dennis M.Ritchie, "The C Programming Language", Prentice Hall Software Series 2nd Edition

WEB RESOURCES

1. https://www.tutorialspoint.com/cprogramming/index.html
2. https://www.geeksforgeeks.org/c-language-set-1-introduction/
3. https://fresh2refresh.com/c-programming/

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	L	M	M	L
CO2	S	S	S	L	M	M	L
CO3	S	S	S	M	S	L	L
CO4	S	S	S	M	S	M	L
CO5	S	S	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 Co-coordinator
Mr.M.Karthi	Dr.V.Saravanan	

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

Course Code:	21ITU02	Course Title						Batch:	2021-2022 & onwards
		Digital Fundamentals And Architecture						Semester:	I
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVES

- 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.
- Inculcate knowledge on multiprocessor concepts

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
CO5	Discuss the concepts of multiprocessor.	K2
K1- Remember, K2-Understand, K3-Apply, K4-Analyze		

SYLLABUS

21ITU02	Digital Fundamentals And Architecture	Sem: I
Unit No.	**Topics**	**Hours**
I	**Number System and codes:** Introduction - Number System - Floating Point Representation ofNumbers - Arithmetic Operation - 1's and 2's Complements: 1's Complement Subtraction - 2's Complement Subtraction. 9's Complement - 10's Complement - BCD.	9
II	**Boolean algebra, Minimization Techniques and Logic Gates**: Introduction - Boolean Logic Operations - Basic Laws of Boolean Algebra – Demorgan's Theorems - Sum of Products and Product of Sums - Karnaugh Map. Logic Gates: OR Gate - AND Gate - NOT Gate - NAND Gate - NOR Gate.	10
III	**Arithmetic Circuitsand Flip Flops:** Introduction - Half Adder - Full Adder, Half Subtractor - Full Subtractor - Multiplexers - Demultiplexers - Decoders. Flip Flops: Types of Flip Flops - S-R Flip Flop - JK Flip Flop - T Flip Flop. Registers: Shift registers.	10
IV	**Input -Output Organization**: Input-Output Interface - Asynchronous Data Transfer - Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access - Input - Output Processor: CPU-IOP Communication.	10
V	**Memory Organization:** Memory Hierarchy-Main Memory - Associative Memory - Cache Memory - Virtual Memory: Address Space and Memory Space- Address mapping using Pages- Associative memory- Page Table. **Self-Study :** Intel 8086 Microprocessor	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

Text Books:

1. Salivahanan S and Arivazhagan S, "Digital Circuits and Design", Vikas Publishing House Pvt Ltd, Third Edition. (UNIT - I, II, III)

2. Morris Mano M, "Computer System Architecture", PHI.(UNIT - IV,V).

REFERENCE BOOKS

1. *BadriRam, "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.*

WEB RESOURCES

1. https://www.javatpoint.com/computer-organization-and-architecture-tutorial
2. https://www.tutorialspoint.com/computer_logical_organization/index.htm
3. https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	M	S	M	S	M
CO2	S	S	S	S	S	S	S
CO3	S	S	S	M	M	S	S
CO4	S	S	M	M	M	M	S
CO5	S	S	S	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 Co-coordinator
Gowri.A	Dr.V.Saravanan	

Course Code:	21ITMU02	Course Title						Batch:	2021-2022 & onwards
		Linux Administration with Scripting						Semester:	I
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVES

- To impart knowledge and skillson Installation, Configuration, File System and Basic Commands.
- To teach principles of operating system including File handling utilities, permissions, Process utilities, Disk utilities, Networking Commands, Scripts and filters.
- To understand and make effective use of Linux utilities and shell scripting language to solve problems
- To facilitate students in understanding semaphore and shared memory.
- To understand and make effective use of BASH Scripts

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Examine the fundamental concepts of open-source operating system Linux	K1
CO2	Summarize and apply various Linux based administrationtasks	K2
CO3	Explain the basic commands of Linux operating system and can develop shell scripts	K2
CO4	Develop Network Programming that allows applications to make efficient use of resources available on different machines in a network.	K3
CO5	Analyze and execute BASH scripts	K4
K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze		

SYLLABUS

21ITMU02	Linux Administration with Scripting	Sem: I
Unit No.	**Topics**	**Hours**
I	Linux Basics : Access the command line – Log in to a Linux system and run simple commands using the Shell – Manage files from the command line – copy,move,create,delete and organize files from the bash shell prompt – Get help in Red Hat Enterprise Linux – Resolve problems by using online help systems and Red Hat support utilities – Create, View and edit text files – Create, view and edit text files from command output or in an editor – Manage local Linux users and groups – Administerlocal password policies – Control access to files with Linux file system permissions – Set Linux files system permissions on files and interpret the security effects of different permission settings – Monitor and manage Linux processes – Obtain information about the system and control processes running on it – Control services and daemons.	**9**
II	Control and monitor network services and system daemons using system configure and secure OpenSSH service – Access and provide access to the command line on remote systems securely using OpenSSH – Analyze and store logs – Locate and accurately interpret relevant system log files for troubleshooting purposes – Manged Red Hat Enterprise Linux networking – Configure basic IPv4 networking on Red Hat Enterprise Linux systems – Archive files and copy them from one system to another – Install and update software packages – Download,install,update and manage software packages from Red Hat and yum packages repositories – Access Linux file systems – Access and inspect existing file systems on a Red Hat Enterprise Linux system – Use virtualized systems – Create and use Red Hat Enterprise Linux virtual machines with KVM and libvirt.	**10**
III	LINUX Administration, Server and Security: Automate installation of red Hat Enterprise Linux system with kickstart – Use regular expressions with grep – Write regular expressions that, when partnered with grep, will allow you to quickly isolate or locate content within text files – Create and Edit text files with vim. Introduce the vim text editor with which you can open, edit and save text files – Schedule future Linux tasks – Schedule tasks to automatically execute in the future – Manage priority of Linux processes – Influence the relative priorities at which Linux processes run – Control access to files with access control lists (ACL) – Manage file security using POSIX access control lists – Manage SELinux security – Manage the Security using POSIX access control lists – Manage SELinux security – Manage the Security Enhanced Linux (SELinux) behaviour of a system to keep it secure in case of a network service compromise – Connect to network-defined users and groups – Configure systems to use central identity management services – Add disks, partitions and file systems to a Linux system – Manage simple partitions and life systems.	**10**

IV	Manage logical volume management (LVM) storage – Manage logical volumes from the command line. Access networked attached storage with network file system(NFS) – Access (secure) NFS Shares. Access networked storage with SMB – Use autofs and the command line to mount and unmount SMB file system – Control and troubleshoot the Red Hat Enterprise Linux boot process – Limit network communication with firewall – Configure a basic firewall.	**10**
V	Linux Administration, Server and Shell Scripting: Control services and daemons – Review how to manage services and boot-up process using system – Manage IPv6 networking – Configure and troubleshoot basic IPv6 networking on Red Hat Enterprise Linux systems – Configure link aggregation and bridging – Configure and troubleshoot advanced network interface functionality including bonding, teaming and local software bridges – Control network port security – Permit and reject access to network services using advanced SELinux and firewall filtering techniques – Manage DNS for servers – Set and verify correct DNS records for systems and configure secure DNS caching – Configure email delivery – Relay all email sent by the system to an SMTP gateway for central delivery – Provide block-based storage – Provide and use networked iSCSI block devices as remote disks – Provide file- based storage – Provide NFS exports and SMB file shares to specific systems and users – Configure MariaDB databases – Provide a MariaDB SQL database for use by programs and database administrators – Provide Apache HTTPD web service – Configure Apache HTTPD to provide Transport Layer Security (TLS) enabled websites and virtual hosts – Write Bash scripts – Write simple shell scripts using Bash – Bash conditionals and other control structures to write more sophisticated shell commands and scripts – Configure the shell environment – Customize Bash start up and use environment variables, Bash aliases and Bash functions – Linux containers preview – Preview the capabilities of Linux containers, Docker and other related technologies in Red Hat Enterprise Linux 7.	**9**

Note: Distribution of marks for Internal Examination -50 and External Examination –50

Teaching methods:

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

TEXT BOOK

Text Book:

1. *LINUX ADMINISTRATION WITH SCRIPTING - certiport(Pearsonvue publications) 2019 Edition*

REFERENCE BOOKS

1. *Linux For Beginners by Jason Cannon.*
2. *The Linux Command Line : A Complete Introduction by William Shotts.*

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M	L	L	L	M	L	M
CO2	S	L	L	L	M	L	M
CO3	M	M	L	M	S	M	M
CO4	S	M	S	M	S	M	S
CO5	S	M	M	S	S	M	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

Follows Track -2 Industry Oriented (Microsoft & HP) pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Ms. G. SivaBrindha	Dr. V. Saravanan	

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

Course Code:	21ITU03	Course Title						Batch:	2021-2022 & onwards
		Practical – I : Programming using C						Semester:	I
Hrs/Week:	4	L	-	T	-	P	4	Credits:	2

COURSE OBJECTIVES

- To learn the fundamentals of C Programming
- To enhance their analyzing and problem solving skills
- To gain knowledge about arrays, structures, pointers and functions
- To develop the ability to apply file I/O operations.
- To develop skills to design and analyze simple linear data structures.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Choose the right data representation formats based on the requirements of the problem.	K3
CO2	Compare the various programming constructs and choosethe 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
CO5	Develop C program for Linear data structure operations and its applications	K3

K1 – Remember, K2 – Understand, K3 – Apply, K4 - Analyze

SYLLABUS

21ITU03	Practical – I : Programming using C	I
Ex. No.	**Program List**	**Hours**
1	Program to develop a Simple Calculator using switch case.	4
2	Program to print the Alphabet A to E and reverse the same decreasing one by one line by line using for Loop.	4
3	Program to sort numbers in Ascending and descending order using Arrays..	4
4	Program to accept two number from user and swap the values using call by reference method	4
5	Program to find the Prime numbers between two integers using functions	4
6	Program to Multiply two Matrices by Passing Matrix to a Function	4
7	Program to generating Fibonacci Numbers using recursive functions	4
8	Program for String manipulations without using string functions (string length, string comparison, string copy) (Using function pointers).	4
9	Define a structure Employee having elements emp_id, name, DOB, DOJ etc. Accept data and reprint it. (use structure within structure)	4
10	Program to Find Largest Number Using Dynamic Memory Allocation	4
11	Program to read and write a file line by line.	4
12	Program to know the working of linked list.	4

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

Teaching methods:

PowerPoint Projection through LCD, Demonstration

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	M	S	S	S	M	L
CO2	S	S	S	M	S	S	M
CO3	S	S	S	S	S	M	L
CO4	M	S	M	S	S	S	M
CO5	S	M	S	M	M	L	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 Co-coordinator
Mr.M.Karthi	Dr.V.Saravanan	

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

Course Code:	21ITU05	Course Title						Batch:	2021-2022 & onwards
		Programming with PYTHON						Semester:	II
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVES

- To describe the core syntax and semantics of Python programming language.
- To discover the need for working with the strings and functions.
- To illustrate the process of structuring the data using lists, dictionaries, tuples and sets.
- To indicate the use of regular expressions and built-in functions to navigate the file system.
- To understand how to load data from CSV files and identify the data frame shape.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define the fundamental Python syntax and semantics and be fluent in the use of Python.	K1
CO2	Describe the proficiency in the handling of arrays, strings and functions.	K2
CO3	Define and determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.	K3
CO4	Experiment to Read and write data from/to files in Python Programs	K4
CO5	Understand and experiment a multitude of data operations in Python's popular library	K4
K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze		

SYLLABUS

21ITU05	Programming with PYTHON	Sem: II
Unit No.	**Topics**	**Hours**
I	**Introduction to Python:** Python overview– Comments – Pythonidentifiers – Reserved keywords – Variables – Standard data types – Operators –Statements and Expressions. Control Statements: The for loop – While statement – if elif else statement – Input from keyboard.	9
II	**Functions and Strings:** Functions: Introduction – Built-in functions – Type conversion – Type coercion – Date and time – dir() function – help() function – User defined functions – Parameters & arguments – Function calls – The return statement –Python recursive function. Strings: Compound data type – len() function – String slices – String traversal – Escape characters – String formatting operator – String formatting functions.	10
III	**Lists, Tuples and Dictionaries:** Lists – Values and accessing elements – Traversing a list – Deleting elements from list – Built-in list operators – Built-in list methods. Tuples – Creating tuples – Accessing values in tuples – Tuple assignment –Tuples as return values – Basic tuple operations – Built-in tuple functions. Dictionaries – Creating a dictionary – Accessing, Updating, Deleting elements from dictionary – Operations in dictionary – Built-in dictionary methods.	10
IV	**The NumPyLibrary:** NumPy : A Little History - The NumPy Installation - Ndarray: The Heart of the Library - Basic Operations - Indexing, Slicing and Iterating - Conditions and Boolean Arrays - Shape Manipulation - Array Manipulation - Structured Arrays - Reading and Writing Array Data on Files.	9
V	**Pandas:** The Python Data Analysis Library: Installation- Getting Started with pandas - Pandas Data Structures - Other Functionalities on Indexes - Operations between Data Structures - Function Application and Mapping - Sorting and Ranking - "Not a Number" Data.Pandas: Reading and Writing Data: CSV and Textual Files - Reading Data in CSV or Text Files - Reading and Writing HTML Files.	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 BOOKS

Text Books:

1 E. Balagurusamy, Introduction to Computing and Problem Solving Using Python, McGrawHill publication, 2016,. UNIT 1,2 and 3

2 Fabio Nelli , Python Data Analytics , Apress, 1st Edition, 2015. UNIT 4 and 5

REFERENCE BOOKS

1. *Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python Network Theory Ltd., 2011.*
2. *Zed A. Shaw,Learn Python 3 the Hard Way: A Very Simple Introduction to the Terrifyingly Beautiful World of Computers and Code, Zed Shaw's Hard Way Series, Pearson Addison - Wesley*
3. *John M Zelle - Python Programming: An Introduction to Computer Science- Franklin Beedle, Third Edition*

WEB RESOURCES

1. https://greenteapress.com/thinkpython2/thinkpython2.pdf
2. https://www.softwaretestinghelp.com/python/
3. https://docs.python.org/3/tutorial/

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	M	M	L	M	L	L
CO2	M	M	L	M	L	M	L
CO3	S	M	S	S	S	L	M
CO4	S	S	M	S	M	M	L
CO5	S	S	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 Co-coordinator
Gowri.A	Dr.V. Saravanan	

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

Course Code:	21ITMU05	Course Title						Batch:	2021-2022 & onwards
		Introduction to Programming using Python						Semester:	II
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVES

- To Learn Syntax, Semantics and create Functions in Python.
- To Use common control statements to implement flow control, looping, and exception handling.
- To inculcate the basic structure of a Python application and be able to document, debug, compile, and run a simple application.
- To gain knowledge of object-oriented programming in Python.
- To procure insight knowledge towards Functions, I/O, File Handling and Packages.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Describe the basic concepts and principles of Python programming.	K1
CO2	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.	K3
CO3	Construct the programs that read and write information from data files.	K3
CO4	Developand apply Object Oriented Programming concepts in Python.	K3
CO5	Analyze the concepts of file handlings in Python.	K4
K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze		

SYLLABUS

21ITMU05	Introduction to Programming using Python	Sem: II
Unit No.	**Topics**	**Hours**
I	Perform Operations using Data types and Operators: Evaluate an expression to identify the data type Python will assign to each variable - Data types include str, int, float, and bool - Convert between and work with data types – Type casting; constructing data structures; indexing and slicing operations - Determine the sequence of execution based on operator precedence - Assignment; Comparison; Logical; Arithmetic; Identity (is); Containment (in) - Select the appropriate operator to achieve the intended result - Assignment; Comparison; Logical; Arithmetic; Identity (is); Containment (in)	7
II	Control Flow with Decisions and Loops: Construct and analyze code segments that use branching statements.- if; elif; else; nested and compound conditionals - Construct and analyze code segments that perform iteration - while; for; break; continue; pass; nested loops and loops that include compound conditionals	7
III	Perform Input and Output Operations: Construct and analyze code segments that perform file input and output operations - open; close; read; write; append; check existence; delete; with statement – Construct and analyze code segments that perform console input and output operations - Read input from console; print formatted text; use of command line arguments	7
IV	Document code and Structure Code: Document code segments using comments and documentation strings - Use of indentation and white space; comments and documentation strings; pydoc - Construct and analyze code segments that include function definitions. - Call signatures; default values; return; def; pass.	7
V	Perform Troubleshooting and Error Handling: Analyze, detect, and fix code segments that have errors - Syntax errors; logic errors; runtime errors - Analyze and construct code segments that handle exceptions - Try; except; else; finally; raise. Perform Operations Using Modules and Tools: Perform basic operations using built-in modules - math; datetime; io; sys; os; os.path; random - Solve complex computing problems by using built-in modules: math; datetime; random.	8

Note: Distribution of marks for Internal Examination -50 and External Examination –50

Teaching methods:

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

TEXT BOOK

Text Book:

1. *Python programming- Certiport (Pearson vue publications)*

REFERENCE BOOKS

1. *Think Python: An Introduction to Software Design-Allen b downey*
2. *Fluent Python: Clear, Concise, and Effective Programming- Luciano Ramalho*

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	M	L	L	L	M	L
CO2	S	M	M	L	L	M	M
CO3	S	S	M	L	L	S	S
CO4	S	S	S	M	M	S	M
CO5	S	S	S	S	M	S	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

Follows Track -2 Industry Oriented (Microsoft & HP) pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Ms. G.SivaBrindha	Dr.V.Saravanan	

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

Course Code:	21ITU06	Course Title						Batch:	2021-2022 & onwards
		Data Structures and Algorithms						Semester:	II
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVES

- 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.
- Develop skills to apply appropriate data structures in problem solving.
- Explore the concepts of File Organizations, Symbol tables, Searching and sorting techniques.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	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
CO5	Select appropriate tree and graph for solving the given problem.	K4
K1- Remember, K2-Understand, K3-Apply, K4-Analyze		

SYLLABUS

21ITU06	Data Structures and Algorithms	Sem: 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 -Sparse Matrices-Polynomial addition.	10
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.	9
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 BOOK

Text Book:

1. *Ellis Horowitz, SartajSahni, Susan Anderson Freed, "Fundamentals Of Data StructuresInC", Universities Press (India) Limited ,2017*

REFERENCE BOOKS

1. *MarkAllenWeiss,"DataStructure and Algorithm analysis in ",Pearson Education, Second Edition, Sixteenth Impression2014.*
2. *Alfred V.Aho, John E. Hopcroft and Jeffry D. Ullman, Data Structures and Algorithms, Pearson Education, New Delhi,2006.*
3. *ReemaThareja, "Data Structures using C", Second Edition, Oxford University Press, 2011.*

WEB RESOURCES

1. *https://www.tutorialspoint.com/data_structures_algorithms/index.htm*
2. *https://www.javatpoint.com/data-structure-introduction*
3. *https://www.geeksforgeeks.org/data-structures/*

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	M	M	M	S	S
CO2	S	S	M	S	M	M	M
CO3	S	S	M	S	M	M	M
CO4	S	S	S	S	M	S	S
CO5	S	S	S	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 Co-coordinator
Ms.G. Priyanka	Dr.V. Saravanan	

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

Course Code:	21ITU07	Course Title						Batch:	2021 -2022 & onwards
		Software Engineering						Semester:	III
Hrs/Week:	3	L	3	T	-	P	-	Credits:	3

COURSE OBJECTIVES

- To inculcate the students in different concepts of software engineering principles.
- To understand the importance of software designing requirements.
- To gain the knowledge of how Analysis, Design &Implementation processes are conducted in a software project.
- To understand the software testing approaches such as unit testing and integration testing.
- To cognize how to implement developed software efficiently and effectively.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recognize the given project in various phases of a lifecycle.	K1
CO2	Associate appropriate process model depending on the user requirements.	K2
CO3	Illustrate various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.	K3
CO4	Organize various processes used in all the phases of the product.	K4
CO5	Apply the knowledge, techniques, and skills in the development of a software product.	K3
K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze		

SYLLABUS

21ITU07	SOFTWARE ENGINEERING	II
Unit No.	**Topics**	**Hours**
I	**INTRODUCTION AND AGILE DEVELOPMENT** Software Engineering-Software Process- Generic process model-Prescriptive process model-specialized, unified process-Agile Development-Agile Process- Extreme Programming- Other agile Process Models-Software engineering Knowledge-core Principles-Principles that guide each framework Activity.	7
II	**REQUIREMENTS MODELING** Requirements Analysis-Software Scenario Based Modeling, UML Models-Data Modeling Concepts, Class Based Modeling, Requirements Modeling Strategies, Flow Oriented Modeling, Creating a Behavioral Model, Pattern for Requirement Modeling.	7
III	**SOFTWARE DESIGN CONCEPTS** Design Process, Design Concepts, Design Model , Architectural Design: Software Architecture, Architectural Genres, Styles, Design, Component Level Design: Designing Class Based Components, Designing Traditional Components, Component Based Development, User Interface Design: The Golden Rules, User Interface Analysis and Design, Interface Analysis, Interface Design Steps, WebApp Interface Design, Pattern Based Design: Design Patterns, Pattern Based Software Design, Architectural Patterns, Component Level Design Patterns, User Interface Design Patterns, WebApp Design Patterns.	8
IV	**QUALITY CONCEPTS AND TESTING** Software Quality- Quality Concepts- Software Quality Assurance-Testing: Strategic Approach to software Testing- Strategic Issues- Software Testing Strategies- Testing Conventional Applications- Testing Object-Oriented Applications	7
V	**RISK MANAGEMENT AND MAINTENANCE** Software Risks, Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation, Monitoring, and Management, Maintenance: Software Maintenance-Software Supportability- Reengineering- Business Process Reengineering- Software Reengineering- Reverse Engineering- Restructuring- Forward Engineering- Economics of Reengineering.	7

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

TEXT BOOKS

Text Books:

1. Roger S.Pressman," Software Engineering- A Practioner's Approach", Seventh Edition,McGraw-Hill International Edition,2010.
2. Roger S. Pressman, Bruce R. Maxin" Software Engineering_ A Practitioner's Approach" McGraw-Hill Education ,2014.

REFERENCE BOOKS

1. Ian Sommerville, "Software Engineering", 8th Edition, Pearson Education Asia, 2011.
2. Stephan Schach, Software Engineering, Tata McGraw Hill 2007.
3. Pfleeger and Lawrence Software Engineering : Theory and Practice, Pearson Education, Second Edition.

WEB RESOURCES

1. **https://lecturenotes.in/notes/15479-note-for-software-engineering-se-by-sourav-mishra?reading=true**
2. **https://www.ece.rutgers.edu/~marsic/books/SE/book-SE_marsic.pdf**
3. **http://en.wikipedia.org/wiki/Software_engineering**

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	M	S
CO2	M	S	S	S	S	M	S
CO3	S	S	S	S	M	L	L
CO4	S	S	M	S	S	L	M
CO5	S	S	S	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 Co-coordinator
Mr. Jasmine Antony Raj. A	Dr.V.Saravanan	

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

Course Code:	21ITU08	Course Title						Batch:	2021-2022 & onwards
		Practical – II : Data Structures using PYTHON						Semester:	II
Hrs/Week:	4	L	-	T	-	P	4	Credits:	2

COURSE OBJECTIVES

- To impart the basic concepts of data structures and algorithms.
- To understand concepts about stacks, queues & lists and searching and sorting techniques
- To aims at introducing you to the various components of GUI programming with Tkinter.
- To acquire knowledge about gene libraries and isolation of genes
- To describe how bioinformatics data is stored and organized.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recall the fundamentals concepts of data structures.	K1
CO2	Construct the program for array, stack, queue and linked list operation.	K3
CO3	Summarize the searching and sorting techniques	K2
CO4	Explain various concepts on how to build GUI Programming.	K3
CO5	Distinguish certain types of biological problem like sequence alignment, gene detection, structure prediction, data-mining literature	K4
K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze		

SYLLABUS

21ITU08	PRACTICAL II : Data Structures using Python	Sem: II
Ex. No.	Program List	Hours
1	Program to create an array of 5 integers and display the array items. Access individual element through indexes.	4
2	Program to implement the queue operations.	4
3	Program to implement stack operations Using a Python List.	4
4	Program to perform Binary Search.	4
5	Program to implement Linear Search.	4
6	Program to perform selection sort.	4
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.	6
9	Gene Sequence mining using Python.	6
10	Bio computing in Python.	6

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

Teaching methods:
PowerPoint Projection through LCD, Demonstration

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	M	M	L	L	L	L
CO2	S	S	S	S	M	S	M
CO3	S	S	M	S	M	S	L
CO4	S	S	L	M	S	M	L
CO5	S	M	S	S	L	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 Co-coordinator
Mrs. A. Gowri	Dr.V.Saravanan	

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

OPEN ELECTIVE

Course Code:		Course Title							
		YOGA FOR HUMAN EXCELLENCE							
Hrs/Week:	3	L	3	T		P		Credits:	2

COURSE OBJECTIVES

- To acquire understanding yoga.
- To develop insights into the vedha
- To explore the importance of being mentally and physically healthy.
- To perform asanas for well being.
- To understand the importance of Good food and their contribution for a healthy life

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recalling the importance of yoga and understanding yoga	K1 & K2
CO2	Understanding Vedha and their benefits	K2
CO3	Illustrating the concepts of vedha and their benefits.	K3
CO4	Examining Meditation and their contribution to mental Health.	K4
CO5	Analyse the various types of food for a healthy physical and mental life.	K4

	YOGA FOR HUMAN EXCELLENCE	
Unit No.	**Topics**	**Hours**
I	**MEANING OF YOGA** Concept of yoga -Yoga as science – Yoga as art – origin and history of yoga – Yoga in Vethic period – after Vethic period – Yoga for modern age (simplified kundalani yoga formulated by Sri Vethathiri maharishi.	6
II	**VEDHA** Concept of Vedha – Benefits-Upanished – Geetha Six Dharsans – Sankiam – Patanjali Yoga – Nyaya – Vaisedikam –Meemamsam – Vedhantham – Advaitham, Duvaitham – Vishistathvaitham – Saiva Sithantham – Saivam, Saktham Hindusm, Jainism, Buddhism, Christianity, Islam – Sikhism .	6
III	**MEDITATION AND MENTAL HEALTH** Meaning-Mind and body - powers of mind – conscious, subconscious and unconscious mind –Thoughts – power of - Thought culture – Blessing (Vazhga valamudan, Vazhga vaiyagam) –Various types of meditation, Akana, Thuriyam, shanthi, manipuraka, visukthi etc., - Electro- Encephalogram – Mental frequencies	6
IV	**ASANAS AND PRANAYAMA** Concept –Benefits of Asanas–Types of asanas- **Pranayama** –Types and benefits- Mudras-Benefits and Types.	6
V	**FOOD FOR HEALTHY LIFE** Meaning -Types – Benefits- Satvic Rajo and Tamas- Food for spiritual Life – simple and Balanced diet –Vegetarian food - Fasting and its benefits- Food work and sleep .Concept of siddha – Allopathy – Ayurveda.	6

Text Book

1. Art of Nurturing the Life Force and Mind - Vethathiri Publications.

Reference Books

1. Manavalakalai Part – 2 - Thathuvagnani Vethathiri Maharishi
2. Simplified Exercise - Thathuvagnani Vethathiri Maharishi
3. Yogasanas - Vethathiri Publications

Course Code:		Course Title							
		HUMAN HEALTH AND HYGIENE							
Hrs/Week:	3	L	3	T		P		Credits:	2

COURSE OBJECTIVES

This course will enable the students to:

- know about the functioning of the human body and health.
- expose the students to some important diseases
- Understand issues related to the present day healthcare system
- Acquire basic understanding of other healthcare systems

Course Outcome

K1	CO1	Illustrate the physiology of human body.
K2	CO2	Explain the food value.
K3	CO3	Demonstrate about primary health centres
K4	CO4	Explain the causes, symptoms and prevention of various diseases
K5	CO5	Explain the concept of health and health education.

	HUMAN HEALTH AND HYGIENE	
Unit No.	**Topics**	**Hours**
I	Definition and concept of health. Concept, Objectives and principles of health education. Immunity; Types and schedule of immunization.	6
II	Definition, Physiology and structure of human cell. Elementary anatomy, Physiology and functions of the following system. Cardiovascular system. Gastrointestinal system. Excretory system. Respiratory system. Nervous system. Musculoskeletal system.	6
III	Introduction to food. Composition and nutritive value of Cereals (Rice, Wheat, Millets, Ragi, Pearl millet). Nutritional deficiency disease – Anaemia, Scurvy. Composition and medical value of Ginger, Black pepper and Turmeric. Dental Care and eye care.	6
IV	Primary health centers, UNICEF, WHO, RED CROSS, ICDS, CARE and other non government agencies.	6
V	Non-communicable diseases – Stroke, Diabetes, Chronic lung disease : Obesity and Cancer. Communicable diseases – Dengue fever, Malaria, Amoebiasis, Viral fever and AIDS. Awareness on Diarrhea, Alcoholism, Smoking, Tobacco chewing, Ulcer and Jaundice.	6

References:

1. William Thayer, 2016, Elementary Physiology and Hygiene. the Human Body and Its Health. a Text-Book for Schools, Wentworth Press.
2. Caldwell B. Esselstyn,2008, Prevent And Reverse Heart Disease: The Revolutionary, Scientifically Proven, Nutrition-Based Cure, Penguin USA.
3. K.Park, 2021, Park's Textbook Of Preventive And Social Medicine, Banarsidas Bhanot Publishers.

Course Code		Course Title						Batch:	2021-2022&Onwards
		INDIAN CULTURE AND ERITAGE						Semester:	
Hrs/Week	3	L	3	T	--	P	--	Credits:	

COURSE OBJECTIVE

- To impart basic knowledge to know the Heritage and the Culture of the India.

COURSE OUTCOMES (CO)

	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understand the Elements of developed Civilization and life style.	K1
CO2	Remember of advanced cultural significance.	K2
CO3	Apply on creative works on hand craft.	K3
CO4	Analyze in historical Temples and Architecture.	K4

SYLLABUS

	INDIAN CULTURE AND HERITAGE	
Unit No.	**Topics**	**Hours**
I	**The Indus Valley Civilization and Harappan Culture** What is the Indus Valley Civilization, Period and Phases of growth. Salient Feature of the Harappan culture, Important Harappan Sites and their significance. Important Features of the Harappan culture.	8
II	**Hinduism** Introduction Of Hinduism, Scriptures and Philosophies Of Hinduism, Hindu Philosophies, Sects OF Hinduism, Important of Hindu Scriptures.	7
III	**Temples And Architecture In Ancient And Medieval India.** Temples and Their Fundamental Elements, The Nagara Temple Architecture, Buddhist and Jain Architecture, Important Temples and Their Salient Features.	7
IV	**Indian Heritage Dance, Music, Paintings** Classification Of Indian Music, Classical Music, Folk Music, Modern Music, Musical Instrument, Modern Development in Music. Classification ofPainting. Miniature Paintings, Modern Paintings.	6
V	**Handicraft In India.** Handicrafts and its Tradition in India, Gems and Jewellary, Pottery Works, Glass handicrafts, Stoneware and Craft, Toys and Puppets.	8

Teaching methods: Lecturing, PowerPoint Projection through LCD, Assignment, Live Demonstration.

TEXT BOOKS

1.Mr.Madhukar Kumar Bhagat - The Indian Heritage, Art And Culture

2. Mr.NitinSinghanai – Indian Art And Culture

REFERENCE BOOKS

1. Indian Culture – Mr.P K Agrawal.

Course Code:		Course Title						Batch:	2021-2022 onwards
		Indian Constitution and Political System						Semester:	I
Hrs/Week:	3	L	3	T		P		Credits:	2

COURSE OBJECTIVES:

1. To give an overview of Indian Constitution
2. To enumerate the salient features of the Indian Constitution
3. To explain the fundamental rights and duties of every Indian citizen
4. To understand about the Indian political system

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Remember and Understand the history of the Indian Constitution	K1,K2
CO2	Enable the students to interpret, evaluate the salient features of Indian Constitution	K3 K4
CO3	Enable the students to understand their fundamental rights & duties under Indian Constitution	K2
CO4	Comprehend the Indian federalism	K3
CO5	Enable the Students to interpret and explain about the Indian political system	K1, K2

Unit No.	Indian Constitution and Political System	
	Topics	Hours
I	An overview of constitutional development with reference to Government of India Act 1909,1919,1935 and Indian Independence Act 1947.	6
II	The Constituent Assembly of India.Salient features of the Indian Constitution – the Preamble	6
III	Fundamental Rights –DirectivePrinciples of State Policy – Fundamental Duties	6
IV	Indian federalism, Centre state relation- distribution of legislative powers, administrative and financial relations between the union and states-The finance commission – Planning commission	9
V	Government of the Union (a) The Union Executive – the President and the Vice-President – The Council of Ministers and the Prime Minister – Powers and functions (b) The Union legislature – The Parliament – The LokSabha and the RajyaSabha, Composition, powers and functions – the role of the Speaker. (c) Indian judicial system (d) Government of the State. The Governor – the Council of Ministers and the Chief Minister – Powers and Functions The State Legislature – composition, powers and functions.	9

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

TEXT BOOK:

1. *Constitution of India- P.K. Agarwal- PrabhatPrakashan*

REFERENCE BOOKS

1. *The Constitution & Parliament of India- Derek o' Brian-Rupa Publications India*
2. *Indian Constitution : Government And Political System- P.B. Rathod- Commonwealth Publishers, New Delhi*
3. *Indian Political System- Himanshu Roy & M.P. Singh- Pearson Education*
4. *Indian Government and Politics-BidyutChakrabarty and Rajendra Kumar Pandey-SAGE publishing, India.*

Web Link:

https://www.india.gov.in/my-government/constitution-india#:~:text=It%20is%20a%20Sovereign%20Socialist,a%20parliamentary%20system%20of%20government.&text=As%20per%20Article%2079%20of,the%20People%20(Lok%20Sabha).

Course Code:		Course Title						Batch:	2021-2022 onwards
		CONSUMER AWARENESS AND PROTECTION						Semester:	
Hrs/Week:	3	L	3	T		P		Credits:	2

COURSE OBJECTIVE

1. To acquaint the students with the basic knowledge about the Consumer Awareness and the need for protection of consumers in India.
2. To give an outline of the Consumer Rights under the Consumer Protection Act, 1986.
3. To make the students understand the procedure for redressal of consumer grievances in India.
4. To familiarise the various legislations prevailing in India for consumer Protection.
5. To enable the students to gain the knowledge about the Consumerism.

COURSE OUTCOMES (CO)

No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recalling the basic knowledge about the Consumer Awareness.	K1
CO2	Understanding of the Consumer Rights under the Consumer Protection Act, 1986.	K2
CO3	Describing the procedure for redressal of consumer grievances in India.	K2
CO4	Classifying the various legislations prevailing in India for consumer Protection.	K3
CO5	Analysing the concept of consumerism.	K4

Syllabus

Unit No.	CONSUMER AWARENESS AND PROTECTION Topics	Hours
I	**Consumer Awareness** Meaning of Consumer – Goods and Services - Distinction between buyer and Consumer – Consumer Awareness – Meaning- Definition-Need and Importance – Objectives of Consumer Awareness	6
II	**Consumer Protection Act, 1986** Definitions-Consumer Rights –Right to Information -Right to choose-Right to safety- Right to consumer education - Right to be heard-Right to get redressal -Responsibilities of the consumers–Problems to Consumers – Exploitation of Consumers.	6
III	**Grievance Redressal** Dispute Redress Forums – District level – State level – National level-**Consumer Courts- Redressal Mechanism- Procedure to file a complaint – Grounds to complain** - Role of Voluntary Consumer Protection Organisations in India – NGOs	6
IV	**Other Legislations** Indian Contract Act, 1872- The Sale of Goods Act, 1930 - The Prevention of Food Adulteration Act, 1954-The Agricultural Produce (Grading and Marking) Act, 1937- The Standards of Weights and Measures Act, 1976-The Trade Marks Act, 1999-The Essential Commodities Act, 1955-The Bureau of Indian Standards Act, 1986-The Competition Act, 2002	6
V	**Consumerism** Meaning of Consumerism – Consumerism movement in India – Consumer Awareness in rural India- Role of Ombudsman, IRDA,TRAI - Use of Online and internet in Consumerism – Websites used for online grievance handling	6

Note:Distribution of Marks: Theory 100%

Teaching methods: Lecturing, PowerPoint Projection through LCD and Assignment

TEXT BOOKS

1. ***Dr. R. Sivanesan,"Consumer Awareness" MarghamPublications.,Chennai***

REFERENCE BOOKS

1. H.K.Saharay,"**Text Book on** *Consumer Protection Law*"Universal Law PublishingCo.,New Delhi
2. Srinibas Pathi & Lalrintluanga, – "Consumer Awareness and Consumer Protection " Dominant Publishers and Distributors (P)Ltd.
3. Gupta.S.L, "Consumer Behaviour"SultanChand& Sons, New Delhi.
4. Dr.Shashikala J Maheswari, "Consumer Awareness and Practices"
5. Mohammed Kamalun Nabi, "Consumer Rights and Protection in India", IngramPublications.

Course Code:		Course Title						Batch:	2021-2022 and Onwards
		Professional Ethics and HumanValues						Semester:	
Hrs/Week:	3	L	3	T	-	P	-	Credits:	2

COURSE OBJECTIVES:

- To orient students about value education and human education.
- To help them learn concepts of human values and respect for others.
- To provide in-depth understanding about moral awareness.
- To inculcate a sense of ethics in the profession the students take up.
- To acquire knowledge on professional practices.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understand value education and develop a sense of self respect	K1, K2
CO2	Develop an understanding towards to human values and respect others.	K2,
CO3	Acquire ethical and leadership qualities in managing self and others	K1, K2, K3
CO4	Gain clarity and apply personal and professional ethics	K2, K3
CO5	Practices moral values and code of conduct in their profession	K2,K3

SYLLABUS

Unit No.	Professional Ethics and HumanValues Topics	Sem: Hours
I	**VALUE EDUCATION:** Definition, Concept and Need for Value Education - The Content and Process of Value Education-Self-Exploration as a means of Value Education-Happiness and Prosperity as parts of Value Education	7
II	**HUMAN VALUES:** Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality	7
III	**ETHICS & LEADERSHIP QUALITIES**: Ethical values: Ethics, Social Ethics, Public Policy - Leadership qualities: Integrity, Character, Courage - Personality development. Inter-culture Tolerance	7
IV	**INTRODUCTION TO PROFESSIONAL ETHICS:** Basic concepts, Governing Ethics, Personal and Professional Ethics, Ethical Dilemmas, Life Skills, Profession and Professionalism, Professional Association, Professional Risks, Professional Accountabilities, Professional Success	7
V	**PROFESSIONAL PRACTICES:** Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession, Responsibilities, Obligations and Moral Values in Professional Ethics, Professional code of Ethics	8

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

TEXT BOOKS

1.Jayasree Suresh and B. S. Raghavan, Human Values and Professional Ethics, 3rd Edition, S. Chand Publications

2. P S R Murthy : "Indian Culture, Values and Professional Ethics", 2nd Edition, B S Publications, Hyderabad. 2013

REFERENCE BOOKS

1. *Prof. (Col) P S Bajaj and Dr. Raj Agrawal, Business Ethics – An Indian Perspective, Biztantra, New Delhi, 2004.*
2. *NCERT. "Value Education". Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002*
3. *Daniel and Selvamony. "Value Education Today - Madras Christian College, Tambaram and ALACHE, New Delhi, 1990*
4. *A. Alavudden, R. Kalil Rahaman & M . Jayakumaran : "Professional Ethics & Human Values", 1st Edition, University Science Press (An Imprint of Laxmi Publications Pvt Ltd., Chennai, Bangalore. 2008*
5. *Dr. Saroj Kumar* and*Prof. Sheenu Nayyer, Human values and Professional Ethics,Thakur Publications,*
6. *R.Subramanian, Professional Ethics, Oxford University Press, 2015.*

WEB RESOURCES

Web Link:

1. https://www.pdfdrive.com/professional-ethics-human-values-by-rs-naagarazan-d47842494.html
2. https://www.pdfdrive.com/human-values-and-professional-ethics-d53147100.html

Course Code:		DISASTER MANAGEMENT						Batch:	2021-2022 & Onwards
								Semester:	
Hrs/Week:	3	L	2	T	-	P	-	Credits:	2

COURSE OBJECTIVE:

1. To understand the nature and meaning of disaster, various types of disaster.
2. To gain knowledge on fundamental aspects of disaster management.
3. To know about mental health consequences of disaster and disaster mitigation.
4. To assess the impact of disaster on women, children, aged and others.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identify the concepts, nature and meaning of disaster, various types of disaster.	K1
CO2	Understand the fundamental aspects of disaster management.	K2
CO3	Solve the disaster mitigation and psycho-social issues.	K3
CO4	Evaluate the impact of disaster on women, children, aged and others.	K4

SYLLABUS

Unit No.	DISASTER MANAGEMENT Topics	Sem: Hours
I	**Meaning of Disasters** Concept, Meaning, Types Differences and Similarities between Natural and Technological disasters, Characteristics of various Natural disasters.	5
II	**Disaster Management** Fundamental aspects of Disaster Management – Stages or phases of Disaster Management – Community responses for Disaster Management and Preparedness, Challenges in Disaster Management.	5
III	**Organization and Management** Role of Government in Disaster Management – Tamil Nadu Government Initiatives, The Disaster Management Act 2005: Objectives, Organizational Body, Powers, Functions and Limitations.	5
IV	**Disaster Mitigation and Psycho-Social Support** Disaster mitigation– relief and rehabilitation. Risk: Risk managementfor Social Workers, Importance of Psycho-social care – Principles of Psycho - social care.	5
V	**Impact of Disaster on Women, Children, Aged and others** Impact on the individual, family and society; Mental health consequences of disaster; Specific psychosocial needs of vulnerable groups like children, women and older persons.	11

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

TEXT BOOKS

1. *SathishModh. "Introduction to Disaster Management", Macmillan Publishers, New Delhi, (2010).*

REFERENCE BOOKS

1. *KlinenbergEric. "Heat Wave: A Social Autopsy of Disaster in Chicago", University of Chicago Press, Chicago, (2002).*
2. *Rajan Kumar, Sahoo, Thilothama, Senapati. "Disaster Management and Mitigaition", DominentPublisherss, New Delhi, (2014).*
3. *Sahni,Aryabandu. "Disaster Risk Reduction in South Asia", PHI LearaningPvt, Ltd, New Delhi, (2011).*
4. *Singh S.R. "Disaster Management", APH Publishing Corporation, New Delhi, (2010).*
5. *Singh S.K. "Natural Disasters Threats, Patterns and Social Work", Sublime Publication, Jaipur, (2012).*

WEB RESOURCES

Web Link:

- https://en.wikipedia.org/wiki/Disaster_management_in_India
- https://en.wikipedia.org/wiki/Disaster
- https://en.wikipedia.org/wiki/Category:Disaster_management
- https://en.wikipedia.org/wiki/Emergency_management
- https://en.wikipedia.org/wiki/Disaster_response

Course Code:		Green Farming						Batch:	2021-2022 & Onwards
								Semester:	
Hrs/Week:	3	L	2	T	-	P	-	Credits:	2

COURSE OBJECTIVE:

- To develop knowledge about elements of soil and its properties
- To study plant diseases and their symptoms
- To inculcate about the soil nutrient resources viz., manures, fertilizers and biofertilizers
- To develop the farming management system
- To understand the organic farming structure, concepts and its advantage

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define the composition and properties of soil	K1
CO2	Outline the plant diseases and their control measures	K2
CO3	Develop knowledge on Manure and Biofertilizers	K3
CO4	Categorize the farm management system	K4

SYLLABUS

Unit No.	Green Farming Topics	Sem: Hours
I	**Soil:** Definition – Composition of soil – Types of soils found in India and Tamil Nadu- Physical properties of soil – Texture – Structure, colour, particle density, Bulk density, Pore space, Consistency, Soil air and Soil water Soil temperature – Significance of physical properties in plant growth – Chemical properties of soil. Soil colloids P_H, Electrical conductivity.	5
II	**Study of plant diseases and symptoms** – Mode of spread of plant diseases – Brief study of sulphur, copper, systemic groups of fungicides - Importance of seed treatment with fungicides – Basic biological agents for disease control.	5
III	**Manures and Biofertilizers:** Definition – Classification – Bulky Organic Manures (BOM) and Concentrated Organic Manures (COM) – Preparation of different types of compost including industrial waste, coir waste, press mud – Vermicompost – enriched Farm Yard Manure (FYM) etc – Green manures (GM)and Green Leaf Manures(GLM) – their Benefits and significance . Bio - fertilizers and their types – Application of Bio - Fertilizers.	5
IV	**Farm Management** - Definition and importance – Farming System – Definition, classification - Cropping system – Definition – difference between farming system and cropping system – Systems of farming and types of farming – Advantages and disadvantages – mechanized farming and its possibilities in India – Integrated farming systems (IFS) – definition - types of IFS, Suitable for different situations.	5
V	**Organic Farming:** Stages in Agricultural Development – History of Alternative Agricultural Development – Ill effects of Green Revolution Organic farming – Need, Concepts, Definition and Components – Essential characteristics – Key principles – Different concepts of organic farming – Natural farming, Biodynamic farming, Perma culture and Zero Budget Farming.	11

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

TEXT BOOKS

Johl,S.S. and T.R.Kapur, 2017, Fundamentals of Farm Business management, Kalyani publishers, Lundhiana.

REFERENCE BOOKS

1.Buckman, H.O. and N.C. Brady. 2002. Nature and properties of soil, The McMillan Co, New York, Indian Publishers – Eurasia Publishing House (P) Ltd., Ram Nagar, New Delhi.

2. Das, P.C. 2009. Manures and Fertilizers, Kalyani Publishers, New Delhi

3. Sahai,V.N. 2015. Fundamentals of Soil, Kalyani Publishers, New Delhi

4. Palaniappan.S.P. and K. Annadurai.2016. Organic Farming Theory and Practice.Scientific Publishers (India), Jodhpur.

5. Sharma, Arun K. 2002. A Hand Book of Organic Farming Agrobios (India), Jodhpur.

6. Kahlon, A.S. and Karam Singh. 1992. Economic of farm management in India – Theory and Practice. Allied Publishers Pvt. Ltd., Chennai.

7. Karuppusamy, S.S. and S.Kulandaisamy. 2019. PannaiNirvagam, Gandhigram Rural Institute - Deemed University, Gandhigram

WEB RESOURCES

Weblink:

https://www.coabnau.in/uploads/1587019407_Principlesoforganicfarming.pdf

https://sites.google.com/a/univsul.edu.iq/hemin-abubakir/teaching/organic-farming-lecture-notes

Course Code:		CORPORATE RELATIONS						Batch:	2021-2022 & Onwards
								Semester:	
Hrs/Week:	3	L	2	T	-	P	-	Credits:	2

COURSE OBJECTIVE:

- The General Aptitude evaluates the talent/ability/potential to perform a certain task. This Course will be helpful for Students who are going to appear for any Job Placement/Interview also for those who are appearing for Government Jobs, BANK Exams, Campus Placements, GATE, PSU.

	CORPORATE RELATIONS	Sem:
Unit No.	Topics	Hours
I	Basic concepts: Number system – Simplification – Fraction – Approximate values – Percentage – LCM & HCF – Ratio & Proportion. Profit & Loss – Simple Interest & Compound Interest – Partnership – Mixture &Allegation.	5
II	Time & Work – Pipe & Cistern – Problem on Ages, Speed, Time& Distance – Trains -- Boat & Streams.	5
III	Clocks & Calendar – Probability – Permutation & Combination – Cubes & Dices -- Blood relation – Directions – Puzzles test – Logical sequence of word-Area, Volume & Surface Area – Vendiagram -- Data sufficiences.	5
IV	Series Completion – Analogy – Classification – Coding &Decoding -- Figure series – Figure formation and analysis – Mirror & Water image - Syllogism – Statement Conclusions – Statement Arguments – Statement Assumptions – Seating Arrangements.	5
V	Antonyms – Synonyms – Common Confusables – One word substitutions – Idioms & Phrases- Error Spotting – Sentence Correction – Direct & Indirect Speech – Active & Passive voice – Reading Comprehension -- Parajumbles.	5

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

TEXT BOOKS

1. General Aptitude for Campus Recruitment Examinations – Corporate relations.

Course Code:		STARTUP A BUSINESS						Batch:	2021-2022 & Onwards
								Semester:	
Hrs/Week:	3	L	2	T	-	P	-	Credits:	2

COURSE OBJECTIVE:

- To acquire knowledge in Entrepreneurship.
- To make students understand the Digital means of identifying Business Opportunities.
- To identify the various phases of a project and develop a project plan.
- To develop plans to incubate Business Ideasand to introduce the concept of start up to students
- To identify and understand the various sources of Financing Business.

S.No	COURSE OUTCOMES (CO)	BLOOMS LEVEL
CO1	Recalling the concept of entrepreneurship, types and traits essential for entrepreneurship	K1
CO2	Understanding the entrepreneurs development program and digital entrepreneurship..	K2
CO3	Illustrating project life cycle phases and characteristics of a project.	K3
CO4	Examining the components of a good business plan, business idea, startups and incubations.	K4
CO5	Analyse the various sources of Finance to start up a business	K4

	STARTUP A BUSINESS	
Unit No.	**Topics**	**Hours**
I	**ENTREPRENEURSHIP** Concept and Introduction - characteristics, Traits, functions.and types of entrepreneurs - Intrapreneur – Innovation and entrepreneurship- Entrepreneurship and GreenEntrepreneurship.	6
II	**ENTREPRENEURIAL DEVELOPMENT** Entrepreneurship development programmes - need - objectives – course contents - phases – evaluation –Digital entrepreneurship.	6
III	**PROJECT MANAGEMENT** Project Management: Meaning of project - concepts - categories - project life cycle phases - characteristics of a project .	6
IV	**BUSINESS PLANS AND IDEAS** Business Plan- Meaning of a business plan- Components of a good Business Plan- Business Ideas. Start Ups- Meaning and Types. Incubation – Meaning - Creative Incubation process.	6
V	**ENTREPRENEURIAL FINANCE** Source of finance for new ventures – Institutional finance supporting Small Scale Industries (SSI's) —Role of DIC - NSIC -SIDO-MSME-Small scale industries registration procedure in India.	6

TEXT BOOKS

1. *Vasant Desai – "Dynamics of Entrepreneurial Development & Management", Himalaya Publishing House.*

REFERENCE BOOKS

1. *Khanka S.S - Entrepreneurial Development*
2. *Gupta C.B. &Srinivasan N.P - Entrepreneurial Development*
3. *Choudhury.S - Project Management*
4. *Denis Lock - Project Management*

Course Code:		RESEARCH METHODOLOGY AND IPR						Batch:	2021-2022 & Onwards
								Semester:	
Hrs/Week:	3	L	2	T	-	P	-	Credits:	2

COURSE OBJECTIVE:

1. Tounderstand the basic concepts of research, types, Research Problems and research Designs.
2. Toidentify various methods of sampling and data collection.
3. Togain knowledge using various statistical tools in Research.
4. The Learners can understand the IPR and its economic analysis.
5. To understand Patent Rights, Copy Rights and Trade Marks.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understand the process of Research and Research Design	K1
CO2	Apply the various sampling techniques used for data collection.	K3
CO3	Identify and apply the necessary tools used in the Research	K2& K3
CO4	Applying knowledge of IPR in Business	K4
CO5	Identify and analyze the Patent Right , Copy Right and Trade Mark in Business	K1 &K4

SYLLABUS

Unit No.	RESEARCH METHODOLOGY AND IPR Topics	Sem: Hours
I	**Research Methodology Introduction** Research: Meaning – Objectives – Scope –Concepts –Significance – challenges-types-Research process– Criteria good researcher — Research problems: Identification-Selection. Hypothesis – Research design.	6
II	**Sampling Design** Sampling design: Meaning-Sampling frame- Sampling and Non-Sampling Errors- determination of sample size Methods of sampling. Census: merits and demerits – Census Vs Sampling. Pilot study –Pretest. Primary and Secondary data: Meaning-sources-merits-demerits. Methods of data collection: Observation-Interview-Survey- Email-Schedule and Questionnaire.	6
III	**Statistical Tools** Statistical tools used in research-Measures of Central tendency – Standard deviation – Correlation – simple, partial and multiple correlation- Report writing: Significance – Layout of research report- mechanics of writing a Research report – Precautions to be followed in Research Report- Types of reports	6
IV	**Introduction to IPR** Introduction to Intellectual Property Rights- Concept , Theories and Kinds of Intellectual Property Rights –Economic analysis of Intellectual Property Rights- Need for Private Rights versus Public Interests- Advantages and Disadvantages of IPR.	6
V	**Norms of IPR** Classification of Intellectual Property-Industrial Property, Literary Propert Emerging Forms-Traditional forms of IP-Patents, Trademarks, Trade Name Descriptions, Industrial designs, Geographical Indications of Goods, Copyrig Related Rights and Trade Secrets-Their characteristic	6

Note: Distribution of marks: 60% Theory and 40% Problem

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

TEXT BOOKS

Text Book:

C.R.Kothari., "Research Methodology", Second Revised Edition, New Age International Publishers, New Delhi, 2004.

P. Narayanan (Eastern Law House), Intellectual Property Law

REFERENCE BOOKS

1. Murry, R., Spiegel, Larry, J. and Stephens, "Theory and Problems of Statistics", Third Edition, Tata McGraw – Hill Publishing Co. Ltd., New Delhi, 2017.
2. Panneerselvam, R., "Research Methodology", Eleventh Edition, PHI Learning Pvt. Ltd., New Delhi, 2016. 3
3. N.S. Gopalakrishnan & T.G. Agitha, Principles of Intellectual Property (2009), Eastern Book Company, Lucknow
4. Intellectual property right, Deborah, E. BoDcboux, Cengage learning

WEB RESOURCES

1. www.managementstudyguide.com
2. www.pondiuni.edu.in.
3. https://ipindia.gov.in

Course Code:		IIT JAM/CUCET (Biosciences)						Batch:	2021-2022 & Onwards
								Semester:	
Hrs/Week:	3	L	2	T	-	P	-	Credits:	2

SYLLABUS

Unit No.	Topics	Sem: Hours
I	**Chemistry:** Atomic structure, Bohr's theory and Schrodinger wave equation, Periodicity in properties, chemical bonding, Properties of S,P,D and F block elements, Complex formation , Coordination compounds, Photochemistry, Stereo chemistry of carbon compounds; Inductive, electromeric, conjugative effects and resonance. Mechanism of organic reactions; soaps and detergents; synthetic polymers.	9
II	**Mathematics:** Sets, Relations and functions, Mathematical Induction, Logarithms. Complex numbers, Linear and Quadratic equations, Sequences and Series, Trigonometry, Cartesian system of rectangular, coordinates, Straights lines and family, Circles, conic sections, Permutation, and combinations. Application of Derivatives, Definite and Indefinite Integrals, Differential equations.	9
III	**Physics:** Physical world and measurement, Elementary statics and dynamics, Kinematics, Laws of motion, Work, Energy and power, electrostatics, current electricity, Magnetic effects of current and magnetism, Electromagnetic induction and alternating current, Electromagnetic waves, Optics, dual nature of matter and radiations, atomic nucleus, Solids and semiconductor devices, Principles of communication, motion of system of particles and rigid body, Gravitation, Mechanics of solids and fluids, Heat and thermodynamics and oscillations, Waves.	12

VALUE ADDED COURSES

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Digital Marketing						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

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 OUTCOMES (CO)

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

SYLLABUS

Unit No.	Digital Marketing Topics	Sem: 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 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, Discussion and Activity.

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

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 Co-coordinator
Mr.G.Ravishankar	Dr. V. Saravanan	

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Network Reconnaissance						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

COURSE OBJECTIVE :
To gain knowledge and illustrates *network reconnaissance* and the valuable *network* information that is gathered through intrusion detection.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Illustrate some of the factors driving the need for network security	K2
CO2	Define the terms vulnerability, threat and attack	K1
CO3	Identify physical points of vulnerability in simple networks	K3
CO4	Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of	K4

SYLLABUS

Unit No.	Network Reconnaissance Topics	Sem: Hours
I	**Introduction to Forensic Science** – Computer Crimes - Cyber Laws & Cyber Forensic. **Introduction to information Security and Ethical Hacking :** Introduction to Information Security – What is Hacking - Types of Hackers - **Importance of Information Security** – Stages of Information Security – Types of Hacking Attacks	8
II	**Basic Of OS and Networking :** Overview of System Hardware and Software – Overview of Windows and Linux - Networking Basics – Windows Hacking Tricks. Basic Concept about Virus and Trojans.	8
III	**Trojan, Backdoor and E-Mail Hacking :** RAT(Remote Administration Tools) - Botnet - Key Loggers (Software & Hardware) - Crypters, Binders - Phishing - Skimmer - Basic Concepts about Exploits. **Preventing Measures :** Preventing From Key Logger, Botnets, Phishing, Skimmer Attacks - Preventing Web Server Attacks - Overall Conclusion about Future Information Security.	8

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

TEXT BOOKS

1. *Winn Schwartau* **(Author),** *Kayley Melton & Alissa Phillips* **(Illustrator),** *Mark Carney* **(Technical Editor),** *Analogue Network Security: Time, Broken Stuff, Engineering, Systems, My Audio Career, and Other Musings on Six Decades of Thinking about It All* ***Perfect Paperback – January 1, 2018***

REFERENCE BOOKS

1. *Heather Adkins,Betsy Beyer, Paul Blankinship, Piotr Lewandowski, Ana Oprea , Adam Stubblefield, Building Secure and Reliable Systems: Best Practices for Designing, Implementing, and Maintaining Systems* ***1st Edition.***

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	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 Co-coordinator
Mr. M. Karthi	Dr. V. Saravanan	

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

Course Code:		Course Title						Batch:	2021-2022 & onwards
		VM Ware						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

COURSE OBJECTIVE

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

COURSE OUTCOMES (CO)

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

SYLLABUS

Unit No.	VM Ware Topics	Sem: 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 - 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 BOOK

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

WEB RESOURCE

1. *www.vmware.com*

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	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 Co-coordinator
Dr.C.Thirumoorthi	Dr.V. Saravanan	

Curriculum Cell
Hindusthan College of Science & Technology

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Animation and its Technique						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

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 OUTCOMES (CO)

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

SYLLABUS

	Animation And Its Techniques	Sem:
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. 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

CO \ PO	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 Co-coordinator
Mrs.P.Jayasree	Dr.V. Saravanan	

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

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Multimedia and its Applications						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

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 OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	assify 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

SYLLABUS

Unit No.	Multimedia and its Applications Topics	Sem: Hours
I	**Introduction to Multimedia Computer Fonts and Hypertext :** 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:** 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 :** 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.*
3. *Li & Drew, " Fundamentals of Multimedia" , Pearson Education, 2009.*

REFERENCE BOOKS

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

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	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 Co-coordinator
Mrs. K. Mythili	Dr.V. Saravanan	

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

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Network Administration and Trouble Shooting						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

COURSE OBJECTIVE:

- Understand about Networks.
- Recount the history of computer networks and how it evolved into 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 OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recall the principles of Networking	K1
CO2	Apply and experiment the concepts network administration.	K3
CO3	Infer the essential systems administration skills related to server operating systems, system and network service administration,	K4
CO4	Improve the network security and trouble shooting concepts and network access control mechanisms.	K6

SYLLABUS

Unit No.	Network Administration and Trouble Shooting Topics	Sem: Hours
I	**Introduction to Computer Networks:** Fundamentals of Network Communication, Network terms, network models, Network Servers. **Network Hardware Essentials:** Network repeaters and hubs, Network Switches, Wireless Access points, Network Interface Cards, Routers.	8
II	**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. **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, Discussion and Activity.

TEXT BOOKS

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

REFERENCE BOOKS

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

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	PO1	PO2	PO3	PO4
CO1	S	S	M	L
CO2	S	M	S	L
CO3	M	S	M	S
CO4	S	M	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 Co-coordinator
Mr. M. Karthi	Dr. V.Saravanan	

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

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Project Management						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

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 OUTCOMES (CO)

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

SYLLABUS

Unit No.	Project Management Topics	Sem: 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.*

REFERENCE BOOKS

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

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mrs. B Yazhini	Dr.V. Saravanan	

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Mongo DB						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

COURSE OBJECTIVE:

- Understand MongoDB Aggregation framework.
- Learn MongoDB Backup and Recovery options and strategies.
- Integration of MongoDB with GUI Tool.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Infer how MongoDB stores data	K2
CO2	Define how to run queries against a MongoDB instance in order to store, manipulate, and retrieve data on it.	K1
CO3	Critizize how to use the Node.js MongoDB driver for the same ends in order to manipulate your data directly from Node.js.	K5
CO4	Improve with workings of Node.js and how it interconnects with MongoDB.	K6

SYLLABUS

Unit No.	Mongo DB Topics	Sem: Hours
I	**Introduction to MongoDB:** Reviewing the MongoDB philosophy – Fitting Everything Together – Reviewing the Features List.**Installing MongoDB:**Installing MongoDB on your system – Running MongoDB – Installing Additional Drivers.	8
II	**The Data Model:** Designing the DB – Building the Indexes – Implementing Geospatial Indexing –Pluggable Storage Engines – Using MongoDB in Real World.	8
III	**Working with Data:** Navigating your DB – Inserting Data into Collections – Querying for Data – Updating Data -Processing Data in Bulk – Renaming a Collection – Deleting Data – Referencing a DB – Implementing Index Related Functions.	8

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

TEXT BOOKS

1. *David Hows, "The definitive guide to MongoDB", 2nd edition, Apress Publication, 2009.*

REFERENCE BOOKS

1. *Shakuntala Gupta Edward, "Practical Mongo DB ", Second edition, Apress Publications, 2016*
2. *Daniel Perkins, "Mongo DB, Third Edition, CreateSpace Independent Publishing Platform, 2016*

MAPPING WITH PROGRAM OUTCOMES

CO \ PO	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 Co-coordinator
Mr. M. Karthi	Dr.V. Saravanan	

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

Course Code:		Course Title						Batch:	2021-2022 & onwards
		Block Chain Technology						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

COURSE OBJECTIVE :

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

COURSE OUTCOMES (CO)

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

SYLLABUS

	Block Chain Technology	Sem:
Unit No.	**Topics**	**Hours**
I	**Blockchain :** 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:** 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:** 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

CO \ PO	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 Co-coordinator
Mrs.T.Kavipriya	Dr.V. Saravanan	

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

Course Code:		Course Title						Batch:	2021-2022 & onwards
		E – Learning						Semester:	
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

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 OUTCOMES (CO)

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

SYLLABUS

Unit No.	E-Learning Topics	Sem: Hours
I	**E-Learning – Introduction** 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** 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** 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, Discussion and Activity.

TEXT BOOKS

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 Consumers and Designers of Multimedia Learning, Wiley*

WEB RESOURCES

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

MAPPING WITH PROGRAM OUTCOMES

PO / CO	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 pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Dr. S. Sasikala	Dr.V. Saravanan	

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