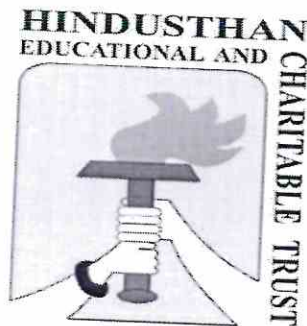


**LEARNING OUTCOMES-BASED CURRICULUM
FRAMEWORK (LOCF)**

in the

**POSTGRADUATE PROGRAMME MASTER OF SCIENCE IN
INFORMATION TECHNOLOGY**

**FOR THE STUDENTS ADMITTED FROM THE
ACADEMIC YEAR 2020 - 2021 AND ONWARDS**



HICAS

HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

(Affiliated to Bharathiar University and Accredited by NAAC)

COIMBATORE-641028

TAMILNADU, INDIA.

Phone: 0422-4440555

Website: www.hindusthan.net/hicas/

PREAMBLE

The Programme, M.Sc Information Technology with Learning Outcomes-Based Curriculum Framework(LOCF) is to implant technical and theoretical understanding of computers and their numerous applications in diverse sectors in pupils. Students can gain a thorough understanding of academics as well as IT-related applications. The students will learn about the IT scenario, its scope, careers, and the essentials of the IT sector during the curriculum.

VISION

To cater the needs of the environmental and ethical values in the mind of students to become good citizens and entrepreneurs.

MISSION

The Mission of the college is to pursue a philosophy of perpetual acquisition of knowledge. The important policy is to provide value-based education and to bring out the hidden potentials in students that equip them to approach life with optimism.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Post Graduates of Information Technology programme will

PEO1: Implement domain knowledge of core technologies and deliver professional services in career by incorporating creativity in computing profession.

PEO2: Explore leadership skills and incorporate ethics as an entrepreneurship to inculcate problem solving capability, design skills and other diverse career paths.

PEO3: Expose Knowledge to various contemporary issues which will enable to become ethical and responsible towards themselves as a co-worker for society and the nation.

PEO 4: Graduates will demonstrate commitment towards sustainable development for the betterment of society.

PEO 5: Graduates will pursue lifelong learning in generating innovative engineering solutions using research and complex problem-solving skills.

PROGRAMME OUTCOME (PO)

FOR LAB ORIENTED SCIENCE COURSES

PO1: DISCIPLINARY KNOWLEDGE: Apply the knowledge of mathematics, science, computer fundamentals, to the solution of complex problems.

PO2: PROBLEM SOLVING AND ANALYSING: Identify, formulate, review research literature, and analyze complex real world problems reaching substantiated conclusions using first principles using techniques.

PO3: ENVIRONMENT SUSTAINABILITY AND ETHICS: Understand the impact of the professional solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO4: MODERN TOOL USAGE: Create, select, and apply appropriate techniques, resources and modern IT tools including prediction and modeling to complex technical activities with an understanding of the limitations.

PO5: CO-OPERATIVE TEAMWORK & COMMUNICATIVE SKILLS: Communicate effectively on complex activities with the technical community and with society.

PO6: SELF DIRECTED / LIFELONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO7: ENHANCING RESEARCH CULTURE: Apply ethical research principles and responsibilities of the technical practice.

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO1: Provide graduates with a strong foundation in mathematics, science and engineering fundamentals to enable them to devise and deliver efficient solutions to challenging problems in Core and supportive disciplines.

PSO2: Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity

PSO3: Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems

PSO4: Impart analytic and thinking skills to develop initiatives and innovative ideas for R&D, Industry and societal requirements.

PSO5: Inculcate qualities of teamwork as well as social, interpersonal and leadership skills and an ability to adapt to evolving professional environments in the domains of engineering and technology.

**HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)
COIMBATORE -641028**

**SCHEME OF EXAMINATIONS - CBCS & LOCF PATTERN
(For the Students admitted from the Academic year 2020-2021 and onwards)**

PG PROGRAMME

Programme: M.Sc. Information Technology

Course Code	Course Type	Course Title	Lecture Hours/Week	Exam Duration (hours)	MAX. MARKS			CREDIT POINTS
					IE	E.E	TOTAL	
Semester - I								
20ITP01	DSC	Mobile Application Development	5	3	30	70	100	5
20ITP02	DSC	Cloud Computing and Services	5	3	30	70	100	4
20ITP03	DSC	Advanced Java Programming	5	3	30	70	100	5
20ITP04	DSC	Wireless Networks	5	3	30	70	100	4
20ITP05	DSC	Practical I : Mobile Application Programming	5	3	40	60	100	3
20ITP06	DSC	Practical II : Java Programming	5	3	40	60	100	3
20ITPV01	ACC	VAC-I	2	1	50	-	50	1
20ITPJ01	SEC	Aptitude / Placement Training	2	1	50	-	50	Grade*
20ITPJ02	SEC	Online Classes	2	1	-	-	-	C/NC**
Semester - II								
20ITP07	DSC	Advanced Operating System	5	3	30	70	100	5
20ITP08	DSC	Open Source Database Management System	5	3	30	70	100	5
20ITP09	DSC	Web Programming Using Open Source Technologies	5	3	30	70	100	5
20ITP10	DSC	Network Security	4	3	30	70	100	4
20ITP11	DSC	Practical III : Open Source Database Management System	4	3	40	60	100	2
20ITP12	DSC	Practical IV : Web Programming	5	3	40	60	100	3
20GSP01	AECC	Skill Based : Cyber Security	2	-	100	-	100	2
20ITPV02	ACC	VAC-II	2	1	50	-	50	1
20ITPJ03	SEC	Aptitude / Placement Training	2	1	50	-	50	Grade*
20ITPJ04	SEC	Online Classes	2	1	-	-	-	C/NC**

Semester – III

20ITP13	DSC	Internet of Things	5	3	30	70	100	5
20ITP14	DSC	Deep Learning with Python	5	3	30	70	100	5
20ITP15	DSC	Soft Computing	5	3	30	70	100	4
20ITP16	DSC	Practical V : Programming the Internet of Things Lab	5	3	40	60	100	3
20ITP17	DSC	Practical VI : Python Programming Lab	5	3	40	60	100	3
20ITP18A	DSE	Elective I : Software Project Management	5	3	30	70	100	3
20ITP18B		Elective I : Bioinformatics						
20ITP18C		Elective I : Software Testing						
20ITP18D		Elective I : Mobile Computing						
20ITPV03	ACC	VAC-III	2	1	50	-	50	1
20ITPJ05	SEC	Aptitude / Placement Training	2	1	50	-	-	Grade*
20ITPJ06	SEC	Online Classes	2	1	-	-	-	C/NC**

Semester - IV

20ITP19	DSC	Big Data Analytics	5	3	30	70	100	4
20ITP20	DSC	Research Methodology	5	3	30	70	100	5
20ITP21	DSC	Practical VII : Big Data Analytics using R Tool	5	3	40	60	100	3
20ITP22A	DSE	Elective II : Enterprise Resource Planning	5	3	30	70	100	3
20ITP22B		Elective II : Artificial Intelligence and Robotics						
20ITP22C		Elective II : Multimedia and its Applications						
20ITP22D		Elective II : Digital Image Processing and Analysis						
20ITP23	DSC	Project Work	-	-	50	150	200	3
20ITPV04	ACC	VAC-IV	2	1	50	-	50	1
20ITPJ07	SEC	Aptitude / Placement Training	2	1	50	-	-	Grade*
20ITPJ08	SEC	Online Classes	2	1	-	-	-	C/NC**
TOTAL CREDITS								95

- VAC-Value Added Course (Extra Credit Courses)
- JOC-Job Oriented Course
- C/NC**- Completed/ Not Completed
- I.E-Internal Exam
- E.E-External Exam
- * Grades depends on the marks obtained

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

PASSING MINIMUM

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

List of Open Elective Papers	
Open Electives	Courses offered by the Departments (Additional credit Course)
	a) Digital Marketing
	b) Master Web Designing in Photoshop
	c) SAP ERP Fundamentals
	d) Digital Humanities
	e) Cyber Law
	f) Web services

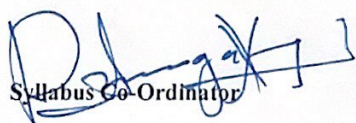
List of Elective Papers/ DSE (Can choose any one of the paper as electives)		
	Course Code	Title
Electives/ DSE-I	20ITP18A	Software Project Management
	20ITP18B	Bioinformatics
	20ITP18C	Software Testing
	20ITP18D	Mobile Computing
Electives/ DSE-II	20ITP22A	Enterprise Resource Planning
	20ITP22B	Artificial Intelligence and Robotics
	20ITP22C	Multimedia and its Applications
	20ITP22D	Digital Image Processing and Analysis

ABSTRACT FOR SCHEME OF EXAMINATIONS

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

S.No.	Course (AEE/DSC/DSE/GE/ACC/SEC)	Papers	Credit	Total Credits	Marks	Total Marks
1	Ability Enhancement Elective (AECC)	1	2	2	100	100
2	Discipline Specific course(DSC)	8	5	40	100	800
3	Discipline Specific course(DSC)	5	4	20	100	500
4	Discipline Specific course(DSC)	7	3	21	100	700
5	Discipline Specific course(DSC)	1	2	2	100	100
3	Discipline Specific Elective(DSE)	2	3	6	100	200
4	Additional Credit Course (ACC)	4	1	4	50	200
5	Skill Enhancement Course (SEC)	8	Grade			
Total		36	20	95	650	2600

* Excluding Additional Credit Course(ACC) Credit Points(4)


Syllabus Co-Ordinator


Academic Council – Member Secretary

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


BOS Chairman
Dr. V. SARAVANAN
MCA., M.Sc(CS)., M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

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

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

1. Internal Marks for all PG

Components	Marks
Test	5
Model Exam	10
Assignment	5
Attendance*	5
Seminar	5
TOTAL	30

*Split-up of Attendance Marks for UG

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

(# (3+2)-3 for External & 2 for (Internal paper presentation or poster design))

2. a) Components for Practical I.E.

Components	Marks
Test-I	20
Test-II	20
Total	40

b) Components for Practical E.E.

Components	Marks
Experiments	50
Record	5
Viva	5
Total	60

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

Institutional /Industrial Training (I.E)		Mini Project (I.E)	Major Project Work		
Component	Marks	Marks	Component	Marks	Total Marks
Work diary	25	-	LE a)Attendance	20	50
Report	50	50	b)Review	30	
Viva-voce	25	50	E.E* a) Final report	120	150
Total	100	100	b)Viva-voce	30	
				Total	200

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

4. Components for Cyber Security Paper

Components	Marks
Two Tests (each 2 hours) of 40marks each [4 out of 7 descriptive type questions 4 x 10 = 40 Marks]	80
Two assignments (2 x 10)	20

5. Value Added Courses and 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 50%
2. If the candidate fails to secure 50% passing minimum, he / she may have to reappear for the same in the subsequent semesters
3. Item No's:4,5, are to be treated as 100% Internal papers.
4. For item No.5, Tests conducted through online modules (Google Form/any other)

PG PATTERN
QUESTION PAPER PATTERN FOR CIA EXAM

Reg.No: _____

Q.P.CODE: _____

HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)
DEGREE CIA EXAMINATIONS _____ **20** _____
(_____ Semester)

BRANCH: _____

Subject Name: _____

Time: Two Hours

Maximum: 50 Marks

Section-A (3 x 6=18 Marks)

Answer ALL Questions

ALL questions carry EQUAL Marks

(Q.No: 1 to 3 Either Or type)

Section-B (4 x 8=32 Marks)

Answer ALL Questions

ALL questions carry EQUAL Marks

(Q.No: 4 to 7 Either Or type)

QUESTION PAPER PATTERN FOR MODEL/ END SEMESTER EXAM

Reg.No: _____

Q.P.CODE: _____

HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)
DEGREE MODEL EXAMINATIONS _____ **20** _____
(_____ Semester)

BRANCH: _____

Subject Name: _____

Time: Three Hours

Maximum: 70 Marks

SECTION - A (5x6=30 marks)

Answer ALL Questions

ALL Questions carry EQUAL Marks

(Q.No 1 to 5 Either Or type)

(One question from each Unit)

SECTION - B (5x8=40 Marks)

Answer ALL Questions

ALL Questions carry EQUAL Marks

(Q.No 6 to 10 Either Or type)

(One question from each Unit)

Course Code:	20ITP01	Course Title					Batch:	2020 -2021 & onwards	
		Mobile Application Development					Semester:	I	
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Apply the fundamental concepts of Android studio and other application
- Explore Life cycle of an application in Android
- Design to create a new application in Mobile environment.
- Develop Debug and Deploy Android applications

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Choose a mathematical foundation in analysis of algorithms.	K1
CO2	Describe with different algorithmic design strategies	K2
CO3	Apply design principles and concepts to algorithm design	K3
CO4	Analyze to choose appropriate algorithm design techniques for solving problems.	K4

SYLLABUS

20ITP01	Mobile Application Development	Sem: I
Unit No.	Topics	Hours
I	INTRODUCTION TO ANDROID What is Android - History and Version - Installing softwares – Setup Eclipse - Hello Android example - Internal Details - Dalvik VM - Software Stack - Android Core Building Blocks - Android Emulator - AndroidManifest.xml - R.java file - Hide Title Bar - Screen Orientation.	12
II	WIDGETS & USER INTERFACE Working with Button - Toast - Custom Toast - Button - Toggle Button - Switch Button - Image Button - CheckBox - AlertDialog - Spinner - AutoCompleteTextView - RatingBar - DatePicker - TimePicker - ProgressBar - Quick Contact Budge -Analog Clock and Digital Clock - Working with hardware Button - File Download	12
III	ACTIVITY, INTENT & FRAGMENT Activity Lifecycle – Activity Example - Implicit Intent - Explicit Intent - Fragment Lifecycle –Fragment Example - Dynamic Fragment. Android Menu.LAYOUT&VIEWOption Menu - Context Menu - Popup Menu - Relative Layout – Linear Layout - Table Layout - Grid Layout	12
IV	ANDROID ADAPTOR VIEW Array Adaptor - ArrayList Adaptor - Base Adaptor - GridView - WebView - ScrollView - SearchView - TabHost - Dynamic ListView - Expanded ListView. ANDROID SERVICES Android Service - Android Service API - Android Started Service - Android Bound Service - Android Service Life Cycle - Android Service Example.	12
V	Data Storage - Shared Preferences - Internal Storage - External Storage. SQLite - SQLite API - SQLite Spinner - SQLite List View - API - Android Web Services	12

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

Android Developer Fundamental course - Learn to Develop Android Applications - Google Developer Training Team 2016.

REFERENCE BOOKS

1. *Android Application Development for Dummies 3rd Edition* published by John Wiley & Sons, Inc. 2015
2. *Android Programming for Beginners* John Horton - December 2015
3. *Complete Introduction for Beginners – Step By Step Guide How to Create Your Own Android App Easy!* - Matthew Gimson - 2015.

WEB RESOURCES

<https://books.goalkicker.com/AndroidBook/>

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mr.K.S.Senthil Kumar	Dr. V. Saravanan	

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

Course Code:	20ITP02	Course Title						Batch:	2020 -2021 & onwards
		Cloud Computing and Services						Semester:	I
Hrs/Week:	5	L	5	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- The Basics of Cloud computing and its key concepts.
- Provides in depth knowledge in Cloud Computing services.
- Able to do Cloud implementation and Mobile cloud computing.
- To gain Knowledge in Key components of Amazon Web Services.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Illustrate Cloud Computing and categories the different Cloud services and deployment models	K1
CO2	Identify and recall the key components of Amazon web Service	K2
CO3	Compare security and privacy issues in cloud computing.	K3
CO4	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing	K4

SYLLABUS

20ITP02	Cloud Computing and Services	Sem: I
Unit No.	Topics	Hours
I	Defining Cloud Computing: Definition - Cloud types - Benefits of cloud computing – Disadvantages – Role of Open standards - Understanding Cloud Architecture: Exploring the cloud computing stack.	12
II	Understanding Services and Applications by type: Defining IaaS, PaaS, SaaS – Defining Identity as a Service IDaaS – Defining Compliance as a Service (CaaS) - Understanding Abstraction and Virtualization – Capacity Planning.	12
III	Exploring Platform as a Service: Defining Services – Using PaaS Application Frameworks – Using Google we services: Exploring Google Applications, Surveying the Google Application portfolio- Using Amazon Web Services - Using Microsoft Cloud Services: Exploring Microsoft Cloud Services, Defining the Windows Azure Platform.	14
IV	Exploring Cloud Infrastructures: Administrating the cloud – Understanding Cloud Security: Securing the cloud - Securing data - Establishing Identity and presence – Introducing Service Oriented Architecture – Defining SOA Communication – Managing and monitoring SOA.	12
V	Working with Cloud based storage: Cloud storage definition – Provisioning Cloud storage – Exploring cloud backup solutions – Using Webmail services: Exploring Cloud mail Services – Exploring Instant messaging – Collaboration Technologies – Using Media and Streaming.	10

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. *Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010*

REFERENCE BOOKS

1. Tim Mather, SubraKumaraswamy, and ShahedLatif, *Cloud Security and Privacy An Enterprise Perspective on Risks and Compliance*, O'Reilly 2009
2. *Cloud Computing – Second Edition* by Dr. Kumar Saurabh, Wiley India
3. Jason Venner, "Pro Hadoop- Build Scalable, Distributed Applications in the Cloud", A Press, 2009

WEB RESOURCES

<https://lecturenotes.in/notes/14455-note-for-cloud-computing-cc-by-ravipudiedukondalu?reading=true&continue=2>

MAPPING WITH PROGRAM OUTCOMES

CO	PO1	PO2	PO3	PO4
CO1	S	M	M	M
CO2	L	M	S	S
CO3	M	S	S	S
CO4	M	L	M	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

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

Course Code:	20ITP03	Course Title						Batch:	2020 -2021 & onwards
		Advanced Java Programming						Semester:	I
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Remember to code, compile, and execute programs while learning advanced programming concepts.
- To demonstrate the use of good object-oriented design principles including encapsulation and information hiding.
- Demonstrating the use of a variety of basic control structures including selection and repetition.
- Creating RMI application with Framework.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	List classes, objects, members of a class and relationships among them needed for a specific problem.	K1
CO2	Classify dynamic web pages, using Servlets and JSP	K2
CO3	Apply to develop RMI application using Java Spring Framework	K3
CO4	Analyze and classify the type of framework and its advantages	K4

SYLLABUS

20ITP03	Advanced Java Programming	Sem: I
Unit No.	Topics	Hours
I	Overview Object Oriented Programming - Simple Program - Second short program-Two control statements. Introducing Classes - class fundamentals - Declaring objects - assigning object reference Variables - introducing methods - constructors.	12
II	Multithreaded Programming The Java Thread Model - Main Thread- creating a Thread - Creating Multiple Threads - using is Alive() and join() - Thread Priorities - Synchronization – Inter thread communication - Suspending ,resuming and stopping Threads.	12
III	Networking Networking basics - java and the Net - Inet Address -Inet4Address and Inet6Address - TCP/IP Client Sockets - URL - URL Connection - TCP/IP Server Sockets - Datagrams - URL Class.	12
IV	Structs: Introduction to Structs : Structs - Features –Model1 vs Model2 -Custom Validation – Bundled Validators – Ajax Validation View – Controller MVC Design Pattern – tags – UI Components Hibernate: Introduction to Hibernate Framework –ORM Tool-Architecture- Hibernate using XML – Web application.	12
V	Spring: Introduction to Spring Framework – Framework of Swing-Advantages of Spring Framework - Modules – Application –IoC Container- Dependency Injection - Constructor Injection- RMI-Integration of RMI in Spring.	12

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Herbert Schildt - "The complete Reference Java ", Tata McGraw Hill, 5th edition, 2005.

REFERENCE BOOKS

1. Deitel & Deitel, "Java How to Program", Prentice Hall, 5th Edition, 2002.
2. The Complete Reference 2nd Edition James Holmes "Tata McGraw Hill 2nd Edition 2007.

WEB RESOURCES

<https://beginnersbook.com/java-tutorial-for-beginners-with-examples/>



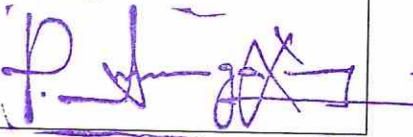
MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L - Low

ASSESSMENT PATTERN

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

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

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

Course Code:	20ITP04	Course Title						Batch:	2020 -2021 & onwards
		Wireless Network						Semester:	I
Hrs/Week:	5	L	5	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- Understand the fundamentals of wireless networks.
- Learn and analyze the different wireless technologies.
- Evaluate Ad-hoc networks and wireless sensor networks.
- Understand and evaluate emerging wireless technologies.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define the basic concepts of wireless network and wireless generations.	K1
CO2	Compare and contrast different wireless technologies such as CDMA, GSM, GPRS etc	K2
CO3	Discover and judge the emerging wireless technologies standard such as WLL, WLAN, WPAN, WMAN	K3
CO4	Determine the security measures, standards. Services and layer wise security considerations.	K4

SYLLABUS

20ITP04	Wireless Networks	Sem: I
Unit No.	Topics	Hours
I	Fundamentals of wireless communication: Electromagnetic spectrum- Characteristics of wireless channel- Modulation techniques- Multiple access techniques-Antennas- Radio Propagation Mechanisms-Spread Spectrum.	12
II	LANs, PANs, WANs,MANs: IEEE 802.11- HIPER-LAN standards- Bluetooth- HomeRF- Cellular concept and architecture- WLL- UMTS- 2G/3G Versus LTE- Next Generation Mobile Networks.	12
III	Wireless Internet and Ad hoc networks: Mobile IP- TCP over wireless- Wireless application protocol- Optimizing Web over wireless. Wireless devices service technologies- SMS- USSD and VXML. Issues and challenges in infrastructure-less networks- MAC protocols- Routing protocols- Multicast routing protocols- Transport and security protocols- Quality of service provisioning- Energy management.	14
IV	Hybrid wireless networks: Architectures and routing protocols for hybrid wireless-networks- Load balancing schemes- Pricing schemes for multihop wireless networks.	12
V	Sensor Networks, Application Layer and Contemporary issues: Issues and challenges in wireless sensor networks: Architectures and routing protocols; MAC protocols; Data dissemination, data gathering, and data fusion; Quality of a sensor network; Real-time traffic support and security protocols. Contemporary issues.	10

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. C. Siva Ram Murthy, B. S. Manoj, "Ad Hoc Wireless Networks – Architecture and Protocols", Pearson Education, 2010.

REFERENCE BOOKS

1. Asoke K. Talukder, Roopa R. Yavagal, *Mobile Computing-Technology, Applications and Service Creation*, Tata McGraw Hill, 2010
2. Waltenege Dargie, Christian Poellabauer, "Fundamentals of wireless sensor Networks - theory and practice", John Wiley & Sons, 2010
3. Ian F. Akyildiz, Mehmet Can Vuran, "Wireless Sensor Networks", John Wiley & Sons, 2010.

WEB RESOURCES

<https://www.tutorialspoint.com/Wireless-Networks>

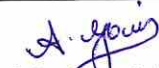
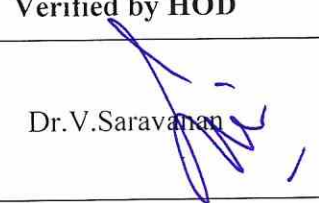

MAPPING WITH PROGRAM OUTCOMES

CO ^{PO}	PO1	PO2	PO3	PO4
CO1	M	M	L	M
CO2	M	S	S	S
CO3	S	M	M	M
CO4	S	M	M	M

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 Mrs. Gowri.A	 Dr. V. Saravanan	

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

Course Code:	20ITP05	Course Title					Batch:	2020 -2021 & onwards	
		Practical I : Mobile Application Programming					Semester:	I	
Hrs/Week:	5	L	-	T	-	P	5	Credits:	3

COURSE OBJECTIVE

- Ability to understand about Android studio and Eclipse Environment
- Able to Create GUI application with Multi-screen Templates
- Deploy SQLite with Application
- Design their application using Web Services

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define a Mobile Application using Android Studio	K1
CO2	Interpret to use widgets and components in their android applications	K2
CO3	Apply to work with database locally & cloud	K3
CO4	Examine how to deploy the applications by inheriting web services.	K4

SYLLABUS

20ITP05	Practical I : Mobile Application Programming	Sem: I
Ex. No.	Topics	Hours
1	Create a simple Login App using Database	5
2	Design and implement a single screen app that displays information about a fictional small business	5
3	Build a Score Keeper app, which gives a user the ability to keep track of the score of two different teams playing a game of your choice	5
4	Create a simple file upload program with user authentication	5
5	Create a simple application to find a Location of your android device	5
6	Create a simple dictionary App	5
7	The Quiz App	5
8	Musical Structure App	5
9	Tour Guide App	5
10	News App	5

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

MAPPING WITH PROGRAM OUTCOMES

CO ^{PO}	PO1	PO2	PO3	PO4
CO1	S	S	M	S
CO2	M	M	M	L
CO3	S	S	S	M
CO4	L	M	M	L

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mr.K.S.Senthil Kumar	Dr.V.Saravanan	

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

Course Code:	20ITP06	Course Title						Batch:	2020 -2021 & onwards
		Practical II : Java Programming						Semester:	I
Hrs/Week:	5	L	-	T	-	P	5	Credits:	3

COURSE OBJECTIVE

- Remembering simple application using object oriented concepts using java
- Understanding the concepts of Framework applied in java.
- Evaluate the techniques of RMI in java
- Create a Simple application in GUI Environment.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Remembering and Developing simple GUI Applications	K1
CO2	Extend on developing RMI Application	K2
CO3	Experiment with an application using Framework	K3
CO4	Classify and understand the concepts of Hibernate	K4

SYLLABUS

20ITP06	Practical II : Java Programming	Sem: I
Ex. No.	Topics	Hours
1	Demonstrate REMOTE METHOD INVOCATION application using Java	4
2	Create an Event Driven Java Application. (Mouse Events/Keyboard Events)	4
3	Exhibit Socket Programming for Two way communication in java.	4
4	Create a Java program to display IP ADDRESS and HOST NAME of the machine	4
5	Illustrate a concept of inheritance with Servlet	4
6	Write a java program to implement GUI WITH BORDER LAYOUT.	4
7	Create a Event Handler program using Spring Framework.	4
8	Create a File upload program using Struts Framework.	4
9	Create a program for handling exceptions using Struts.	4
10	Demonstrate a simple JAVA BEANS applications.	4
11	Bulida java program to execute NETWORKING concept.	5
12	Design a java program to perform ANIMATION of different shapes.	5

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning


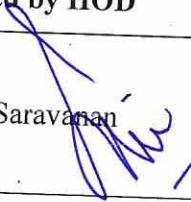

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

Co-ordinator
Curriculum Development Cell
Hindusthan College of Engineering & Science,
Coimbatore - 642 028.

Course Code:	20ITP07	Course Title						Batch:	2020 -2021 & onwards
		Advanced Operating System						Semester:	II
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Remembering the Main components of an OS & their functions.
- Learning the mechanisms of OS to handle processes and threads and their communications.
- Gain insight into the components and management aspects of real time and mobile operating systems.
- Develop real-time algorithm for task scheduling.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identify the importance of computer system resources and the role of operating systems in their management policies and algorithms.	K1
CO2	Illustrate the working of real-time operating systems and real-time databases.	K2
CO3	Examine the hardware and software issues in modern distributed systems.	K3
CO4	Organize the requirement for process synchronization and coordination handled by operating system	K4

SYLLABUS

20ITP07	Advanced Operating System	Sem: II
Unit No.	Topics	Hours
I	Basics of Operating Systems: An Operating System – Main frame Systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real-Time Systems – Handheld Systems – Feature Migration – Computing Environments - Process Scheduling – Cooperating Processes – Inter Process Communication- Deadlocks – Prevention – Avoidance – Detection – Recovery.	12
II	Distributed Operating Systems: Issues – Communication Primitives – Lamport’s Logical Clocks – Deadlock handling strategies – Issues in deadlock detection and resolution distributed file systems –design issues – Case studies – The Sun Network File System-Coda.	12
III	Realtime Operating Systems : Introduction – Applications of Real Time Systems – Basic Model of Real Time System – Characteristics – Safety and Reliability - Real Time Task Scheduling	10
IV	Operating Systems for Handheld Systems: Requirements – Technology Overview – Handheld Operating Systems – Palm OS-Symbian Operating System- Android –Architecture of android – Securing handheld systems.	13
V	Case Studies : Linux System: Introduction – Memory Management – Process Scheduling – Scheduling Policy - Managing I/O devices – Accessing Files- iOS : Architecture and SDK Framework - Media Layer - Services Layer - Core OS Layer - File System.	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. William Stallings, "Operating systems", Pearson Prentice Hall, 6th Edition, 2009.
2. Pradeep K Sinha, "Distributed Operating Systems: Concepts and Design", Prentice Hall of India, 2007.

REFERENCE BOOKS

1. Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, "Operating System Concepts", Seventh Edition, John Wiley & Sons, 2004.
2. Rajib Mall, "Real-Time Systems: Theory and Practice", Pearson Education India, 2006.
3. Pramod Chandra P.Bhatt, An introduction to operating systems, concept and practice, PHI, Third edition, 2010

WEB RESOURCES

<https://www.docsity.com/en/notes-for-distributed-operating-system/2725203/>


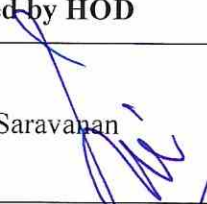

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, 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
 Ms. G. Sivabrintha	 Dr. V. Saravanan	

Course Code:	20ITP08	Course Title						Batch:	2020 -2021 & onwards
		Open Source Database Management System						Semester:	II
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Remembering the relational model of data and usage of Relational Algebra.
- Create a relational database using a relational database package.
- Design to facilitating the student to understand the various functionalities of DBMS software.
- Analyze the operations related to creating, manipulating and maintaining databases for Real-world applications.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define the structure and model of the relational database system	K1
CO2	Classify multiple tables; and using group functions, sub queries	K2
CO3	Establish a database based on a data model considering the normalization to a specified level	K3
CO4	Analyze the storage size of the database and design appropriate storage techniques	K4

SYLLABUS

20ITP08	Open Source Database Management System	Sem: II
Unit No.	Topics	Hours
I	Database internals and Advanced concepts: Introduction- Data Models - Entity Relationship model - Relational model – Relational Database - Introduction - SQL - Other Relational languages - Integrity and Security – Relational Database design.	12
II	Transaction Management: Overview of Transaction Management- The ACID properties – Transactions and Schedules – Concurrent execution of Transactions – Lock based concurrency control – Performance of locking - Transaction support in SQL – Introduction to crash recovery – The log – Other recovery related structures – Check pointing – Recovering from a system crash – Media Recovery.	12
III	Object based Databases and XML: Structured Data Types - Operations on Structured Data - Encapsulation and ADTs – Inheritance - Objects, OIDs, and Reference Types - Database Design for an ORDBMS - ORDBMS Implementation Challenges – OODBMS - Comparing RDBMS, OODBMS, and ORDBMS – XML – Background – Structure of XML Data – XML Document Schema – Querying and Transformation - The Application program interface – Storage of XML data- XML Application - Case Study in XML.	12
IV	Parallel and Distributed Databases: Distributed Databases – Homogeneous and Heterogeneous Databases - Distributed Data Storage - Distributed Transactions - Commit Protocols – Concurrency Control in Distributed Databases – Availability - Distributed Query Processing - Heterogeneous Distributed Databases - Directory Systems - Parallel Databases – Introduction - I/O Parallelism – Inter query Parallelism – Intra operation Parallelism - Interoperation Parallelism - Design of Parallel Systems – Case Study in Oracle.	12
V	NoSQL: NoSQL Basics - Interfacing and Interacting with NoSQL – Storage Architecture – CRUD Operations - NoSQL Stores Queries - Data Stores Modifications and Evolution Management - Indexing and Ordering Data Sets - NoSQL in Cloud – Case Study in MongoDB.	12

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Silberschatz, Korth, Sudarshan, "Database system concepts", 6th Edition, Tata McGraw Hill, 2013 (For UNITS I, III, IV).

2. Shashank Tiwari, "Professional NoSQL", 1 edition- 2011 (For UNIT V).

REFERENCE BOOKS

1. Ramakrishnan, Gehrke, "Database Management Systems", Tata McGraw Hill

2. Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", Fifth Edition, Pearson Education, 2008.

3. G.K. Gupta, "Database Management Systems", Tata McGraw Hill, 2011.

WEB RESOURCES

<https://pdfs.semanticscholar.org/0390/91a2f0772060b60d97df25c59f1000e20aed.pdf>


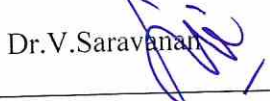

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L - Low

ASSESSMENT PATTERN

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

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

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

Course Code:	20ITP09	Course Title						Batch:	2020 -2021 & onwards
		Web Programming Using Open Source Technologies						Semester:	II
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Remembering basic concepts of the Internet Programming.
- Acquire knowledge and skills for creation of web site considering both client and server side
- Implement interactive web page(s) using HTML, CSS and JavaScript.
- Ability to develop responsive web applications.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define interactive web page(s) using HTML, CSS and JavaScript.	K1
CO2	Illustrate a responsive web site using HTML5 and CSS3.	K2
CO3	Apply Dynamic web site using server side PHP Programming and Database connectivity.	K3
CO4	Determine and differentiate different Web Extensions and Web Services.	K4

SYLLABUS

20ITP09	Web Programming Using Open Source Technologies	Sem: II
Unit No.	Topics	Hours
I	Introduction : Server-Side Web Scripting - Syntax and Variables-Control and Functions. Passing Information between Pages: GET Arguments - POST Arguments - Formatting Form Variables - PHP Super global Arrays.	12
II	Data Manipulations: Strings in PHP - String Functions-Arrays and Array Functions: Creating Arrays - Retrieving Values - Multidimensional Arrays - Inspecting Arrays - Deleting from Arrays - Iteration. Advanced Array Functions: Transformation of Arrays. Number Handling: Numerical Types - Mathematical Operators - Simple Mathematical Functions - Randomness.	12
III	Session and Cookies : Regular Expressions: Tokenizing and parsing Functions - Regular Expressions - Perl - Compatible Regular Expressions - Advanced String Functions. Working with the File system: PHP File Permissions - File Reading and Writing Functions - File system and Directory Functions - Network Functions - Date and time Functions - Calendar Conversion Functions. Working with Sessions and Cookies: Sessions work in PHP - Session Functions - Configuration Issues - Cookies - Sending HTTP Headers.	12
IV	Structured Query Language (SQL): Relational Database and SQL-SQL standards-The Workhorses of SQL- Database Design-Privileges and Security. PHP and MySQL: Connecting to MySQL - Making MySQL Queries - Fetching Data Sets - Multiple Connections - Error Checking - Creating MySQL Databases with PHP - MySQL Functions.	12
V	Content management system: What is CMS - Wordpress - Joomla - Drupal -Magento - Prestashop - Comparion of Content Management System ,Opencart , Cscart. Search Engine Optimization - How it Works - How SEO in marketing.	12

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

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

REFERENCE BOOKS

1. DacieCristian, "Pack Pub AJAX and PHP" - 2006
2. Scourar necYann, Stolz Jeremy Jeremy and Glass Michael , "Beginning PHP5, APACHE, MYSQL Web Development" , Wiley-India. New Delhi, 20053.
3. Steven Holzner, "The Complete Reference" , Tata McGraw Hill Edition, NewDelhi, 2009

WEB RESOURCES

1. <https://www.tutorialspoint.com/php/index.htm>
2. <http://www.tizag.com/phpT/>

MAPPING WITH PROGRAM OUTCOMES

CO	PO1	PO2	PO3	PO4
CO1	S	S	S	L
CO2	S	M	S	L
CO3	S	S	S	L
CO4	L	M	M	L

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mr.K.S.Senthil Kumar	Dr.V.Saravanan	

Co-ordinator
Curriculum Development Cell 27
Hindusthan College of Arts & Science,
Coimbatore-641 028.

Course Code:	20ITP10	Course Title					Batch:	2020 -2021 & onwards	
		Network Security					Semester:	II	
Hrs/Week:	4	L	4	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- Network security awareness and a clear understanding of its importance.
- Network security threats and countermeasures
- Network security designs using available secure solutions (such as PGP, SSL, IPSec, etc)
- Advanced security issues and technologies

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define the role of management in enforcing security policies standards and practices.	K1
CO2	Remembering and solving a problem using problem solving technique in AI	K2
CO3	Illustrate how digital signatures are performed and the role of digital certificates.	K3
CO4	Develop implementations for some of the common cryptographic algorithms.	K4

SYLLABUS

20ITP10	Network Security	Sem: II
Unit No.	Topics	Hours
I	Network Security Overview: Introduction to Critical Infrastructure Protection, Risk Analysis, Eavesdropping and Wiretapping, Informants and Surveillance, Cyber Crime and Cyber criminals, Privacy and Cyberspace Law Privacy and Information Operations.	8
II	IPSec: Secure sockets – IPsec overview – IP security architecture – IPsec-Internet Key Exchanging(IKE) – IKE phases – encoding – Internet security – Threats to privacy – Packet sniffing – Spoofing - Web security requirements – Real Time communication security – Security standards– Kerberos.X.509AuthenticationService, Comparison between IPv4 and IPV6, Mobile IP.	10
III	Security protocols: Transport layer protocols – SSL – Electronic mail security – PEM and S/MIME security protocol – Pretty Good Privacy – Web Security - Firewalls design principles – Trusted systems – Electronic payment protocols. Intrusion detection – password management – Viruses and related Threats – Virus Counter measures, Virtual Private Networks.	10
IV	Attack Classifications: Software Flaws, Buffer Overflow, Linearization Attacks, ARP attacks, route table modification, ARP Spoofing, Denial of Service, DDoS Network Management Systems: Trust Based Systems, Firewall and its Types, Firewall Design Principles.	10
V	Security Consideration: Encrypted Tunnels, Authentication header, WEP, key distribution protocols, Digital signatures, and Digital certificates.	10

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Forouzan B. A., "Cryptography & Network Security", Tata McGraw Hill, 2010

REFERENCE BOOKS

1. Douglas Stinson, "Cryptography Theory and Practice", 2nd Edition, Chapman & Hall/CRC.
2. Stallings W., "Cryptography and Network Security", Pearson Education.
3. Man Young Rhee, "Internet Security: Cryptographic Principles", "Algorithms and Protocols", Wiley Publications, 2003

WEB RESOURCES

1. <https://www.doccity.com/en/computer-and-network-security-introduction-to-information-security-lecture-slides/311680/>
2. https://www.tutorialspoint.com/information_security_cyber_law/network_security.htm

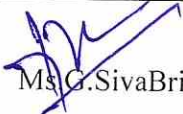
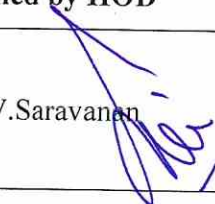
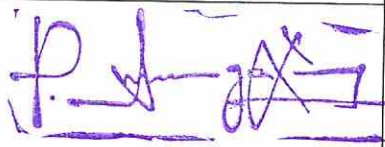
MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science, 30
Coimbatore-641 028.

Course Code:	20ITP11	Course Title						Batch:	2020 -2021 & onwards
		Practical III : Open Source Database Management System						Semester:	II
Hrs/Week:	4	L	-	T	-	P	4	Credits:	2

COURSE OBJECTIVE

- A strong formal foundation in database concepts.
- Introduction to systematic database design approaches covering conceptual design, logical design and an overview of physical design.
- To present the concepts and techniques relating to ODBC and its implementations.
- The concepts of transactions and transaction processing.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	List out the underlying concepts of database technologies	K1
CO2	Illustrate and implement a database schema for a given problem domain	K2
CO3	Establish the enforce integrity constraints on a database	K3
CO4	Organize programming PL/SQL including stored procedures, stored functions, cursors and packages	K4

SYLLABUS

20ITP1 1	Practical III : Open Source Database Management System	Sem: II
Ex. No.	Topics	Hours
1	Creation of a database and writing SQL queries to retrieve information from the database by performing Insertion, Deletion, Modifying, Altering, Updating and Viewing records.	4
2	Creation of database for Procedures, Triggers and Functions.	4
3	Creation of Views, Synonyms, Sequence, Indexes, save point.	4
4	Creating an Employee database to set various constraints and joins.	4
5	Creating a database for college admission system by using relationship between the databases.	4
6	Implement PostgreSQL for Personal Information System.	4
7	Create a function that calculates <i>tax</i> on a personnel member's salary	4
8	Exhibit Web Based User Identification System using Oracle/ My SQL	4
9	Demonstrate Railway Reservation System using Oracle/ My SQL	4
10	Create Timetable Management System using Oracle/ My SQL	4

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

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

Course Code:	20ITP12	Course Title						Batch:	2020 -2021 & onwards
		Practical IV : Web Programming						Semester:	II
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- Ability to understand markup languages and Scripting languages
- Deploy a simple web application using PHP & MYSQL
- Knowledge on Creating a Simple Forum based application
- Design Develop Debug and Deploy an application with Admin Panel

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	List out and develop simple GUI Applications	K1
CO2	Demonstrate a web application using PHP & MYSQL	K2
CO3	Applying Template in Web Application	K3
CO4	Examine an application using Client / Server Panel in Web Environment.	K4

SYLLABUS

20ITP12	Practical IV : Web Programming	Sem: II
Ex. No.	Topics	Hours
1	Design and create a program for implementing Inheritance.	5
2	Develop a program to send an HTML formatted Email with attachment in PHP.	5
3	Develop and demonstrate a program for login authentication using PHP and My SQL.	5
4	Creating Crud Grid For A Student Database Using PHP and My SQL.	5
5	Develop a program to upload a file in PHP.	5
6	Design and create a RSS feed using PHP and My SQL.	5
7	Create a Pay slip for an employee using PHP and My SQL.	5
8	Create a simple Discussion board for students to share their knowledge.	5
9	Build a college website using Word press Theme.	5
10	sCreate a homepage and customize the data through the Admin Panel.	5

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning


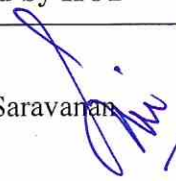

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 Mrs. Senthil Kumar	 Dr. V. Saravanan	

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

Course Code:	20ITPV01	DIGITAL MARKETING						Batch:	2020-2021 &Onwards
Hrs/Week:	2	L	2	T	-	P	-	Semester:	I
								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 Adwords campaigns.
- The social media planning and implementation in real life
- Analysing and Experiencing realtime of digital marketing.

COURSE OUTCOMES (CO)

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

SYLLABUS

20ITPV01	DIGITAL MARKETING	Sem:
Unit No.	Topics	Hours
I	Principles of Digital Marketing: Basics of Marketing-What is Digital Marketing?-Comparison of Traditional and Digital Marketing-Statistics of Digital Marketing- Benefits of Digital marketing-Latest Digital marketing trends-Digital marketing platforms-Digital Marketing strategy for websites-Career opportunities in digital marketing	10
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.	10
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.	10

TEXT BOOKS

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

REFERENCE BOOKS

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


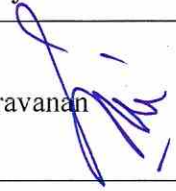

MAPPING WITH PROGRAM OUTCOMES

PO CO	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 (if deviation from common pattern)

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 (Mr.G.Ravishankar)	 Dr.V.Saravanan	

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

Course Code:	20ITPV02	DIGITAL HUMANITIES						Batch:	2020-2021 &Onwards
Hrs/Week:	2	L	2	T	-	P	-	Semester:	I
								Credits:	1

COURSE OBJECTIVE:

- Exploring contested definitions of the digital humanities
- Exploring debates about the digital humanities within the emerging field
- Beginning to consider why the digital humanities matter beyond the academic field itself
- Through hands-on experimentation, trying out various types of digital humanities analysis using heterogeneous datasets, tools, and methods

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identify and Learn the prospects and limitations of science and technology in digital humanities, their role in society, and the individual's responsibility for how they are used	K1
CO2	Implement knowledge and understanding of the main field of study and significant in-depth knowledge in some subcategories of the digital humanities	K2
CO3	Analyze, questions, and situations related to the digital humanities as a field of study and work	K3
CO4	Classify and manage complex phenomena related to the digital humanities	K4

SYLLABUS

20ITPV02	DIGITAL HUMANITIES	Sem:
Unit No.	Topics	Hours
I	The digital humanities: Development - Beginnings of the intersection of humanities with computing-The second wave : qualitative and generative-Present state of DH- DH in India Week.	10
II	Digital Humanities: meaning and nature-Meaning and definitions -Features and principles-Methods and procedures-Using digital technology for academic purposes-Basics of computing, Editing tools	10
III	Using the Microsoft toolbar and networking tools like the Google drive- Wordpress (blogging)-Wordpress (website) Week-Digital Libraries and Archiving-Introduction: Opportunities and Challenges-Tools and Systems-Hands-On Work (to be posted on Wordpress)- Presentation of results	10

TEXT BOOKS

1. Exploring Digital Humanities in India: Pedagogies, Practices, and Institutional Possibilities - by Maya Dodd (Editor), Nidhi Kalra (Editor) Routledge India; 1st Edition (July 9, 2020)
2. Digital Humanities - Berry David.M, Polity Press, ISBN: 9780745697666, 9780745697666

REFERENCE BOOKS

1. The Historical Web and Digital Humanities - The Case of National Web Domains By Niels Brügger, Ditte Laursen Copyright Year 2019, ISBN 9781138294318, Published March 28, 2019 by Routledge

WEB RESOURCES

1. http://klangable.com/uploads/books/Simanowski_2016_Digital-Humanities-and-Digital-Media.pdf
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 (if deviation from common pattern)

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
(Mr.G.Ravishankar)	D.V.Saravanan	

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

Course Code:	20ITPV03	SAP ERP FUNDAMENTALS						Batch:	2020-2021 &Onwards
Hrs/Week:	2	L	2	T	-	P	-	Semester:	II
								Credits:	1

COURSE OBJECTIVE

- Knowing the SAP System from scratch
- Remembering ERP and SAP related Technologies
- Analysing ABAP/4:ABAP/4
- Evaluating and Creating ABAP Dictionary

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Define the basics of the SAP system	K1
CO2	Classify ERP and SAP related technologies	K2
CO3	Identify ERP Manufacturing Perspective and ERP modules	K3
CO4	Analyze and implement lifecycle, emphasis on ERP benefits and introduces the ERP tools	K4

SYLLABUS

20ITPV03	SAP ERP FUNDAMENTALS	Sem:
Unit No.	Topics	Hours
I	SAP Architecture: Presentation Server, Application Server, Database Server -Defining an Instance -Understanding a User Context-Understanding a Roll Area-List and their jobs of background services.	3
II	Introduction to ABAP/4:ABAP/4 Programming concept-Introduction of various types of program-Fundamentals of creation of programs-Introduction of standard Data Types-Declaration of different types of variables-Loop and Controls-IF structure-Case statement-Loop statement-Control break statement-Data structure-User-Defined Data Types.	5
III	Introduction of ABAP Dictionary: Overview of Dictionary objects-Overview of Types of Base tables-Creation of Client independent -base tables-Creation of Client dependent base tables-Understanding of standard database tables- Views-Structure-Data Element-Domain-Search Help. Introduction of Database Operations: Understanding of Open SQL statement-Understanding of Native SQL statement-Working with Insert, Update, Delete statement-Addition of corresponding fields of statement.	7

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. BEGINNER'S GUIDE TO SAP: An Introduction To The Basics of Using SAP- Peter Moxon, Publisher
Peter Moxon (11 March 2014)
2. Introduction To SAP for Beginners - by Parveen, Kindle Edition

REFERENCE BOOKS

BEGINNERS GUIDE TO SAP ABAP - Peter Moxon; 1st Edition (January 20, 2014)

WEB RESOURCES

1. <https://sapfidocz.files.wordpress.com/2013/01/sap-book-for-beginners-and-learners.pdf>

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

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

Course Code:	20ITP13	Course Title					Batch:	2020 -2021 & onwards	
		Internet of Things					Semester:	III	
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Understand the architecture of Internet of Things and connected world.
- Learning about Machine to Machine interaction with IoT protocol standards
- Explore on use of various hardware, communication and sensing technologies to build IoT applications.
- Illustrate the real time IoT applications to make smart world via Arduino and cloud.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Enumerate the whole process line of extracting knowledge from data about the Internet of Things.	K1
CO2	Generalize deriving theoretical properties of methods involved in IoT.	K2
CO3	Choose Design and implementation/modification of methods involved in IoT to build real time applications	K3
CO4	Correlate effective results of IoT via Arduino and cloud for smart future approaches.	K4

SYLLABUS

20ITP13	Internet of Things	Sem: III
Unit No.	Topics	Hours
I	INTRODUCTION TO INTERNET OF THINGS (IoT): Definition and characteristics of IoT- physical design of IoT- logical design of IoT - IoT enabling technologies- IoT levels and deployment-domain specific IoTs- IoT System Management with NETCONF-YANG- IoT Platforms Design Methodology	12
II	IoT AND M2M : Introduction- M2M- difference between IoT and M2M- software defined networking (SDN) and network function virtualization (NFV) for IoT - M2M and IoT technology fundamentals. Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols – Unified Data Standards – Protocols – IEEE 802.15.4 – BACNet Protocol – Mod bus–Zigbee Architecture – Network layer – 6LowPAN - CoAP - Security	14
III	IoT PLATFORMS DESIGN METHODOLOGY & IOT APPLICATIONS : IoT Architecture: State of the art introduction- state of the art- Architecture reference model- Introduction- reference model and architecture- IoT reference model-IoT applications – Types of applications - Consumer application – Education application – Industrial applications – Health care applications.	14
IV	IoT PHYSICAL DEVICES AND ENDPOINTS Introduction to Arduino- Installing and setting up the Arduino- sketches-shields- interfacing with Arduino -Introduction to Node MCU- Programming Node MCU- RFID- GPS -Introduction to Raspberry pi- installation-usage.	13
V	IoT PHYSICAL SERVERS AND CLOUD OFFERINGS Introduction to cloud storage models and communication, IOT cloud building blocks, Interfacing with cloud, About Thingspeak, Channels, working with thingspeak.	12

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. ArshdeepBahga, Vijay Madiseti, "Internet of Things: A Hands-on-Approach", VPT, 8th Edition, 2014.
2. Matt Richardson, Shawn Wallace, "Getting Started with Raspberry Pi", O'Reilly (SPD), 3rd Edition, 2014.

REFERENCE BOOKS

1. Adrian McEwen, Hakim Cassimally, "Designing the Internet of Things", John Wiley and Sons 2014.
2. Francis da Costa, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", Apress Publications, 1st Edition 2013.

WEB RESOURCES

1. <https://ia801208.us.archive.org/9/items/IoT5days/IoT5days.pdf>
2. <https://drive.google.com/file/d/1ARl4-71ndz43bSutvL.BqqfxjNc7mVkEo/view?usp=sharing>

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

Follows a 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:	20ITP14	Course Title						Batch:	2020 -2021 & onwards
		DEEP LEARNING WITH PYTHON						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Learning the fundamental concepts necessary in order to approach deep learning.
- Remembering and Preparing data using Sentiment Analysis
- Developing word embedding model which are being used for making progress, like coloring image and videos based on the context in the scene.
- Practicing Text Classification, Language Modeling and Deep learning

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Learning Python, Tensorflow and Keras to develop deep learning applications.	K1
CO2	Recollecting the deep learning methodologies to prepare data using Sentiment Analysis	K2
CO3	Develop ability to independently solve business problems using deep learning techniques via word embedding.	K3
CO4	Practicing a verified portfolio with hands-on deep learning projects that will showcase the new skills acquired to employers.	K4

9	<p>Guess the Number This project uses the random module in Python. The program will first randomly generate a number unknown to the user. The user needs to guess what that number is. (In other words, the user needs to be able to input information.) If the user's guess is wrong, the program should return some sort of indication as to how wrong (e.g. The number is too high or too low). If the user guesses correctly, a positive indication should appear. You'll need functions to check if the user input is an actual number, to see the difference between the inputted number and the randomly generated numbers, and to then compare the numbers.</p> <p>Concepts to keep in mind:</p> <ul style="list-style-type: none"> • Random function • Variables • Integers • Input/Output • Print • While loops • If/Else statements 	6
10	<p>Hangman Despite the name, the actual "hangman" part isn't necessary. The main goal here is to create a sort of "guess the word" game. The user needs to be able to input letter guesses. A limit should also be set on how many guesses they can use. This means you'll need a way to grab a word to use for guessing. (This can be grabbed from a pre-made list. No need to get too fancy.) You will also need functions to check if the user has actually inputted a single letter, to check if the inputted letter is in the hidden word (and if it is, how many times it appears), to print letters, and a counter variable to limit guesses.</p> <p>Concepts to keep in mind:</p> <ul style="list-style-type: none"> • Random • Variables • Boolean • Input and Output • Integer • Char • String • Length • Print 	6

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

REFERENCE BOOKS

1. Mark Graph, "Deep Learning with Python: The Ultimate Guide to Understand Deep Neural Networks with Python Through PyTorch, TensorFlow and Keras. Discover the Ethical Implications of Deep Learning in the New World", Independently Published, 2019.
2. Andreas C. Müller, Sarah Guido, "Introduction to Machine Learning with Python: A Guide for Data Scientists", "O'Reilly Media, Inc.", 2016
3. Alex Galea, Luis Capelo, "Applied Deep Learning with Python: Use scikit-learn, TensorFlow, and Keras to create intelligent systems and machine learning solutions" ,Packt Publishing Ltd, 2018

WEB RESOURCES

1. https://in.mathworks.com/campaigns/offers/deep-learning-with-matlab.html?ef_id=Cj0KCQjw2NvFBhDoARIsAMtHtZ5ok-vVraNa4TxZiZetmr4Gk1fhZyI9rMC_rzVgyO96aoxt1nRn7fMaAtoQEALw_wcB:G:s&s_kwid=AL!8664!3!281794527281!b!!g!!%2Bdeep%20%2Blearning&s_eid=psn_57384022752&q=+deep%20+learning&gclid=Cj0KCQjw2NvFBhDoARIsAMtHtZ5ok-vVraNa4TxZiZetmr4Gk1fhZyI9rMC_rzVgyO96aoxt1nRn7fMaAtoQEALw_wcB

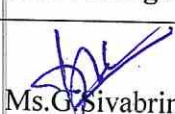
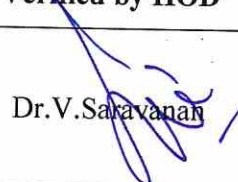

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

Follows a common 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:	20ITP15	Course Title						Batch:	2020 -2021 & onwards
		SOFT COMPUTING						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- Understanding Artificial neural network and Fuzzy concepts
- Analysing the supervised learning network and Neural Networks
- Gaining insight into the Associative memory network and memory management aspects of real time and mobile operating systems.
- To develop real-time algorithm using fuzzification, defuzzification

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understanding the importance of Artificial Neural Network as well as fuzzy concepts .	K1
CO2	Experiencing supervised learning network and Neural Networks	K2
CO3	Applying the memory management concepts in real world applications.	K3
CO4	Evaluate and apply the fuzzy logic using fuzzification and defuzzification algorithms	K4

SYLLABUS

20ITP15	SOFT COMPUTING	Sem: III
Unit No.	Topics	Hours
I	INTRODUCTION: Artificial neural network: Introduction, characteristics- learning methods – taxonomy – Evolution of neural networks- basic models – important technologies – applications. Fuzzy logic: Introduction – crisp sets- fuzzy sets – crisp relations and fuzzy relations: Cartesian product of relation – classical relation, fuzzy relations,. Genetic algorithm- Introduction – biological background – traditional optimization and search techniques – Genetic basic concepts.	13
II	NEURAL NETWORKS: McCulloch-Pitts neuron – linear separability – HEBB network – supervised learning network: perception networks – adaptive linear neuron, multiple adaptive linear neuron, BPN, RBF, TDNN- associative memory network: auto-associative memory network, hetero.	13
III	MEMORY MANAGEMENT: Associative memory network, BAM, Hopfield networks, iterative auto associative memory network & iterative associative memory network –unsupervised learning networks: Kohonenself organizing feature maps, LVQ – CP networks, ART network.	10
IV	FUZZY LOGIC: Membership functions: features, fuzzification, and methods of membership value assignments-Defuzzification: lambda cuts – methods – fuzzy arithmetic and fuzzy measures: fuzzy arithmetic – extension principle – fuzzy measures – measures of fuzziness.	15
V	FUZZY INTERFACES: Fuzzy integrals fuzzy rule base and approximate reasoning: truth values and tables, fuzzy propositions, formation of rules-decomposition of rules, aggregation of fuzzy rules, and fuzzy reasoning-fuzzy inference systems-overview of fuzzy expert system- fuzzy decision making.	14

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. J.S.R.Jang, C.T. Sun and E.Mizutani, "Neuro-Fuzzy and Soft Computing", PHI / Pearson Education 2004.
2. S.N.Sivanandam and S.N.Deepa, "Principles of Soft Computing", Wiley India Pvt Ltd, 2011.

REFERENCE BOOKS

1. S.Rajasekaran and G.A.VijayalakshmiPai, "Neural Networks, Fuzzy Logic and Genetic Algorithm: Synthesis & Applications", Prentice-Hall of India Pvt. Ltd., 2006.
2. David E. Goldberg, "Genetic Algorithm in Search Optimization and Machine Learning" Pearson Education India, 2013

WEB RESOURCES

http://www.soukalfi.edu.sk/01_NeuroFuzzyApproach.pdf

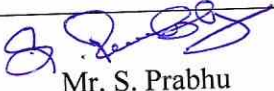
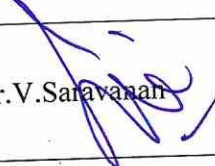

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

Course Code:	20ITP16	Course Title						Batch:	2020 -2021 & onwards
		Practical V : Programming the Internet of Things Lab						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- Exploring various components of Internet of things such as Sensors, internetworking and cyber space
- Explore on use of various hardware, communication and sensing technologies to build IoT applications.
- Demonstrate Arduino and its pins also Experimenting Arduino Uno.
- Illustrate the real time IoT applications to make smart world also Understanding challenges and future trends in IoT.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recognize various devices, sensors and applications	K1
CO2	Predict various M2M and IoT architectures	K2
CO3	Examine design issues in IoT applications	K3
CO4	Conclude IoT solutions using sensors, actuators and Devices	K4

SYLLABUS

20ITP16	Practical V : PROGRAMMING THE INTERNET OF THINGS	Sem: III
Ex No.	Program List	Hours
1	Introduction to various sensors and various actuators & its Application (Students have to prepare Report for the same). a) PIR Motion Sensor. b) Rain Drop Sensor. c) Moisture Sensor. d) Temperature Sensor. e) Touch Sensor. f) Infrared Sensor. g) Servo Moto. h) RFID Sensor. i) Bluetooth Module. j) Wi-Fi Module.	7
2	Getting Started with ESP8266 Wi-Fi SoC (wifi configuration)	6
3	Create a simple project of study room automation using wifi	6
4	Global data communication using thingspeak.	6
5	Demonstrate Arduino and its pins. Case study	6
6	Perform Experiment using Arduino Uno to measure the distance of any object using Ultrasonic Sensor.	7
7	Create a Program using Arduino to Learn the Working of Servo Motor	7
8	Send a data to the web server using wifi module with audinoplatform.	7
9	Display GPS location on google map using thingspeak	6
10	Demonstration of Setup & Working of Raspberry Pi. (Students have to prepare the Report for the same.).	7

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.

- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

Follows a 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:	20ITP17	Course Title						Batch:	2020 -2021 & onwards
		PRACTICAL VI : PYTHON PROGRAMMING LAB						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- Learning Decision Making and Functions in Python
- Exploring advanced Object Oriented Programs using Python
- Describe different data types of neural networks
- Classify images, data, and sentiments using deep learning.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understanding the Python language syntax including control statements, loops and functions.	K1
CO2	Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data.	K2
CO3	Discover the capabilities of Python regular expression for data verification and utilize matrices for building performance efficient Python programs.	K3
CO4	Analyse the external modules for creating and writing data by Using Regular Expression also with various deep learning techniques for different applications.	K4

SYLLABUS

20ITP16	PRACTICAL VI : PYTHON PROGRAMMING LAB	Sem: III
Ex No.	Program List	Hours
1	To find whether given number is Disarium or not, calculate the sum of digits powered with their respective positions. If the sum is equal to the original number then, the given number is Disarium number. Print all Disarium numbers between 1 and 100.	6
2	Take the file name and letter to be counted from the user. Read each line from the file and split the line to form a list of words. Use a for loop to traverse through the words in the list and another for loop to traverse through the letters in the word. Check if the letter provided by the user and the letter encountered over iteration is equal and if they are, increment the letter count	6
3	Encrypt the text using Caesar Cipher technique. Display the encrypted text. Prompt the user for input and the shift pattern	6
4	Rock paper scissors is a hand game that's typically played between two people. The game works in that each player simultaneously forms one of three hand gestures with an outstretched hand. Determine the winner based on options entered.	6
5	Using Regular Expressions, develop a Python program to a) Identify a word with a sequence of one upper case letter followed by lower case letters. b) Find all the patterns of '1(0+) 1' in a given string. c) Match a word containing 'z' followed by one or more o's. Prompt the user for input.	6
6	To build an application through which you can automatically get the name of the colour by clicking on them. So for this, we will have a data file that contains the colour name and its values. Then we will calculate the distance from each colour and find the shortest one.	6
7	Create a menu drive Python program with a dictionary for words and their meanings. Write functions to add a new entry (word: meaning), search for a particular word and retrieve meaning, given meaning find words with the same meaning, remove an entry, display all words sorted alphabetically.	6
8	Write a program that simulates rolling dice. When the program runs, it will randomly choose a number between 1 and 6. (Or whatever other integer you prefer — the number of sides on the die is up to you.) The program will print what that number is. It should then ask you if you'd like to roll again. For this project, you'll need to set the min and max number that your dice can produce. For the average die, that means a minimum of 1 and a maximum of 6. You'll also want a function that randomly grabs a number within that range and prints it. Concepts to keep in mind: <ul style="list-style-type: none"> • Random • Integer • Print 	6

	<ul style="list-style-type: none"> • While Loops 	
9	<p>Guess the Number This project uses the random module in Python. The program will first randomly generate a number unknown to the user. The user needs to guess what that number is. (In other words, the user needs to be able to input information.) If the user's guess is wrong, the program should return some sort of indication as to how wrong (e.g. The number is too high or too low). If the user guesses correctly, a positive indication should appear. You'll need functions to check if the user input is an actual number, to see the difference between the inputted number and the randomly generated numbers, and to then compare the numbers.</p> <p>Concepts to keep in mind:</p> <ul style="list-style-type: none"> • Random function • Variables • Integers • Input/Output • Print • While loops • If/Else statements 	6
10	<p>Hangman Despite the name, the actual "hangman" part isn't necessary. The main goal here is to create a sort of "guess the word" game. The user needs to be able to input letter guesses. A limit should also be set on how many guesses they can use. This means you'll need a way to grab a word to use for guessing. (This can be grabbed from a pre-made list. No need to get too fancy.) You will also need functions to check if the user has actually inputted a single letter, to check if the inputted letter is in the hidden word (and if it is, how many times it appears), to print letters, and a counter variable to limit guesses.</p> <p>Concepts to keep in mind:</p> <ul style="list-style-type: none"> • Random • Variables • Boolean • Input and Output • Integer • Char • String • Length • Print 	6

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

Follows a common 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:	20ITP18A	Course Title						Batch:	2020 -2021 & onwards
		Elective I : SOFTWARE PROJECT MANAGEMENT						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- Understanding the outline the need for Software Project Management.
- Knowing the highlights different techniques for software cost estimation and activity planning via Quality Control & Quality Assurance
- Evaluating network planning model for project scheduling.
- Analysing risk management techniques and recent trends in project management

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understanding the importance and need for a Software Process and their metrics.	K1
CO2	Learning Quality Control & Quality Assurance concepts	K2
CO3	Analysing Globalization issues in Project Management.	K3
CO4	Designing a component or a product applying all the relevant standards and with realistic constraints.	K4

SYLLABUS

201TP18A	Elective I : SOFTWARE PROJECT MANAGEMENT	Sem: III
Unit No.	Topics	Hours
I	Basic Concepts: Introduction to Software Project Management - Software Projects - ways of categorizing software projects – problems with software projects - Project Life Cycle – Management - Setting objectives – Stakeholders - Project Team – Step Wise: An overview of project planning - Project evaluation - Selection of appropriate project approach. Software effort estimation – function point analysis - objects point – COCOMO.	13
II	Umbrella Activities: Metrics—Software Configuration Management: Process and activities, Configuration audit, Metrics in SCM, Tools & automation –Software Quality Assurance:Quality Control & Quality Assurance, Tools, Measure of SQA Success –Risk Management:Risk Management Cycle, Risk Identification, Quantification, Monitoring, Mitigation, Metrics in Risk Management.	13
III	Project Management, Process and Activities: In-Stream activities - Project initiation: activities, Outputs, Quality Records, completion criteria –Project Planning and Tracking: Components, activities specific to Project tracking—Project Closure: Effective closure Process issues, Metrics for Project Closure.	10
IV	Engineering Activities in Project Life Cycle: Software requirement Gathering: Inputs and start criteria, Dimensions, steps ,Output & Quality records, Skillsets, Challenges, Metrics for Requirement Phase – Estimation : Phases of Estimation, Methodology, Models for size estimation, Challenges, Metrics for Estimation Process —Design and Development Phases- Project Management in Testing & Maintenance Phase.	15
V	Emerging Trends in Project Management: Globalization Issues in Project management : Evolution, Challenges, Models – Impact of the internet on Project Management:Effect of internet on Project Management, managing project for internet, Project management activities – People Focused Process Models:People centric models, P-CMM, other peoplefocussed Models.	14

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Ramesh Gopaldaswamy, “Managing and global Software Projects”, Tata McGraw Hill.Tenth Reprint 2011.

2. Hughes B., Cotterell M. and Rajib M., "Software Project Management", Fifth Edition, Tata McGrawHill, 2012.

REFERENCE BOOKS

1. Software Project Management – A concise study, S. A. Kelkar

WEB RESOURCES

https://www.udemy.com/course/software-project-management-the-complete-course/?utm_source=adwords&utm_medium=udemyads&utm_campaign=DSA_Catchall_la.EN_cc.INDIA&utm_content=deal4584&utm_term=.ag_82569850245.ad_437477497176.kw.de.c.dm.pl.ti_dsa-841699835463.li_1007810.pd.&matchtype=b&gclid=Cj0KCCQjw2NvFBhDoARIsAMtHtZ4M5qcCqm_s3TY2weCEK-LJu4b_rXEYkbpWCYtMOBu8JyTUDQcDCT_QaAsYYEALw_wcB

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

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

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

Course Code:	20ITP18B	Course Title						Batch:	2020 -2021 & onwards
		Elective I : BIOINFORMATICS						Semester:	III
Ers/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- To understand scope and history of Bioinformatics
- Understanding of popular bioinformatics database tools and its uses
- Analysing the Databases using Sequence alignment methods as well as predictive methods
- Approaches to drug discovery using bioinformatics techniques

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understand the basic principles and concepts of biology, computer science and mathematics	K1
CO2	Interpret information from large databases and to use this information in computer modeling	K2
CO3	Compare problem-solving skills and experiment including the ability to develop new algorithms and analysis methods	K3
CO4	Classify of the intersection of life and information sciences, structure-function relationships, information theory, gene expression, and database queries	K4

SYLLABUS

20ITP18B	Elective I : BIOINFORMATICS	Sem: III
Unit No.	Topics	Hours
I	HISTORY, SCOPE AND IMPORTANCE Important contributions-aims and tasks of Bioinformatics-applications of Bioinformatics-challenges and opportunities-internet basics-HTML-introduction to NCBI data model-Variou s file formats for biological sequences	13
II	DATABASES-TOOLS AND THEIR USES Importance of databases-Biological databases-primary sequence databases-Composite sequence databases-Secondary databases-nucleic acid sequence databases-Protein sequence data bases-structure databases-bibliographic databases-specialized genomic resources-analysis packages	13
III	SEQUENCE ALIGNMENT METHODS Sequence analysis of biological data-Significance of sequence alignment-pairwise sequence alignment methods-Use of scoring matrices and gap penalties in sequence alignments-multiple sequence alignment methods-Tools and application of multiple sequence alignment.	13
IV	PREDICTIVE METHODS USING DNA AND PROTEIN SEQUENCES Gene predictions strategies-protein prediction strategies-molecular visualization tools-phylogenetic analysis: Concept of trees-phylogenetic trees and multiple alignments.	13
V	DRUG DISCOVERY PROCESS Discovering a drug-target identification and validation-identifying the lead compound-optimization of lead compound-chemical libraries.	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. S.C. Rastogi&others, "Bioinformatics-Concepts, Skills, and Applications", CBS Publishing, 2003.
2. Andreas D Baxevanis& B F Francis, "Bioinformatics-A practical guide toanalysis of Genes &Proteins", John Wiley, 2000.

REFERENCE BOOKS

1. C S V Murthy, "Bioinformatics", Himalaya Publishing House, 1st Edition 2003
2. David W. Mount "Bioinformatics sequence and genome analysis", Cold Spring Harbor Laboratory Press, 2004.
3. S. Ignacimuthu, S.J., "Basic Bioinformatics", Narosa Publishing House, 1995

WEB RESOURCES

[https://www.udemy.com/course/learn-bioinformatics-in-6-days/?gclid=Cj0KCQjw2NvFBhDoARIsAMtHtZ7PjrDraF76ps6-ZYurV7BXaLWd5YbkESVT0G4DmJtiKjnroynKDugaAmWREALw_wcB&matchtype=e&utm_campaign=LongTail la.EN cc.INDIA&utm content=deal4584&utm medium=udemyads&utm source=adwords&utm term= . ag 80573530073 . ad 387389543952 . kw bioinformatics+course . de c . dm . pl . ti kwd-422676011212 . li 1007810 . pd .](https://www.udemy.com/course/learn-bioinformatics-in-6-days/?gclid=Cj0KCQjw2NvFBhDoARIsAMtHtZ7PjrDraF76ps6-ZYurV7BXaLWd5YbkESVT0G4DmJtiKjnroynKDugaAmWREALw_wcB&matchtype=e&utm_campaign=LongTail%20la.EN%20cc.INDIA&utm_content=deal4584&utm_medium=udemyads&utm_source=adwords&utm_term=.ag%2080573530073.ad%20387389543952.kw%20bioinformatics%20course.de.c.dm.pl.ti.kwd-422676011212.li%201007810.pd)

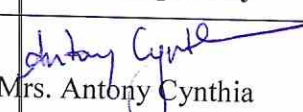
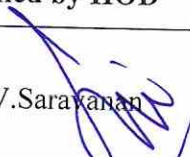

MAPPING WITH PROGRAM OUTCOMES

CO	PO1	PO2	PO3	PO4
CO1	M	M	S	S
CO2	M	S	M	M
CO3	S	M	M	M
CO4	S	M	M	S

S-Strong, M- Medium, L - Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 Mrs. Antony Cynthia	 Dr. V. Saravanan	

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

Course Code:	20ITP18C	Course Title						Batch:	2020 -2021 & onwards
		Elective I : SOFTWARE TESTING						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- Understanding the basic concepts software Quality and testing
- Learning the various types of testing methods of the software
- Analyzing the advancement testing techniques
- Examining the risks in software management

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understanding the software test life cycle.	K1
CO2	Remembering various testing types, software quality and other verification techniques and theoretical limits of software testing	K2
CO3	Practicing framework for testing.	K3
CO4	Design patterns for test automation. The challenges of object-oriented testing	K4

SYLLABUS

20ITP18C	Elective I : SOFTWARE TESTING	Sem: III
Unit No.	Topics	Hours
I	Testing : an Overview – what is software Quality? – Possible Definitions – New Approaches to quality – The overall course of a test – Planning – Execution – Evaluation – checking – List of Known errors – testing strategies – Exploratory Testing – Testing and improving – Automated Testing	13
II	Testing by Documenting – Regression Testing – Smoke Tests – Embedded Testing – Live Testing – Testing Methods – Black Box Testing – White Box Testing – Gray Box Tests – Requirements – Based Testing –Design Based Testing – code Based Testing – Performance Testing –Stress Testing – Robustness Testing – Long-Term Testing – Installation Testing – Security Testing	13
III	Random Data Testing – Spot Check Testing – Boundary value Testing – Phases of testing – The classic Test Planning Model – Integration of Phases in Rapid Application Testing – Design and code Reviews – Static code Analysis – Model Validation	13
IV	Risk Assessment – Setting Priorities – Various Risk Types – Risk assessment based on User Priorities – Function/risk Matrix – Testing Patterns , Patterns for Debugging – Best – Minimal, Maximal and Error Case- Equivalence Classes	13
V	Boundary Values – Cause and Effect Diagrams –Decision Trees – Unit Testing – Functional Testing –Structure Testing – Integration Testing – Transactions - Linking to the interface – synchronization – System Testing – Functional Completeness – Run -Time Behavior	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Galileo Computing Software Testing and Internationalization © 2003 Lemoine International and the Localization Industry Standards Association (LISA)

REFERENCE BOOKS

1. Beginners Guide To Software Testing - Padmini C
2. The Art of Software Testing, Second Edition Glenford J. Myers Revised and Updated by Tom Badgett and Todd M. Thomas with Corey Sandler John Wiley & Sons, Inc.
3. Software Testing - Ron Patton Copyright © 2001 by Sams Publishing

WEB RESOURCES

1. <http://www.guru99.com/software-testing-books.html>


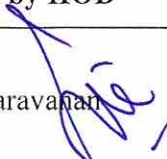

MAPPING WITH PROGRAM OUTCOMES

CO ^{PO}	PO1	PO2	PO3	PO4
CO1	S	M	L	M
CO2	M	L	S	M
CO3	M	S	L	M
CO4	S	S	M	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 Ms. U. Sinhuja	 Dr. V. Saravanan	

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

Course Code:	20ITP18D	Course Title						Batch:	2020 -2021 & onwards
		Elective I : MOBILECOMPUTING						Semester:	III
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- Understanding the basic principles of mobile computing
- Remembering basics of modern wireless systems
- Learning Fundamentals of Frequency Management
- Analyzing the propagation techniques

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understanding the basic principles of mobile computing	K1
CO2	Recollecting the operation of mobile computing systems and their generation divisions	K2
CO3	Learning the basic principles of the modern mobile and wireless communication systems	K3
CO4	An analysis of mobile communication with the interpretation of the call prints	K4

SYLLABUS

20ITP18D	Elective I : MOBILE COMPUTING	Sem: III
Unit No.	Topics	Hours
I	Mobile Computing : Mobile communication systems- Two way mobile radio – cordless telephone – Cellular radio – Analog and Digital systems standards – Personal Communication systems (PCS) and Mobile personal Computers MPC – One way mobile.	13
II	Radio propagation : Radio Propagation Concepts: Fundamentals of radio propagation and system concepts – causes for propagation path loss – fading – Doppler spread – time delay path loss – foliage loss – path loss measurement from point to point prediction model.	13
III	Frequency management – Frequency bands for mobile communication – frequency reuse techniques – FDMA, TDMA and CDMA techniques.- Comparison between GSM and CDMA	13
IV	Radio interference: Mobile radio interference: Noise limited and interference limited environment – co-channel and adjacent channel environment – inter-modulation – Near –end and far-end ratio	13
V	Design Parameters: Design parameters: Design characteristic at base station and mobile unit- Mobile communication satellites – Mobile communication satellites are Geo-synchronous orbits – IRIDIUM satellites ODYSSEY satellites	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. William C.Y.Lee: Mobile Cellular Telecommunications Analog and Digital Systems, 2nd Edition, McGrawHill, 1995.
2. KamiloFether: Wireless digital communication modulation and spread spectrum applications Prentice Hall, 1995.S.C. Rastogi&others,“Bioinformatics-Concepts, Skills, and Applications”,CBS Publishing, 2003.

REFERENCE BOOKS

1. Tom Logsdon: Mobile communication satellites theory and applications – McGraw Hill, 1995.
2. William C.Y.Lee: Mobile Communication Design Fundamentals – McGraw Hill, 1993.

WEB RESOURCES

<https://www.coursera.org/courses?query=mobile%20cloud%20computing>

MAPPING WITH PROGRAM OUTCOMES

CO	PO1	PO2	PO3	PO4
CO1	S	M	S	L
CO2	M	S	M	M
CO3	M	S	L	M
CO4	S	M	M	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Ms.U.Sinhuja	Dr.V.Saravanan	

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

Course Code:	20ITP03	VAC-III MASTER WEB DESIGNING IN PHOTOSHOP						Batch:	2021 -2022 & onwards
								Semester:	III
Hrs/Week:	2	L	2	T	-	P	-	Credits:	1

COURSE OBJECTIVE

- Demonstrating contested definitions of the adobe Illustrator user interface
- Exploring debates about the Adobe via tools within the emerging field
- Understanding and customizing the workspace
- Through hands-on experimentation, trying out painting

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Learning elements of the adobe Illustrator user interface and demonstrating knowledge of their functions.	K1
CO2	Demonstrate knowledge of how to work with brushes, symbols, graphic styles, and patterns.	K2
CO3	Simulating Color Tools and Shape tools	K3
CO4	Applying the ideas of drawing and shape tools	K4

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning.

SYLLABUS

20VAP03	VAC-III Master Web Designing in Photoshop	Sem: III
Unit No.	Topics	Hours
I	Workspace: Workspace Basics-Workspace overview-Customizing the workspace-Tools: Tool Panel Overview-Improved User Interface -Tool Galleries-Files and Templates-Using multiple-Artboards-Viewing Artwork.	9
II	Drawing Basics -Drawing simple lines and shapes-Drawing Pixel aligned paths for web Workflows-Drawing with the pen, Pencil or Flare tool-Editing Paths-Adjust Path Segments-Symbolism tools and symbol sets-Symbols.	9
III	Selecting Colors -Using and creating swatches-Color groups-Create color themes with kuler-Adjusting Colors. Painting: Painting with fills strokes-Live Paint groups-Brushes-Gradients-Meshes-Patterns.	8

TEXT BOOKS

1. Adobe Illustrator CC Classroom in a Book, 1 edition, Pearson Education India.
2. Adobe Illustrator CC Classroom in a Book (2017 release) 1st Edition, Kindle Edition

REFERENCE BOOKS

1. Adobe Illustrator CS6 Classroom in a Book by adobe create team

WEB RESOURCES

1. <https://www.goodreads.com/book/show/14786149-adobe-illustrator-cs6-classroom-in-a-book>


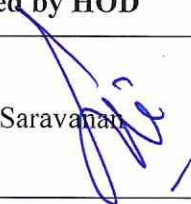
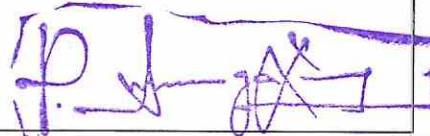
MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 Ms. U. Sinthuja	 Dr. V. Saravanan	

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

Course Code:	20ITP19	Course Title					Batch:	2020 -2021 & onwards	
		Big Data Analytics					Semester:	IV	
Hrs/Week:	5	L	5	T	-	P	-	Credits:	4

COURSE OBJECTIVE

- Explore the fundamental concepts of big data analytics
- Learn to analyze the big data using intelligent techniques.
- Understand the Software Tools with the help of R language
- Understand the various models and mathematical approaches for data analytics

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Recognize intuition of the Big data handler, Software tools and algorithms.	K1
CO2	Illustrate deriving theoretical properties of Security, Compliance, Auditing, and Protection	K2
CO3	Apply the big data using mathematical approaches.	K3
CO4	Analysing data science using trending techniques.	K4

SYLLABUS

20ITP19	Big Data Analytics	Sem: IV
Unit No.	Topics	Hours
I	Introduction - History of Big Data / Data Science - Google White papers - Map Reduce - Google File system - clusters . Big data handlers - SPSS - SAS Introduction about Software Tools - Mongo DB - R - Hadoop - Hadoop Ecosystem - What makes it Big Data .What is Data science - Tools in Data Science - Type of Data Analytics - I/O issues - Big data usage - Future of Big Data . Algorithms in Big Data - Classification - Predictive learning - Deterministic behavior algorithms	13
II	Security, Compliance, Auditing, and Protection : Pragmatic Steps to Securing Big Data - Classifying Data - Protecting Big Data Analytics - Big Data and Compliance - The Intellectual Property Challenge	13
III	Software Tools : Overview of R - Installing R - Built in Datasets - Data Imports - Creating Charts and Graphs - Creating histograms and box plots - Frequencies and Descriptive - Transformation of Variables - Coding missing data .	13
IV	Mathematical Approach to Data Science: Decision Trees - Tree based methods - creating a decision tree in R - Rules - r part - R packages.	12
V	Statistical Approach in Data Science : Regression - Trees - Classification - Diagnostics - Descriptive vs inferential statistics - Basic measures of Central tendency - Relationships - basic measures of central tendency using R- Linear Models - Least Squares methods - Creating and Using Linear Models with the Least Squares methods and its implementation in R.	14

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. AnandRajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press,2012. 2. David Loshin, "Big Data Analytics: From Strategic Planning to Enterprise Integration with Tools, Techniques, NoSQL, and Graph", Morgan Kaufmann/Elsevier Publishers,2013.

REFERENCE BOOKS

1. EMC Education Services, "Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data", Wiley publishers, 2015.
2. Bart Baesens, "Analytics in a Big Data World: The Essential Guide to Data Science and its applications", Wiley Publishers, 2015.
3. Dietmar Jannach and Markus Zanker, "Recommender Systems: An Introduction", Cambridge University Press. 2010.

WEB RESOURCES

1. http://www.bdbanalytics.ir/media/1121/big-data-analytics_turning-big-data-into-big-money.pdf
2. https://www.tutorialspoint.com/big_data_analytics/index.htm

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mr. K.S Senthil Kumar	Dr.V.Saravanan	

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

Course Code:	20ITP20	Course Title						Batch:	2020 -2021 & onwards
		Research Methodology						Semester:	IV
Hrs/Week:	5	L	5	T	-	P	-	Credits:	5

COURSE OBJECTIVE

- Achieving competence and proficiency in the theory of research design and formulation
- Analysing and validating collected research data via tools and methods
- To develop the knowledge in IPR- Patents, Designs, Trademarks and Copyright.
- Develop skills in writing research proposals, reports and dissertation.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	List awareness of crucial aspect of the nature of Knowledge and the value of scientific method	K1
CO2	Observe literature, from a variety of sources, pertinent to the research objectives	K2
CO3	Choose the concepts of IPR	K3
CO4	Analysing common mistakes in the field of research methodology	K4

SYLLABUS

20ITP20	RESEARCH METHODOLOGY	Sem: IV
Unit No.	Topics	Hours
I	RESEARCH FORMULATION AND DESIGN Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Scope and objectives of research problem, Identification of research problem, Errors in selecting a research problem, Approaches of investigation for research problems - Research Design - Types - Review of Literature.	13
II	DATA COLLECTION AND ANALYSIS Data Collection - types of data - tools of data collection - method of validation, Sampling design - meaning - sampling methods, Data processing and analysis strategies and tools - data analysis with statistical package (Sigma STAT, SPSS for student t-test, ANOVA, etc.), Hypothesis - meaning - types - formulation of hypothesis and testing.	13
III	RESEARCH PROPOSAL AND ETHICS Effective literature studies approaches, analysis of Plagiarism, Research ethics, Impact factor - Validity, Merits, limitations. Other measurements of impact: h-index-advantages, criticism of h-index-modification of h-index.Q-index - introduction - advantages. Web of Science - introduction - advantages.	13
IV	GUIDELINES FOR WRITING A THESIS: Guidelines for writing the abstract, introduction, methodology, results and discussion, conclusion sections of a manuscript, Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee	13
V	INTELLECTUAL PROPERTY: Intellectual property rights (IPR) - forms of IPR- Patents, Designs, Trademarks and Copyright- Industrial design-geographical indication. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT. FUNDING AGENCIES AND RESEARCH GRANTS Introduction to various research funding agencies such as-DST, DBT, AICTE, UGC, CSIR, ICMR, AAYUSH, and DRDO along with their functions in India. Writing a research project and procurement of research grants.	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussion, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Wadehra, B.L. 2000. Law relating to patents, trade marks, copyright designs and geographical

indications Universal Law Publishing.

3. Dr. Shanti Bhushan Mishra, Dr. ShashiAlok, "Handbook of Research Methodology" EDUCREATION PUBLISHING, 2015 edition.

REFERENCE BOOKS

1. Anthony, M., Graziano, A.N. and Raulin, M.L., 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
2. Carlos, C.M., 2000. Intellectual property rights, the WTO and developing countries: the TRIPS agreement and policy options. Zed Books, New York.

WEB RESOURCES

1. [https://www.cusb.ac.in/images/cusbfiles/2020/el/cbs/MCCOM2003C04%20\(Business%20Research%20Methods\)Research Methodology C R Kothari.pdf](https://www.cusb.ac.in/images/cusbfiles/2020/el/cbs/MCCOM2003C04%20(Business%20Research%20Methods)Research%20Methodology%20C%20R%20Kothari.pdf)
2. https://www.researchgate.net/publication/319207471_HANDBOOK_OF_RESEARCH_METHODOLOGY

MAPPING WITH PROGRAM OUTCOMES

PO	PO1	PO2	PO3	PO4
CO1	S	S	S	M
CO2	M	S	S	M
CO3	M	S	S	M
CO4	M	M	S	M

S-Strong, M- Medium, L - Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mrs. Maryna S Eastaff	Dr.V.Saravanan	

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

Course Code:	20ITP21	Course Title						Batch:	2020 -2021 & onwards
		Practical VII : Big Data Analytics using R Tool						Semester:	IV
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- To explore the statistical analysis techniques using R programming languages.
- Experiencing the R language to use it for further research
- Analysing statistical techniques on variety of data
- Evaluating the collected data with different types of algorithms.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	List out optimize business decisions and create competitive advantage with Big Data analytics	K1
CO2	Estimate statistical analysis techniques for solving practical problems.	K2
CO3	Examine statistical analysis on variety of data	K3
CO4	Classify appropriate statistical tests using R and visualize the outcome	K4

SYLLABUS

20ITP21	Practical VII : Big Data Analytics Using R Tool	Sem: IV
Ex No.	Program List	Hours
1	Write a R program to find the levels of factor of a given vector	7
2	Write a R program to extract the five of the levels of factor created from a random sample from the LETTERS (Part of the base R distribution)	8
3	Write a R program to call the (built-in) dataset air quality. Remove the variables 'Solar.R' and 'Wind' and display the data frame	8
4	Write a R program to create two 2x3 matrix and add, subtract, multiply and divide the matrixes.	8
5	Implement a central limit theorem using R	9
6	Demonstrate Apriori algorithm using R	8
7	Implementation of KNN algorithm using R	9
8	Demonstrate a Decision Tree algorithm using R	8

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mr. K.S Senthil Kumar	Dr.V.Saravanan	

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

Course Code:	20ITP22A	Course Title						Batch:	2020 -2021 & onwards
		Elective II : ENTERPRISE RESOURCE PLANNING						Semester:	IV
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

To give a good formal foundation on the business analytic skills.

To create a better relationship with management strategies.

To develop entrepreneurship skills.

Analysing technology based management skill and also various emerging trends in Resource Planning.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Learning the fundamentals technology of Enterprise Resource Planning	K1
CO2	Remembering and Designing a simple ERP Module for an organization	K2
CO3	Building factors that implement ERP Life cycle	K3
CO4	Estimating the trends in ERP Technologies based on ERP market	K4

SYLLABUS

20ITP22A	Elective II : ENTERPRISE RESOURCE PLANNING	Sem: IV
Unit No.	Topics	Hours
I	Enterprise Resource Planning Basics :Introduction- Overview of enterprise systems – Evolution - Risks and benefits -Fundamental technology - Issues to be considered in planning design and implementation.	13
II	ERP Solutions And Functional Modules : Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.	13
III	ERP Implementation :Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Framework-Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.	13
IV	ERP Market: Introduction-SAP AG- Baan Company-Oracle Corporation, PeopleSoft-JD Edwards World Solutions Company- System Software Associates- Inc. (SSA)-QAD-A Comparative Assessment and Selection of ERP Packages and Modules.	13
V	Future Directions in ERP :Future Directions in ERP New Markets-New Channels; Faster Implementation Methodologies- Business Modules and BAPIs- Convergence on Windows NT-Application Platform-New Business Segments-More Features-Web Enabling- Market Snapshot.	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Alexis Leon, ERP demystified, second Edition Tata McGraw-Hill, 2007.
2. e-book :http://164.100.133.129:81/econtent/Uploads/ENTERPRISE_RESOURCE_PLANNING.pdf

REFERENCE BOOKS

1. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
2. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
3. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India, 2nd edition, 2006.
4. Summer, ERP, Pearson Education, 2008.

WEB RESOURCES

https://education.oracle.com/learn/saas-erp/pPillar_644

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Mrs G.S. Geethamani	Dr. V. Saravanan	

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

Course Code:	20ITP22B	Course Title						Batch:	2020 -2021 & onwards
		Elective II :ARTIFICIAL INTELLIGENCE AND ROBOTICS						Semester:	IV
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

- To understand concepts of AI and its search techniques.
- To develop the reasoning and knowledge representation ideas in AI
- Analyzing the areas of artificial intelligence search and knowledge representation.
- Learning Robot geometrical configuration and manipulation.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Learning basic AI and Heuristic search techniques	K1
CO2	Remembering the knowledge and applying representation ideas	K2
CO3	Analysing the various search techniques	K3
CO4	Learning and implementing robotics	K4

SYLLABUS

20ITP22B	Elective II : ARTIFICIAL INTELLIGENCE AND ROBOTICS	Sem: IV
Unit No.	Topics	Hours
I	Introduction: Foundation and history of AI. AI Problems and techniques - AI programming languages – Introduction to LISP and PROLOG – Problem spaces and searches -Blind search strategies; Breadth first - Depth first – Introduction: Heuristic search techniques Hill climbing - Best first – A* algorithm AO* algorithm – game trees Minimax algorithm – Game playing – Alpha beta pruning.	13
II	Knowledge Representation: Knowledge representation issues – Predicate logic – logic programming – Semantic nets - Frames and inheritance - constraint propagation –Representing Knowledge using rules – Rules based deduction system.	13
III	Reasoning under Uncertainty: Introduction to uncertain knowledge review of probability – Baye’s Probabilistic inferences and Dempster Shafer theory –Heuristic methods – Symbolic reasoning under uncertainty- Statistical reasoning – Fuzzy reasoning – Temporal reasoning- Non monotonic reasoning.	13
IV	Introduction: Robot definition, Robotics and programmable automation Historical background, laws of Robotics. Robotics systems and Robot anatomy, specification of Robots. Robot geometrical configuration.	13
V	Mathematics for Robot Manipulation: Homogeneous coordinate transformations, Mathematical description of objects. Description of a wedge by transformation matrices, Relative transformations in the robot workspace. Description of manipulator joints, Assignment of coordinate systems to robot joints and derivation of transformation matrices.	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Patrick Henry Winston, "Artificial Intelligence", Addison Wesley, Third edition, 2000.
2. George F Luger, Artificial Intelligence, Pearson Education, 6th edition, 2009.

3. Francis N. Nagy, AndrasSiegler, Engineering foundation of Robotics, Prentice Hall Inc., 1987

REFERENCE BOOKS

1. EngeneCharniak and Drew Mc Dermott," Introduction to Artificial intelligence, Addison Wesley 2000.

WEB RESOURCES

<https://www.google.com/search?q=%3A+ARTIFICIAL+INTELLIGENCE+AND+ROBOTICS+course&aq=chrome..69i57j0l4j0i22i30l4j0i10i22i30.2781j1j4&sourceid=chrome&ie=UTF-8#>

MAPPING WITH PROGRAM OUTCOMES

CO	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	S	S	M
CO3	S	S	S	M
CO4	S	S	S	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Jasmine Antony Raj. A	Dr. V. Saravanan	

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

Course Code:	20ITP22C	Course Title						Batch:	2020 -2021 & onwards
		Elective II : MULTIMEDIA AND ITS APPLICATIONS						Semester:	IV
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

Understanding the basic concepts multimedia
 Understanding audio and video compression techniques in multimedia
 Knowing the application of multimedia
 Analyzing color models of an image

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	To understand the basic concept about multimedia	K1
CO2	Analysing the video and audio signals	K2
CO3	Learning the basic details about colour models in image	K3
CO4	Implementing basic tools in multimedia	K4

SYLLABUS

20ITP22C	Elective II : MULTIMEDIA AND ITS APPLICATIONS	Sem: IV
Unit No.	Topics	Hours
I	Introduction to Multimedia: What is Multimedia? - Components of Multimedia- Multimedia Research Topics and Projects- Multimedia and Hypermedia- History of Multimedia- Hypermedia and Multimedia. World Wide Web: History of the WWW- Hypertext Transfer Protocol (HTTP- Hypertext Mark-up Language (HTML) - Extensible Mark-up Language (XML) Overview of Multimedia Software Tools: Music Sequencing and Notation- Digital Audio- Graphics and Image Editing- Video Editing- Animation- Multimedia Authoring.	13
II	Multimedia Authoring and Tools: Multimedia Authoring- Multimedia Authoring Metaphors- Multimedia Production- Multimedia Presentation- Automatic Authoring. Some Useful Editing and Authoring Tools: Adobe Premiere- Macromedia Director- Macromedia Flash- Dreamweaver. VRML: Overview- Animation and Interactions- VR1 Specifics. Graphics and image Data Representations: Graphics image Data Types- 1-Bit images- 8-Bit Gray Level Images- Image Data Types- 24-Bit Color Images- 8-Bit Color Images.	13
III	Color in Image and Video: Color Science: Light and Spectra- Human Vision- Spectral Sensitivity of the Eye- Camera Systems- Gamma Correction- Color Monitor Specification- Out-of-Gamut Colors- White-Point Correction- XYZ to RGB Transform- Transform with Gamma Correction.	13
IV	Color Models in Images: RGB Color Model for CRT Displays- Subtractive Color: CMY Color Model- Transformation from RGB to CMY- Printer Gamut. Color Models in Video: Video Color Transforms- YUV Color Model- YIQ Color Model- Cyber Color Model.	13
V	Fundamental Concepts in Video: Types of Video Signals- Component Video- Composite Video- S-Video- Analog Video- Digital Video. Basics of Digital Audio: Digitization of Sound- MIDI: Musical Instrument Digital Interface- Quantization and Transmission of Audio	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning- Assignments and Cooperative learning

TEXT BOOKS

1. Fundamentals of Multimedia Ze-Nian Li and Mark S. Drew. Pearson Education International.

REFERENCE BOOKS

1. Principles of Multimedia 2nd Edition by Ranjanparekh.

WEB RESOURCES

<https://www.coursera.org/lecture/android-programming-2/multimedia-part-1-NW4wT>

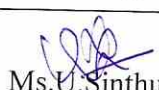
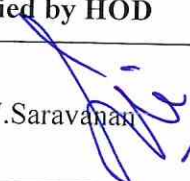
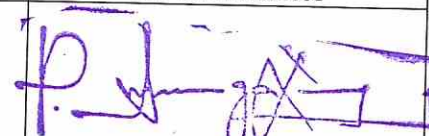
MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
 Ms. U. Sinhuja	 Dr. V. Saravanan	

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science
Coimbatore-641 028. 97

Course Code:	20ITP22D	Course Title						Batch:	2020 -2021 & onwards
		EElective II :DIGITAL IMAGE PROCESSING AND ANALYSIS						Semester:	IV
Hrs/Week:	5	L	5	T	-	P	-	Credits:	3

COURSE OBJECTIVE

Learning digital image processing techniques.
 Analysing the advanced concepts of image processing via implementation.
 Understanding of basics of Image sensing and Acquisition
 Analyzing the techniques and Processing the digital image using that techniques

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Understand the need for image transforms and their properties	K1
CO2	Understand the need for image compression and to learn the spatial and frequency domain techniques of image Compression	K2
CO3	Learn different techniques employed for the enhancement of images	K3
CO4	Develop image processing application	K4

SYLLABUS

20ITP22D	Elective II :DIGITAL IMAGE PROCESSING AND ANALYSIS	Sem: IV
Unit No.	Topics	Hours
I	Introduction to Digital Image Processing: The Origins of Digital Image Processing- Gamma Ray Imaging – X Ray Imaging – Imaging in Ultra Violet band – Fundamental steps in Digital Image Processing – Components of an Image Processing System.	13
II	Digital Image Fundamentals: Elements of Visual Perception – Light and the electromagnetic spectrum – Image sensing and Acquisition – Image Acquisition using a single sensor - Image Acquisition using sensor strips - Image Acquisition using sensor arrays – A simple image formation model.	13
III	Image Sampling and Quantization: Basic Concepts in Sampling and Quantization - Representing digital images – Spatial & Intensity Resolution– Image Interpolation	13
IV	Image Processing:- Functions - read write and show image - image reverse - image mirroring - Image shift -Image Resize-Image enhancement : Brightness & contrast - Negative- Histogram - Threshold	13
V	Image Compression: Fundamentals – Spatial and Temporal Redundancy - Irrelevant Information - Measuring Image Formation – Image Compression Models – Compression Methods – Huffman’s coding – Arithmetic coding – Digital image watermarking	13

Teaching methods:

- Use of multi-media/AV (Audio-Visual)/ICT
- Flipped Learning and Flipped Classroom
- Active Learning Forums
- Usage of Projectors
- Inquiry-based learning through quizzing, MCQs, etc.
- Student seminars and workshops
- Availability of E-resources
- Group Discussions, Group learning-Assignments and Cooperative learning

TEXT BOOKS

1. Gonzalez R.C and Woods R.E- “Digital Image Processing”- Addison Wesley- third edition.

REFERENCE BOOKS

1. Anil K. Jain- "Fundamentals of Digital Image Processing"- PrenticeHall.
2. Chanda&Majumdar- "Digital Image Processing and Analysis"- Prentice Hall- third edition. Delhi, 2004.

WEB RESOURCES

1. <https://drive.google.com/file/d/1XHUj6MbdCE5nCK8tn-qsYLbR7oQJikkR/view?usp=sharing>
2. <https://www.smartzworld.com/notes/digital-image-processing-pdf-notes-dip/>

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN

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

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Ms.U.Sinthuja	Dr.V.Saravanan	

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