

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

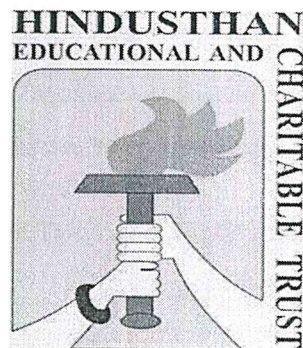
in the

**POSTGRADUATE PROGRAMME**

**MASTER OF SCIENCE IN COMPUTER SCIENCE**

**FOR THE STUDENTS ADMITTED FROM THE  
ACADEMIC YEAR**

**2022 - 2023 AND ONWARDS**



**HICAS**

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

**(Affiliated to Bharathiar University and Accredited by NAAC)**

**COIMBATORE-641028**

**TAMILNADU, INDIA.**

**Phone: 0422-4440555**

**website : [www.hicas.ac.in](http://www.hicas.ac.in)**

## **PREAMBLE**

Learning Outcomes-Based Curriculum Framework (LOCF) in the Postgraduate Programme M.Sc. Computer Science programme provides with deep knowledge of theoretical Computer Science to the participants who can become a technocratic to suit the industry requirement.

## **VISION**

To provide quality education to meet the need of industry and society by enhancing innovations, problem solving skills, leadership qualities, team spirit and ethical responsibilities.

## **MISSION**

- To prepare students to be the leaders of research and development in computer science.
- To provide leadership in high technology application to improve the educational experience.
- To make students embark on a journey of intellectual transformation.
- To discover, preserve and disseminate knowledge and promote a culture of computer education and thereby the employability of the students is ensured.

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEO)**

Post Graduates of Computer Science program will be

**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)**

- PO1: DISCIPLINARY KNOWLEDGE:** Get core competence in various subjects of Computer Science
- PO2: PROBLEM SOLVING AND ANALYSING:** Recognize the organizational need and To engage themselves in continuing professional development.
- PO3: ENVIRONMENT SUSTAINABILITY AND ETHICS:** Apply knowledge of computing And mathematics appropriate to the discipline.
- PO4: MODERN TOOL USAGE:** Design, implement, and evaluate a computational System to meet the desired needs within realistic constraints.
- PO5: CO-OPERATIVE TEAM WORK & COMMUNICATIVE SKILLS:** Apply mathematical foundations, algorithmic principles and computer science theory in the modeling and design of computational systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- PO6: SELF DIRECTED / LIFE LONG LEARNING:** Function effectively on teams to accomplish shared computing design, evaluation or implementation goals
- PO7: ENHANCING RESEARCH CULTURE:** Recognize the need for and ability to engage in continuing professional development.

## **PROGRAMME SPECIFIC OUTCOME (PSO)**

- PSO1:** Attain the ability to design and develop hardware and software based systems, evaluate and recognize potential risk and provide creative solutions.
- PSO2:** Gain knowledge in diverse area of computer science and experience an environment conducive in cultivating skills for successful career, entrepreneurship and higher studies.
- PSO3:** Explore technical knowledge in the field of computing and in latest trends, to pursue teaching research and development activities to work effectively in a team.
- PSO4:** Design, develop and test software systems for world-wide network of computers to provide solutions to real world problems.
- PSO5:** Able to develop and implement the solution of real life computing problems using contemporary technologies.

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

**SCHEME OF EXAMINATIONS - CBCS & LOCF PATTERN**

*(For the Students admitted from the Academic year 2022-2023 and Onwards)*

**PG PROGRAMME**

**Programme: M.Sc.**

**Branch: COMPUTER SCIENCE**

Course Code	Course Type	Course Title	Credit points	Lecture Hours/ Week		Exam Duration (hours)	MAX. MARKS		
				Theory	Practical		I.E.	EE	Total
<b>Semester - I</b>									
22CEP01	DSC	Web Programming Using Open Source Technologies	4	5		3	50	50	100
22CEP02	DSC	Analysis & Design of Algorithms	4	5		3	50	50	100
22CEP03	DSC	Advanced Java Programming	4	5		3	50	50	100
22CEP04	DSC	Advanced Software Engineering	4	4		3	50	50	100
22CEP05	DSC	<b>Practical I:</b> Web application Programming	3	-	5	3	50	50	100
22CEP06	DSC	<b>Practical II:</b> Object-Oriented Programming	3	-	5	3	50	50	100
22CEP07	SEC	Internship / Institutional Training / <b>Mini-Project</b>	2	-			100	-	100
22CEPE01	AEE	Open Elective - I	2	3		3	100	-	100
22CEPV01	ACC	VAC-I	1*	2		2	50	-	50**
22CEPJ01	SEC	<b>Aptitude / Placement Training</b>	Grade*	2		2	50		50**
	SEC	SDR – Student Development Record	<b>Assessment will be done in the end of III – rd Semester</b>						
		<b>Total</b>	<b>26</b>	<b>26</b>	<b>10</b>		<b>500</b>	<b>300</b>	<b>800</b>
<b>Semester - II</b>									
22CEP08	DSC	Advanced Operating System	4	5		3	50	50	100
22CEP09	DSC	Advanced Networking Technologies	4	5		3	50	50	100
22CEP10	DSC	Mobile Application Development	4	5		3	50	50	100
22CEP11	DSC	Machine Learning & Robotics	4	4		3	50	50	100
22CEP12	DSC	<b>Practical III:</b> Advanced Network programming	3	-	5	3	50	50	100
22CEP13	DSC	<b>Practical IV:</b> Mobile Application Programming	3	-	5	3	50	50	100
22CEP14	SEC	Internship / Institutional Training / <b>Mini-Project</b> / Extension Activity	2	-		-	100	-	100

22CEPE02	AEE	Open Elective - II	2	3		3	100	-	100
22CEPV02	ACC	VAC-II	1*	2		2	50	-	50**
22CEPJ02	SEC	Online Courses	Grade*	-		-	-	-	C/NC
22CEPJ03	SEC	Aptitude / Placement Training	Grade*	2		2	50		50**
		<b>Total</b>	<b>26</b>	<b>26</b>	<b>10</b>		<b>500</b>	<b>300</b>	<b>800</b>
		<b>Semester - III</b>							
22CEP15	DSC	Virtual Reality	4	5		3	50	50	100
22CEP16	DSC	Data Mining & Warehousing	4	4		3	50	50	100
22CEP17	DSC	Internet of Things	4	4		3	50	50	100
22CEP18	DSC	Practical V: Programming in Virtual Reality	3	-	5	3	50	50	100
22CEP19	DSC	Practical VI : Internet of Things Programming	3	-	5	3	50	50	100
22CEP20	DSE	Electives/ DSE-I	3	3		3	50	50	100
22CEP21	DSE	Electives/ DSE-II	3	3		3	50	50	100
22CEP22	SEC	Internship / Institutional Training / Mini-Project / Extension Activity	2	-		-	100	-	100
22CEPE03	AEE	Open Elective-III	2	3		3	100	-	100
22CEPV03	ACC	VAC-III	1*	2		2	50	-	50**
22CEPJ04	SEC	Aptitude / Placement Training	Grade*	2		2	50		50**
22CEPJ05	SEC	Online Courses	Grade*			-	-	-	C/NC
22CEPJ06	SEC	SDR – Student Development Record	2*	-	-	-	-	-	-
		<b>Total</b>	<b>28</b>	<b>26</b>	<b>10</b>		<b>550</b>	<b>350</b>	<b>900</b>
		<b>Semester - IV</b>							
22CEP23	DSE	Electives/ DSE-III	3	5		3	50	50	100
22CEP24	DSE	Electives/ DSE-IV	3	5		3	50	50	100
22CEP25	DSC	Self-Study Course	3	-	-	3	50	50	100
22CEP26	SEC	Project Work / Student Research	5	-			100	100	200
		<b>Total</b>	<b>14</b>	<b>10</b>			<b>250</b>	<b>250</b>	<b>500</b>
		<b>Grand Total</b>	<b>94</b>						<b>3000</b>

- \* denotes Extra credits which are not added with total credits.
- \*\* denotes Extra marks which are not added with total marks.
- VAC-Value Added Course (Extra Credit Courses)
- Grade - 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
Below 50	Not Satisfactory = Not completed

- I.E-Internal Exam
- E.E-External Exam
- J-Job Oriented Course
- E-Open Elective Papers

#### **PASSING MINIMUM**

- Passing Minimum for PG 50% (Both Internal and External Exam)

### *Abstract for Scheme of Examination*

*(For the students admitted during the academic year 2022 - 2023 and onwards)*

Course	Papers	Credit	Total Credits	Marks	Total Marks
Core /DSC	11	4	<b>44</b>	100	<b>1100</b>
Self-Study Course/DSC	1	3	<b>3</b>	100	<b>100</b>
Electives/DSE	4	3	<b>12</b>	100	<b>400</b>
Practical/DSC	6	3	<b>18</b>	100	<b>600</b>
Project/SEC	1	5	<b>5</b>	200	<b>200</b>
<i>Internship/Institutional Training/Mini-Project / Extension Activity</i>	3	2	<b>6</b>	100	<b>300</b>
Open Electives /AEE	3	2	<b>6</b>	100	<b>300</b>
<i>Value Added Course</i>	3	1*	3*	50	<b>150**</b>
Aptitude/Placement Training/SEC	3	Grade*	Grade*	50	<b>150**</b>
Online Courses/ SEC	2	Grade*	Grade*	-	C/NC
SDR – SEC	1	2*	2*	-	-
<b>Total</b>			<b>94 + (5 Extra Credits)</b>		<b>3000 + (300**)</b>

### List of Papers

<b>Open Electives</b>	Yoga for Human Excellence Human Health & Hygiene Indian Culture and Heritage Indian Constitution and Political System Consumer Awareness and Protection Professional Ethics and Human Values Human Rights, Women's Rights & Gender Equality Disaster Management Green Farming Corporate Relations Start a Business? Research Methodology and IPR General Studies for Competitive Examinations IIT JAM Examination (for Science only) CUCET Examination
<b>VAC Papers</b>	Digital Marketing SAP ERP Fundamentals Digital Humanities Master Web Designing in Photoshop Cyber law Web Services
<b>Courses offered by the Departments to Other Programmes</b>	



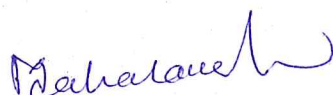
**List of Elective Papers/ DSE**  
(Can choose any one of the paper as electives)

	Course Code	Title
<b>Electives/ DSE-I</b>	22CEP20A	<b>ELECTIVE – I</b> Cloud Computing & Distributed systems
	22CEP20B	Information Security
<b>Electives/ DSE-II</b>	22CEP21A	<b>ELECTIVE – II</b> Research Methodology
	22CEP21B	Deep learning for Computer Vision
<b>Electives/ DSE-III</b>	22CEP23A	<b>ELECTIVE- III</b> Social Network
	22CEP23B	Software Project Management
	22CEP23C	<b>ELECTIVE- III</b> Python for Data Science
<b>Electives/ DSE-IV</b>	22CEP24A	<b>ELECTIVE-IV</b> Virtual Reality
	22CEP24B	Wireless Adhoc & sensor Networks
	22CEP24C	Cryptography & Network Security



**Syllabus Co-ordinator**

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PROFESSOR IN COMPUTER SCIENCE  
HINDUSTHAN COLLEGE OF ARTS & SCIENCE  
COIMBATORE - 58



**Academic Council – Member Secretary**



**BOS-Chairman/Chairperson**

Head of the Department  
Dept. of Computer Science,  
Hindusthan College of Arts & Science  
Coimbatore - 641 020



**PRINCIPAL**

**PRINCIPAL**

Hindusthan College of Arts & Science (Autonomous),  
Hindusthan Nagar, Bala - Java India,  
Coimbatore - 641 020.

## PG Scheme of Evaluation (Internal & External Components)

(For the students admitted during the academic year 2022-2023 and onwards)

### 1. Internal Marks

Components	Marks
Test	15
Model Exam	15
Internal Assessment components	20 #
<b>TOTAL</b>	<b>50</b>

### # List of components for Internal Assessment

S.No	Components
1	Multiple choice questions
2	Video teach
3	Co-operative or Collaborative Learning
4	Mini Project/Assignment
5	Case study
6	Seminar
7	Role Play
8	Management Games

(Any four components from the above list with five marks each will be calculated  $4 \times 5 = 20$  marks)

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

Components	Marks
Test -I	15
Test - II	15
Observation	10
Application*	10
<b>Total</b>	<b>50</b>

### b) Components for Practical E.E.

Components	Marks
Experiments/Exercise	40
Record	5
Viva	5
<b>Total</b>	<b>50</b>

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

Internships/Industrial Training (I.E)		Mini Project (I.E)	Major Project Work		
Component	Marks		Component	Marks	Total Marks
Work diary	25	-	I.E a) Attendance	20	100
Report	50	50	b) Review	30	
Viva-voce	25	50	c) Report	25	
			d) Moc Viva-Voce/ Presentation	25	
<b>Total</b>	<b>100</b>	<b>100</b>	<b>E.E*</b>		
			a) Final report	60	100
			b) Viva-voce	40	
			<b>Total</b>		<b>200</b>

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

### 4. 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
<b>Total</b>	<b>50</b>

## 5. Guideline for Open Elective

Two tests(each 2 hours) of 50 marks each [5 out of 8 descriptive type questions 5x10=50 Marks	<b>Marks</b>
	<b>100</b>

### 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 is to be treated as 100% Internals and evaluation through online.
4. Item No.2: \* - Application should be from the relevant practical subject other than the listed programmes. It must be enclosed in the practical record.

*For all PG/MBA/MCA Programmes*

*(2022-2023 Regulations)*

**QUESTION PAPER PATTERN FOR CIA EXAM**

Reg.No:-----

Q.P.CODE:

HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)  
PG/MBA/MCA DEGREE CIA EXAMINATIONS -----20-----

(-----Semester)

BRANCH: -----

Subject Name: -----

Time: Two Hours

Maximum: 50 Marks

**Section-A (4 x 4=16 Marks)**

Answer ALL Questions

ALL questions carry EQUAL Marks

(Q.No: 1 to 4 Either Or type)

**Section-B (3 x 8=24 Marks)**

Answer any THREE Questions out of FIVE Questions

ALL questions carry EQUAL Marks

(Q.No: 5 to 9)

**Section-C (1 x 10=10 Marks)**

(Compulsory Question: It should be a Case study/Application oriented/Critical analysis from any of the units)

(Q.No: 10)

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

Reg.No:-----

Q.P.CODE:

HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)  
PG/MBA/MCA DEGREE MODEL EXAMINATIONS -----20-----

(-----Semester)

BRANCH: -----

Subject Name: -----

Time: Three Hours

Maximum: 60 Marks

**SECTION – A (5x4=20 marks)**

Answer ALL Questions

ALL Questions carry EQUAL Marks

(Q.No 1 to 5 Either Or type)

(One question from each Unit)

**SECTION – B (3x10=30 Marks)**

Answer any THREE Questions Out of FIVE Questions

ALL Questions carry EQUAL Marks

(Q.No 6 to 10)

(One question from each Unit)

**SECTION – C (1x10=10Marks)**

(Compulsory Question: It should be a Case study/Application oriented/Critical analysis from any of the units)

(Q.No: 11)

## Blue Print of Question Paper for all PG Programmes

(For the academic year 2021-22, 2022-23)

### FOR CIA I - QUESTION PATTERN

Max. Marks:50

Sec	Question No	Type	No of Question	Questions to be answered	Mark per question	K-level
A	1 to 4	Either or Type (a or b)	8	4	4 (4x4=16)	2 Questions will be in K1 4 Questions will be in K2 2 Questions will be in K3
B	5 to 9	Open choice	5	3	8 (3x8=24)	2 Questions will be in K3 2 Questions will be in K4 1 Questions will be in K5
C	10	Compulsory	1	1	10 (1x10=10)	1 Question will be in K5

### FOR MODEL/ESE - QUESTION PATTERN

Max. Marks:60

Sec	Question No	Type	No of Questions	Questions to be answered	Mark per question	K-level
A	1 to 5	Either or Type (a or b)	10	5	4 (5x4=20)	2 Questions will be in K1 4 Questions will be in K2 4 Questions will be in K3
B	6 to 10	Open choice	5	3	10 (3x10=30)	2 Questions will be in K3 2 Questions will be in K4 1 Questions will be in K5
C	11	Compulsory	1	1	1 (1x10=10)	1 Question will be in K5

### Distribution of section-wise marks with K levels for PG 2021-22, 2022-23

CIA - PG								
Sec.	K1	K2	K3	K4	K5	Total questions	Questions to be answered	Total marks
A- Either or type	2	4	2			8	4	4X4=16
B - Open choice			2	2	1	5	3	3X8=24
C- Compulsory Question					1	1	1	1X10=10
<b>Total Marks</b>	<b>8</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>18</b>			<b>84</b>
% of marks without choice	9.52	19.05	19.05	119.05	21.43			100

Model Exam - PG								
Sec.	K1	K2	K3	K4	K5	Total questions	Questions to be answered	Total marks
A- Either or type	2	4	4			10	5	5X4=20
B - Either or type			2	2	1	5	3	3X10=30
C - Compulsory Question					1	1	1	1X10=10
<b>Total Marks</b>	<b>8</b>	<b>16</b>	<b>36</b>	<b>20</b>	<b>20</b>			<b>100</b>
% of marks without choice	8	16	36	20	20			100

**PG Programme Regulations for the academic year 2022-2023**

1. Internal marks components for all the candidates admitted from the academic year 2022-2023 and onwards is as follows.

**For Theory courses**

Components	Marks
Test	15
Model Exam	15
Internal Assessment components	20
<b>TOTAL</b>	<b>50</b>

**For Practical courses**

Components	Marks
Test-I	15
Test-II	15
Observation/Excercise	10
Application*	10
<b>TOTAL</b>	<b>50</b>

2. Pattern of question paper for External Examination will be maximum of 60 marks for all theory courses. The marks obtained will be converted into 50 marks as per the scheme.
3. Passing minimum marks for all PG programme is 50 % in internal and 50% in External and the composition of total 50 marks out of 100 marks.
4. Project work is considered as a special course involving application of knowledge in problem solving / analyzing /exploring a real-life situation. A Project work may be given in lieu of a discipline specific elective paper. Distribution of marks for major project work for all PG Programmes will be of 50:50 pattern for both Internal and External in total of 200 marks.
5. Internship / Institutional Training / Mini-Project/ Extension Activity is related to the discipline. The students can be permitted to complete the Internship / Institutional Training / Mini-Project/ Extension Activity before the end of respective semesters (end of I, II and III semester) and submit a report.

Internship / Institutional Training/ Extension Activity	Not more than seven days
Mini project	During the course of study for not more than seven days.

6. For fully internal subjects, Two test will be conducted one at the time of CIA I and the other will be during Model Examinations.
7. Retest for the failure candidates in the above case should be conducted immediately before the End Semester Examinations.
8. For the Theory cum Practical blended courses, 50:50 Internal and External pattern will be followed for theory examination and Fully internal pattern will be followed for Practical examination. For theory part, External examination will be conducted as regular pattern (max of 70 marks) and it will be converted into 25 marks.

Course	Internal Marks		External marks		Total marks (Max. marks 50)	
	Min.	Max.	Min.	Max.	Min.	Max.
Theory	12.5	25	12.5	25	25	50
Practical	25	50	-		25	50

For Practical components for Theory cum Practical courses (Fully Internal)

Components	Marks
Test I	10
Test II	10
Experiment/Exercise	20
Record	5
Viva	5
<b>Total</b>	<b>50</b>

The Internal mark 50 will be converted into 25.

11. For the candidates admitted under the Fast Track System (FTS) must register their names to their concerned department heads and get approval from the COE office at the beginning of the II semester.
12. Self Study will be a Core Paper of the department for which the examination pattern of other theory subjects is followed.
13. Online courses is incorporated as a non-credit skill enhancement course for the III and IV semesters and Grades will be assessed based on the certificates produced by the students. It is compulsory to produce one online course certificate for each semester to avail grades for the students. (2 certificates in any of the online platform is mandatory).
14. SDR – Student Development Report to be received by the department from the students till end of the **Third** semester. (Evidences of Curriculum activities and Co-curriculum activities).
15. Open elective courses:  
Departments can offer list of subjects which teaches moral ethics to the young community for the better future. The topics relevant to Indian ethics, Culture, Women rights, Yoga, Green farming, Indian constitution etc., as an open elective courses. These courses can be offered by the department or other department as inter department courses. Marks earned for this subject will not be included for the CGPA calculation.

## Regulations of Fast Track System (FTS)

- From the academic year 2021-22, our college is offering Fast Track System (FTS) for all UG and PG programmes. In this system, we are offering two courses under the course type of Discipline Specific Elective (DSE) in the sixth semester for all UG programmes and fourth semester for all PG programmes, which are equivalent and related with **National Programme on Technology Enhanced Learning/Study Webs of Active-Learning for Young Aspiring Minds (NPTEL/SWAYAM)** courses.
- The students have the option of taking two subjects of the sixth semester of their programme through NPTEL/SWAYAM portal from the list given by NPTEL and can complete the online course before fifth semester and submit the received original certificates to the COE office for getting approval. If the student completes these courses before the beginning of the sixth semester (UG)/fourth semester (PG), the candidate can be considered and exempted to write the examination from the assigned DSE courses in the sixth semester/fourth semester. They should complete only the self study course and project work during the VI/IV semester as assigned in the scheme. The candidate who completes the online courses and submits the successful course completion credentials, the credit transfer will be considered as per our Scheme of Examination for qualifying the degree. **The minimum duration of the registered online course must be 12 weeks.** Course duration of less than 12 weeks will not be considered.
- For all PG programmes, the candidates who were admitted during the academic year 2021-2022 under the Fast track system, for the self study course, the internal mark component will be as follows. For others regular internal pattern follows.

TEST	Max. Marks	Mode
CIA I	50 (50x1=50)	Online objective type
Model Exam.	50 (50x1=50)	Online objective type

Out of these two tests, the total marks will be converted into 40 marks as Internal.

- For all UG programmes, the candidates who were admitted during the academic year 2021-2022 under the Fast track system, for the self study course, the internal mark component will be as follows. For others regular internal pattern follows.

TEST	Max. Marks	Mode
CIA I	50 (50x1=50)	Online objective type
CIA II	50 (50x1=50)	Online objective type
Model Exam.	50 (50x1=50)	Online objective type

Out of three tests, the total mark will be converted into 30 marks as Internal.

- For the students admitted in Fast Track System, must enroll their names to the concerned department heads and get approval from the COE office at the beginning of III semester for all UG Programmes and at the beginning of II semester for all PG programmes.
- The students who cleared and got certified for online courses under the fast track system, the grade obtained will be converted into average marks of range. The received certificates must be submitted to the COE office for approval of the Controller and the Principal. The FTS courses will be treated as fully external.



DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
I	DSC	22CEP01	Web Programming Using Open Source Technologies	4	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- Apply to get familiar with basics 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
- Explore different web extensions and web services standards

Unit	Course Contents	Hours	K Level
I	<b>Introduction :</b> 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	13	Upto K5
II	<b>Data Manipulations:</b> 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.	13	Upto K5
III	<b>Session and Cookies :</b> 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	13	Upto K5

IV	<b>Structured Query Language (SQL):</b> Relational Database and SQL-SQL standards-The Workhorses of SQL- Database Design-Privileges and Security. PHP and My SQL: Connecting to My SQL - Making My SQL Queries - Fetching Data Sets - Multiple Connections - Error Checking - Creating My SQL Databases with PHP - My SQL Functions. <b>STORING OBJECTS IN THE CLOUD :</b> Advanced database techniques using MySQL and SQL Server, blob storage, table storage	14	Upto K5
V	<b>CONTENT MANAGEMENT SYSTEM :</b> What is CMS – Word press - Joomla - Drupal -Magento - Prestashop - Comparison of Content Management System, Open cart, Cscart. Search Engine Optimization - How it Works - How SEO in marketing	12	Upto K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

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

#### Books for Reference

1. Dacie Cristian, "**Pack Pub AJAX and PHP**"-2006
2. Scouarnec Yann, Stolz Jeremy Jeremy and Glass Michael, "**Beginning PHP5, APACHE, MYSQL Web Development**", Wiley-India. New Delhi, 2005 Steven Holzner, "**The Complete Reference**", Tata McGraw Hill Edition, New Delhi, 2009
3. Raymond, Eric S., "**The Cathedral and the Bazaar**" on November 7, 2003
4. Moody, Glyn, "**Rebel Code**", Penguin Books, London, England, 2001
5. Wheeler, David, "**Why OSS/FS? Look at the Numbers!**" November 7, 2003

#### Web Resources

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

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** Student would be a professional in software development

#### Activities to be given

1. Generate an application to simply the process in managing the database.
2. Develop a website to bring out student ideas in business application.

3. Provide a seminar on Domain name server, Web server, database management, cloud services.

### Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Study interactive webpage(s) using HTML, CSS and JavaScript.	Upto K5
CLO2	Embellish a responsive website using HTML5 and CSS3.	Upto K5
CLO3	Apply Dynamic website using server side PHP Programming and Database connectivity.	Upto K5
CLO4	Asses and differentiate different Web Extensions and Web Services.	Upto K5
CLO5	Reframe the Content Management Systems	Upto K5

### Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	3	2	3	3	3
CLO 2	3	2	3	2	3	2	2
CLO 3	3	3	3	2	3	2	3
CLO 4	3	2	2	3	2	3	2
CLO 5	3	3	3	3	3	3	3

3- Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
Mr.K.S.SENTHILKUMAR	Dr.R.RANGARAJ	

Head of the Department  
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Co-ordinator  
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Coimbatore-641 028.

DEPARTMENT OF COMPUTER SCIENCE				CLASS : I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
I	DSC	22CEP02	Analysis & Design of Algorithms	4	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- Learning the basic of designing the algorithms.
- Remembering the mathematical background for analysis of algorithm
- Demonstrate a familiarity with major algorithms and data structures.
- Reinforce basic design concepts like pseudo code, specifications, top-down design.
- Applying and analyzing an important algorithmic design paradigms and methods of analysis

Unit	Course Contents	Hours	K Level
I	<b>Design of Efficient Algorithms:</b> Data Structures: lists, queues, and stacks-set representation-graphs-trees- recursion-Divide and Conquer-Balancing-Dynamic programming- Epilogue Data Structure for Set manipulation Problems: Fundamental operations on sets-Hashing-Binary Search-Binary Search trees-Optimal binary trees-A simple Disjoint –Set union algorithm- Balanced Tree schemes-Partitioning.	13	Upto K5
II	<b>Elementary Data Structures:</b> Stacks and Queues – Trees – Binary Trees–Binary Search Trees–Iterative and Recursive Search of BST–Graphs–Konigsberg Bridge Problem – Graph Representations - Graph Traversals. Greedy Methods: Knapsack Problem, Minimum Cost Spanning Trees, Optimal Storage on Tapes and Single Source Shortest Path Problem.	13	Upto K5
III	<b>Dynamic Programming :</b> General method – multistage graphs – all pair shortest path – optimal binary search trees – 0/1 Knapsack – traveling salesman problem – flow shop scheduling	13	Upto K5
IV	<b>Backtracking:</b> General method – 8-Queens problem – sum of subsets – graph coloring – Hamiltonian cycles – knapsack problem – Branch and bound:-The method– 0/1 Knapsack Problem – traveling salesperson.	13	Upto K5

V	<b>Branch and Bound:</b> The Method- Least Cost Search. Bounding: FIFO Branch and Bound and LC Branch and Bound-0/1 Knapsack Problem- Travelling Salesman Problem- Efficiency Considerations.	13	Upto K5
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Note: The Questions should be asked in the ratio of 100% theory

### Book for Study

1. *Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, "The Design and analysis of Computer Algorithms", Pearson Education, 1999. (UNIT I – Chapter 2 &4)*

### Books for Reference

1. *Goodman and S.T.Hedetniem, "Introduction to the Design and Analysis of Algorithms "MGH.*
2. *Aho A.V, John E.Hopcroft Jeffrey D. Ullman, —"The Design and Analysis of Computer Algorithms" Pearson Education.*
3. *Lakshmi varahan S, Sudarshan K Dhall. "Analysis and Design of Parallel Algorithms", Mcgraw hills series.*
4. *Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran,—"Fundamentals of Computer Algorithm", Galgotia Publications, 2009.*
5. *Shefali Singhal and Neha Garg "Analysis and Design of Algorithms", 2009*

### Web Resources

1. <https://kailash392.files.wordpress.com/2019/02/fundamentalsof-computer-algorithms-by-ellis-horowitz.pdf>
2. [https://mrcet.com/downloads/digital\\_notes/IT/Design%20and%20Analysis%20Algorithms.pdf](https://mrcet.com/downloads/digital_notes/IT/Design%20and%20Analysis%20Algorithms.pdf)

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** Student were able to deploy the algorithms in developing applications

### Activities to be given

1. Training would be given in deploying algorithm in simulation environment
2. Simulation practices in cloud
3. Awareness on Research in computer science

### Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Apply the mathematical foundation in analysis of algorithms.	Upto K5
CLO2	Appraise the time and space complexity of the algorithms Designed greedy techniques.	Upto K5
CLO3	Exemplify the efficiency of algorithms using time and space complexity theory	Upto K5
CLO4	Embellish various iterative improvement techniques	Upto K5
CLO5	Defend their own versions for a given computational task and to compare and contrast their performance.	Upto K5

### Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	2	2	2	1	2	2	3
CLO 2	2	3	2	1	2	3	2
CLO 3	2	2	2	1	2	3	3
CLO 4	1	3	3	1	2	2	2
CLO 5	2	2	2	2	2	2	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
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Co-ordinator  
Curriculum Development Cell  
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Coimbatore-641 028.

DEPARTMENT OF COMPUTER SCIENCE				CLASS : IMSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
I	DSC	22CEP03	Advanced Java Programming	4	5	50	50	1 00

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

### Course Objectives

- Learning Fundamentals of Applets and JDBC
- Demonstrate the use of good object-oriented design principles including encapsulation and information hiding.
- The implementation will demonstrate the use of a variety of basic control structures including selection and repetition
- Create to learn Framework Technologies like spring, Struts, Hibernate.
- Understand to create RMI application with Framework

Unit	Course Contents	Hours	K Level
I	<b>Overview:</b> Object Oriented Programming-Simple Program-control statements. Introducing Classes – class fundamentals - Declaring objects – assigning object reference-Variables- introducing methods - constructors. 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	13	Upto K5
II	Applet Fundamentals- Applet Class - Applet lifecycle-Steps for Developing Applet Programs- Passing Values through Parameters-Graphics in Applets- GUI Application - Dialog Boxes – Creating Windows - Layout Managers – AWT Component classes – Swing component classes- Borders – Event handling with AWT components -AWT Graphics classes - File Choosers – Color Choosers – Tree – Table–Tabbed panels–Progressive bar - Sliders.	13	Upto K5
III	<b>JDBC</b> -Introduction - JDBC Architecture - JDBC Classes and Interfaces Database Access with MySQL -Steps in Developing JDBC application - Creating a New Database and Table with JDBC -Working with Database Metadata;	13	Upto K5

	Java Networking Basics of Networking - Networking in Java- Socket Program using TCP/IP -Socket Program using UDP- URL and Inet address classes.		
IV	<b>Structs:</b> Introduction to Structs : What is Structs - Features –Modell vs Model2 -Custom Validation – Bundled Validators – Ajax Validation View– Controller MVC Design Pattern – tags – UI Components. <b>Hibernate:</b> Introduction to Hibernate Framework – ORM Tool- Architecture- Hibernate using XML – Web application	13	Upto K5
V	<b>Spring:</b> Introduction to Spring Framework – Framework of Swing Advantages of Spring Framework - Modules – Application –IoC Container Dependency Injection - Constructor Injection. Web Services – SOAP Web Service – Restful Web services	13	Upto K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

1. Herbert Schildt - "*The complete Reference Java*", Tata McGrawHill, 8th edition, 2011.

#### Books for Reference

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.
3. Lay S. Horstmann, Gray Cornell. "*Core Java 2 – Fundamentals*" 2nd Edition, 2000.
4. Scott daks & Henry "*Java threads*", 2nd Edition, , Shroff Publishers & Distributors, 2000
5. Elliotte Rusty Harold, "*Java Network Programming*", First Edition, Shroff Publications 2000.

#### Web Resources

1. <https://beginnersbook.com/java-tutorial-for-beginners-with-examples/>
2. <https://enos.itcollege.ee/~jpoial/allalaadimised/reading/Advanced-java.pdf>

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** Students become a Java developer

#### Activities to be given

1. Rich API development in java
2. Oops implementation in developing a desktop application
3. Comparative study on python and java



## Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	List classes, objects, members of a class and relationships among them needed for a specific problem.	Upto K5
CLO2	Classify dynamic webpages using Servlets and JSP.	Upto K5
CLO3	Apply to develop RMI application using Java Spring Framework	Upto K5
CLO4	Analyze and classify the type of framework and its advantages	Upto K5
CLO5	Asses Java SDK environment to create debug and run simple Java program	Upto K5

## Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	3	3	3	3	3
CLO 2	3	3	2	3	2	3	2
CLO 3	2	3	3	3	3	2	3
CLO 4	2	3	3	3	3	3	2
CLO 5	3	2	2	3	3	3	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
Dr.S.SASIKALA	Dr.R.RANGARAJ	

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Curriculum Development Cell  
Co-ordinator  
Coimbatore - 641 028

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
I	DSC	22CEP04	Advanced Software Engineering	4	4	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

### Course Objectives

- Learning the basics of Software engineering methods and practices, and their appropriate Application.
- Remembering software engineering layered technology and Process framework.
- A general understanding of software process models such as the waterfall and evolutionary Models.
- Understanding and applying software requirements and the SRS documents in real-time.
- Analyzing the role of project management including planning, scheduling, risk Management etc.

Unit	Course Contents	Hours	K Level
I	<b>The Product and The Process:</b> The Evolving role of Software – Process methods and tools – Software process models – Linear sequential model – Prototyping model – Real model – Evolutionary software process model – Formal methods model – Fourth generation techniques – Project management concepts – Software process and project metric.	10	Upto K5
II	<b>Software Project Planning:</b> Software Project Planning – Observation on estimating software Scope, Resources, Project estimation, Decomposition techniques, Empirical estimation models – The Make Busy divisions – Risk management – Software risk identification – Risk projection, Risk mitigation – Monitoring and management	10	Upto K5
III	<b>Project Scheduling and Tracking:</b> Project Scheduling and Tracking- Basic concepts – Defining a task set for the software project – Scheduling plan – Software quality assurance – Quality concepts and assurance – Software reliability – ISO 9000 Quality standards – Software configuration management – Software reviews – Formal technical reviews – Statistical quality assurance.	10	Upto K5
IV	<b>Agile Software Development:</b> Basics and Fundamentals- Values, principles, stakeholders - Agile Principles-Agile Manifesto – Agile Software Process Models - Extreme Programming – Twelve Practices of XP- User Stories – Pair Programming – Test Driven Development – Scrum – Scrum	12	Upto K5

	Methodology – Sprints – Scrum Teams - Scrum Meetings - Lean Software Development - Lean Approach - Waste Management, Kaizen – Kanban – Kanban in Manufacturing- Principles of Kanban, Workflow of Kanban- Kanban boards, Kanban cards - Agile Requirements-User Stories-Backlog Management-Agile Architecture – Feature Driven Development		
V	Project Presentation and Retrospective Analysis I - Agile Risk Management – Risk and Quality Assurance - Iteration II-Project Presentation and Retrospective Analysis - Agile Review - Agile Metrics and Measurements-Agile Testing- Test Driven Development, User Acceptance Test - Scaling Agile for large projects- Scrum of Scrums-Team collaborations.	10	Upto K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

1. Roger S Pressman, "*Software Engineering: A Practitioner's Approach*", McGrawHill(2000)

#### Books for Reference

1. Paul VII, "*Agile: The Complete Overview of Agile Principles and Practices (Agile Product Management)*", 1st Edition, 2016.
2. Robert Martin, "*Agile Software Development, Principles, Patterns, and Practices*", Pearson New International Edition, 2013.
3. Richard Fairley, "*Software Engineering Concepts*", McGraw-Hill 2004.
4. Aggarwal KK, Yogesh Singh, "*Software Engineering*", Newage International Publishers, Third Edition.
5. Pankaj Jalote, "*An Integrated Approach to Software Engineering*" Narosa Publishing House, Delhi, 3<sup>rd</sup> Edition.

#### Web Resources

1. <http://www.ddegjust.ac.in/studymaterial/mca-3/ms-12.pdf>
2. [http://www.jru.edu.in/wp-content/uploads/moocs/e-books/computer-science-and-IT/Advanced\\_Software\\_Engineering.pdf](http://www.jru.edu.in/wp-content/uploads/moocs/e-books/computer-science-and-IT/Advanced_Software_Engineering.pdf)

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** Ability to design a software in industry

**Activities to be given:**

1. Implementing business application model in softwares
2. Classify the model on creating a software
3. Update the application environment in commercial perspectives

**Course Learning Outcomes**

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Categorize the approaches for verification and validation including static analysis and reviews.	Upto K5
CLO2	Assess software testing approaches such as software Scope, Resources, Project estimation	Upto K5
CLO3	Organizing software measurement and software Formal technical reviews	Upto K5
CLO4	Analyze on quality control and how to ensure good quality software.	Upto K5
CLO5	Estimate modern Agile Development and Service Oriented Architecture Concept to Industry	Upto K5

**Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)**

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	3	3	3	3	3
CLO 2	3	1	2	3	3	3	2
CLO 3	3	2	2	2	3	2	3
CLO 4	1	2	2	3	3	3	2
CLO 5	2	2	2	2	2	3	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
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Co-ordinator  
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Coimbatore-641 028.

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
I	DSC	22CEP05	Practical I : Web Application Programming	3	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

### Course Objectives

- 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
- Understanding knowledge on Word press.

Ex.No	PROGRAM LIST	Hours	K - Level
1.	Design and create a program for implementing Inheritance.	6	Upto K5
2.	Develop a program to send an HTML formatted Email with attachment in PHP.	7	Upto K5
3.	Develop and demonstrate a program for login authentication using PHP and My SQL.	6	Upto K5
4.	Creating Crud Grid For A Student Database Using PHP and My SQL.	7	Upto K5
5.	Develop a program to upload a file in PHP.	6	Upto K5
6.	Design and create a RSS feed using PHP and My SQL.	6	Upto K5
7.	Create a Pay-slip for an employee using PHP and MySQL.	6	Upto K5
8.	Create a simple Discussion board for students to share their knowledge	7	Upto K5
9.	Build a college website using Word-press.Theme.	7	Upto K5
10.	Create a home page and customize the data through Admin Panel	7	Upto K5

Note: The Questions should be asked in the ratio of 100% Programs

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** The course helps to develop a websites using open source technologies

**Course Learning Outcomes**

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	develop simple GUI Applications	Upto K5
CLO2	Demonstrate a web application using PHP & MYSQL	Upto K5
CLO3	Applying Template in Web Application	Upto K5
CLO4	Correlate an application using Client/Server Panel in Web Environment.	Upto K5
CLO5	Asses design dynamic websites that meet specified needs and interests.	Upto K5

**Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)**

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	2	3	3	3	3
CLO 2	2	2	2	3	3	3	2
CLO 3	3	3	3	2	3	2	3
CLO 4	3	2	2	3	3	3	2
CLO 5	3	2	3	3	2	2	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
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Co-ordinator  
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Coimbatore-641 028.

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
I	DSC	22CEP06	Practical II: Object - Oriented Programming	3	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	
	Entrepreneurship Oriented	
	Skill Development	✓

### Course Objectives

- Deploy 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.
- Understanding the concepts of Java Networking

Ex. No	PROGRAM LIST	Hours	K - Level
1.	Demonstrate REMOTE METHOD INVOCATION application using Java	5	Upto K5
2.	Create an Event Driven Java Application. (Mouse Events/ Keyboard Events)	6	Upto K5
3.	Exhibit Socket Programming for Two way communication in java.	6	Upto K5
4.	Create a Java program to display IP ADDRESS and HOSTNAME of the machine.	5	Upto K5
5.	Illustrate a concept of inheritance with Servlet.	5	Upto K5
6.	Design a java program to implement GUI WITH BORDER LAYOUT.	6	Upto K5
7.	Create a Event Handler program using Spring Framework.	5	Upto K5
8.	Create a Java Program to Establish Connection in JDBC.	6	Upto K5
9.	Create a program to demonstrate a simple REST API	5	Upto K5
10.	Demonstrate simple JAVABEANS applications.	5	Upto K5
11.	Build a java program to execute NETWORKING concept.	5	Upto K5
12.	Design a java program to perform ANIMATION of different shapes.	6	Upto K5

Note: The Questions should be asked in the ratio of 100% Programs

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** Able to understand structs hibernate and other frameworks in Java

**Course Learning Outcomes**

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Observe to develop simple GUI Applications	Upto K5
CLO2	Extend on developing RMI Application	Upto K5
CLO3	Experiment with an application using Framework	Upto K5
CLO4	Classify and understand the concepts of Hibernate	Upto K5
CLO5	Evaluate the use of Java in a variety of technologies on different platforms.	Upto K5

**Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)**

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	2	3	3	3	3
CLO 2	2	2	2	3	3	2	2
CLO 3	3	3	3	2	3	3	3
CLO 4	3	2	2	3	3	2	2
CLO 5	3	3	3	3	3	3	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
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DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
II	DSC	22CEP08	Advanced Operating System	4	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- Main components of an OS & their functions.
- 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.
- Design how Distributed Shared Memory is managed

Unit	Course Contents	Hours	K Level
I	<b>Basics of Operating Systems:</b> What is an Operating System? – Mainframe Systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real-Time Systems – Handheld Systems – Feature Migration – Computing Environments – Process Scheduling – Cooperating Processes – InterProcess Communication – Deadlocks – Prevention – Avoidance – Detection – Recovery.	15	Upto K5
II	<b>Distributed Operating Systems:</b> 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	11	Upto K5
III	<b>Real time Operating Systems:</b> Introduction – Applications of Real Time Systems – Basic Model of Real Time System – Characteristics – Safety and Reliability – Real Time Task Scheduling	13	Upto K5
IV	<b>Operating Systems for Handheld Systems:</b> Requirements – Technology Overview – Handheld Operating Systems – Palm OS – Symbian Operating	13	Upto K5

	System- Android– Architecture of android–Securing hand held systems		
V	<b>Case Studies:</b> 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	Upto K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

1. William Stallings, "**Operating systems**", Pearson Prentice Hall, 7th Edition, 2011.

#### Books for Reference

1. Pradeep K Sinha, "**Distributed Operating Systems: Concepts and Design**", Prentice Hall of India, 2007
2. Abraham Silbers chatz; Peter Baer Galvin; Greg Gagne, "**Operating System Concepts**", Seventh Edition, John Wiley & Sons, 2004.
3. Rajib Mall, —"**Real-Time Systems: Theory and Practical**", Pearson Education India, 2006.
4. Pramod Chandra P.Bhatt, "**An introduction to operating systems**", concept and practice, PHI, Third edition, 2010
5. Stallings "**Operating Systems, Internals and Design Principles**", 5th edition, Pearson Education India, 2006

#### Web Resources

1. <https://www.docsity.com/en/notes-for-distributed-operating-system/2725203/>
2. [https://techworldthink.github.io/MCA/Download/S2/EI%20-20OS/FULL/OS\\_MD\\_1.pdf](https://techworldthink.github.io/MCA/Download/S2/EI%20-20OS/FULL/OS_MD_1.pdf)

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** Gain a sufficient knowledge in Distributed operating system

#### Activities to be given

1. Installing operating system in lab sessions.
2. Hard Disk Formatting procedures and memory management task is implemented
3. Software Raid concept implemented in Lab Sessions

### Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Define the importance of computer system resources and the role of operating systems in their management policies and algorithms.	Upto K5
CLO2	Probe the concepts of Distributed Operating Systems	Upto K5
CLO3	Appraise real time OS applications	Upto K5
CLO4	Focus on latest Operating Systems and its methodologies.	Upto K5
CLO5	Test Problem-solving schemes as correct, efficient, and well-structured programs, and can integrate the programs into the computing infrastructure as functional information systems.	Upto K5

### Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	2	2	2	3	3	3	3
CLO 2	2	3	2	3	3	3	2
CLO 3	3	2	2	3	3	3	3
CLO 4	2	2	2	2	3	2	2
CLO 5	3	3	3	3	3	3	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
Ms.G.SIVABRINDHA	Dr.R.RANGARAJ	

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

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
II	DSC	22CEP09	Advanced Networking Technologies	4	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- To understand the issue of data flow and selecting the network media.
- To describe the difference between static and dynamic routing protocols.
- To introduce the use of the Wire shark network protocol analyzer.
- To examine the issues of wireless security and Learning the basics of VoIP.
- To Understand the concept of BGP and IPv6 over the Internet

Unit	Course Contents	Hours	K Level
I	<b>Introduction to Physical Network Design:</b> Core- Distribution Layer -Access Layer - Data Flow - Selecting the Media- IP Subnet Design-VLAN Network- Virtual LAN-Configuration and Tagging. Routed Network- Router- Gateway Address- Network Segments- Multilayer Switch- Layer 3 Routed Networks- Routed Port Configuration-Inter-VLAN Routing Configuration- Serial and ATM Port Configuration.	13	Upto K5
II	<b>Advanced Router Configuration I:</b> Configuring Static Routing - Dynamic Routing Protocols - Configuring RIPv2 - TFTP—Trivial File Transfer Protocol. <b>Advanced Router Configuration II:</b> Configuring Link State Protocols— OSPF- Configuring Link State Protocols-IS-IS- Configuring Hybrid Routing Protocols—EIGRP	13	Upto K5
III	<b>Configuring and managing the network Infrastructure:</b> Domain Name and IP Assignment- Ip Management With DHCP- Scaling the Network with NAT And PAT- DOMAIN NAME SERVICE (DNS) Introduction to Analyzing Network Data Traffic: Protocol Analysis/Forensics-Wire shark Protocol Analyzer-Analyzing Network Data Traffic-Filtering.	13	Upto K5
IV	<b>Network Security:</b> Denial of Service-Firewalls and Access Lists- Router Security-Switch Security-Wireless Security-VPN Security. Introduction to VoIP- The Basics of Voice over IP- Voice over IP	13	Upto K5

	Networks- VoIP Security		
V	<b>Internet Routing—BGP:</b> Configuring BGP- BGP Best Path Selection- IPv6 over the Internet- Configuring JUNIPER Routers	13	Up to K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

1. Jeffrey S. Beasley, Piyasat Nilkaew - "*A Practical Guide to Advanced Networking*", 2015, Pearson

#### Books for Reference

1. Alberto Leon-Garcia, Indra Widjaja "*Communication Networks*", Second Edition, McGraw-Hill Education, 2003
2. Shaikh Farhan, Shaikh Mohd Ashfaque "*Advanced Networking Technologies*" Tech-Neo Publications LLP, 2019
3. R. J. Cesarone, R. C. Hastrup, David Bell and G. Nelson "*Architectural Design for a Mars Communications & Navigation Orbital Infrastructure*" Jan 2000
4. K. B. Bhasin and Jeffrey Hayden Space "*Internet architectures and technologies*" for NASA enterprises
5. O Bob, Al Hara and Petrick Handbook: "*A Designer's Companion, Standards Information Network*".

#### Web Resources

1. <https://ptgmedia.pearsoncmg.com/images/9780789749048/samplepages/0789749041.pdf>
2. <https://www.princeton.edu/~ota/disk1/1993/9304/9304.PDF>

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course :** The course provide the sufficient knowledge in configuring Cisco Routers

#### Activities to be given

1. Configure Cisco router for a network using simulations
2. Configure RIP OSPF and other protocols in a network
3. Configure DNS server in a network

### Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Select the Physical Network Design	Upto K5
CLO2	Identify Static Routing and Dynamic Routing Protocols	Upto K5
CLO3	Illustrate router and Switch security	Upto K5
CLO4	Classify the Network Data Traffic	Upto K5
CLO5	Find and experience the new protocols	Upto K5



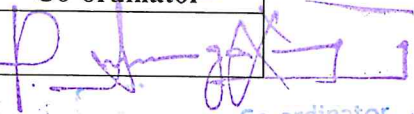
### Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	2	2	2	3	2	3
CLO 2	2	2	2	3	3	3	2
CLO 3	2	3	3	2	3	2	3
CLO 4	2	2	2	3	3	2	2
CLO 5	2	2	3	2	3	2	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
Ms.U.SINTHUJA 	Dr.R.RANGARAJ 	

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Co-ordinator  
Curriculum Development Cell  
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Coimbatore-641 028.

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
II	DSC	22CEP10	Mobile Application Development	4	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- 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
- Construct user interface with Built in view &Layouts

Unit	Course Contents	Hours	K Level
I	<b>INTRODUCTION TO ANDROID:</b> What is Android - History and Version - Installing software's - 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.	13	Upto K5
II	<b>WIDGETS &amp; USER INTERFACE:</b> Working with Button - Toast - Custom Toast - Button - Toggle Button - Switch Button - Image Button - Check Box - Alert Dialog - Spinner - Auto Complete Text View - Rating Bar - Date Picker - Time Picker - Progress Bar - Quick Contact Budge - Analog Clock and Digital Clock - Working with hardware Button - File Download	13	Upto K5
III	<b>ACTIVITY, INTENT &amp; FRAGMENT :</b> Activity Lifecycle - Activity Example - Implicit Intent - Explicit Intent - Fragment Lifecycle - Fragment Example - Dynamic Fragment. Android Menu. <b>LAYOUT&amp;VIEW:</b> Option Menu - Context Menu - Popup Menu - Relative Layout - Linear Layout - Table Layout - Grid Layout	13	Upto K5
IV	<b>ANDROID ADAPTOR VIEW:</b> Array Adaptor - Array List Adaptor - Base Adaptor - Grid View - Web View - Scroll View - Search View - Tab Host - Dynamic List View - Expanded List	13	Upto K5

	View. ANDROID SERVICES: Android Service - Android Service API - Android Started Service - Android Bound Service - Android Service Life Cycle - Android Service Example		
V	<b>Data Storage:</b> Shared Preferences - Internal Storage - External Storage SQLite: SQLite API – SQ Lite Spinner – SQ Lite List View - API - Android Web Services	13	Upto K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

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

#### Books for Reference

1. *Mr. Mark L Murphy "The Busy Coder's Guide to Advanced Android Development Paperback" – Import, 20 July*
2. *John Wiley & Sons "Android Application Development for Dummies" 3rd Edition published by, Inc.2015*
3. *John Horton "Android Programming for Beginners" December 2015*
4. *Matthew Gimson "Complete Introduction for Beginners" –Step By Step Guide How to Create Your Own Android App Easy! -2015*
5. *"Mobile App Development with HTML5" Paperback – March 10, 2015*

#### Web Resources

1. <https://books.goalkicker.com/AndroidBook/>
2. <https://www.cs.cmu.edu/~bam/uicourse/830spring09/BFeiginMobileApplicationDevelopment.pdf>

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** The course brings the knowledge on Mobile application development

#### Activities to be given

1. Install Android Studio and JVM application
2. Create Android application using ACTIVITY LIFE CYCLE
3. Demonstrate the application virtually through web environment



### Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K-Level
CLO1	Define to develop simple GUI Applications	Upto K.5
CLO2	Extend and able to use widgets with components in their android applications	Upto K.5
CLO3	Apply to work with database locally & cloud	Upto K.5
CLO4	Examine to deploy the applications by inheriting web services	Upto K.5
CLO5	Estimate Data Storage using SQ Lite	Upto K.5

### Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	2	2	3	2	2	3	3
CLO 2	3	3	3	2	2	2	2
CLO 3	2	2	2	3	2	3	3
CLO 4	2	3	3	2	2	2	2
CLO 5	2	2	2	2	2	3	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
Mr.K.S.SENTHILKUMAR	Dr.R.RANGARAJ	

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Co-ordinator  
Curriculum Development Cell  
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Coimbatore-641 028.

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
II	DSC	22CEP11	Machine Learning & Robotics	4	4	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- Perceiving artificial intelligence fundamentals and machine process information.
- Remembering the different fields that comprise AI, namely search techniques with knowledge representation.
- Understanding the fundamental concepts of Machine learning of data, model selection.
- Analyzing and applying Robotics concepts in real-time application.
- Learning and evaluating sensors and its functions.

Unit	Course Contents	Hours	K Level
I	<b>The AI Problems:</b> AI technique – Criteria for success – Define the Problem at a state space search – Production System – Characteristics – Problem Characteristics. Heuristic Search Techniques: Generate and Test – Problem Reduction – Constraints Satisfaction – Means End Analysis.	10	Upto K5
II	<b>Knowledge Representation Issues:</b> Approaches to knowledge Representation – The Frame Problem – Computable Functions & Predicates – Resolution – Procedural versus Declarative Knowledge. Machine learning Introduction-Defining Planning-Building a data team-Data Processing-Data Storage	10	Upto K5
III	<b>Decision trees:</b> Basics of decision tree-uses-Advantages-Limitations- Different Algorithm-working-Training Data-Testing the Classifier code- Baye’s Theorem- Baysiean Network- Assigning Probabilities- Calculating Results-Node counts.	10	Upto K5

IV	<b>Robotic Process Automation</b> What is RPA – Flavors of RPA- History of RPA- The Benefits of RPA- The downsides of RPA- RPA Compared to BPO, BPM and BPA – Consumer Willingness for Automation- The Workforce of the Future- RPA Skills-On-Premise Vs. the Cloud- Web Technology- Programming Languages and Low Code- OCR-Databases-APIs- AI-Cognitive Automation-Agile, Scrum, Kanban and Waterfall0 DevOps- Flowcharts.	10	Upto K5
V	<b>RPA Platforms</b> Components of RPA- RPA Platforms-About Ui Path- About UiPath - The future of automation - Record and Play - Downloading and installing UiPath Studio - Learning Ui Path Studio- - Task recorder - Step-by step examples using the recorder.	12	Upto K5

Note: The Questions should be asked in the ratio of 100% theory

#### Book for Study

1. Elaine Richand Kevin Knight, "Artificial Intelligence", Tata McGraw Hill, Second Editon, Tata McGraw Hill2003.

#### Books for Reference

1. "Machine Learning for Big data", Author :JASON BELL Publication: WILEY
2. Tom Taulli "The Robotic Process Automation Handbook", The A Guide to Implementing RPA Systems,2020, ISBN-13 (electronic): 978-1-4842-5729-6, Publisher : A press
3. Alok Mani Tripathi, "Learning Robotic Process Automation", Publisher: Packt Publishing Release Date: March 2018 ISBN: 9781788470940
4. George FLuger, "Artificial Intelligence", Pearson Edition Publication,4thEdition,2002
5. Sudha Sadasivam, "ArtificialIntelligence",Charulatha Publications,2013.

#### Web Resources

1. [https://www.dcehvpm.org/E-Content/BCA/BCA-III/artificial\\_intelligence\\_tutorial.pdf](https://www.dcehvpm.org/E-Content/BCA/BCA-III/artificial_intelligence_tutorial.pdf)
2. [https://web.cs.dal.ca/~tt/CSCI415511/415511\\_9.pdf](https://web.cs.dal.ca/~tt/CSCI415511/415511_9.pdf)

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** The course helps to develop Robotic application

**Activities to be given:**

1. Characteristics of robotic and application development were discussed
2. DIY with sensors were discussed
3. Sensors and AI program were implemented in Robotic projects

**Course Learning Outcomes**

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Observe a problem and Use AI technique to Process Information	Upto K5
CLO2	Illustrate Search engine optimization technique to resolve problem reduction	Upto K5
CLO3	Develop about robotics application developments	Upto K5
CLO4	Categorize to understand about different type of sensors and its implementation procedures	Upto K5
CLO5	Select and review the robotics concepts	Upto K5

**Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)**

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	3	1	3	3	3
CLO 2	3	2	3	1	3	2	2
CLO 3	3	3	3	1	3	3	3
CLO 4	1	2	2	1	3	2	2
CLO 5	3	2	2	2	3	2	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
Ms.S.LAKSHMIPRIYA	Dr.R.RANGARAJ	

Head of the Dept.

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Coimbatore - 641 028.

Co-ordinator

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

DEPARTMENT OF COMPUTER SCIENCE				CLASS: I MSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
II	DSC	22CEP12	Practical III: Advanced Network Programming	3	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	
	Entrepreneurship Oriented	
	Skill Development	✓

#### Course Objectives

- Understand the issue of data flow and selecting the network media.
- Remember the difference between static and dynamic routing protocols.
- Experience the Wire shark network protocol analyzer.
- Examine the issues of wireless security and Learning the basics of VoIP.
- Understand the concept of BGP and IPv6 over the Internet.

Ex.No	PROGRAM LIST	Hours	K - Level
1	Connect the computers in Local Area Network.	6	Upto K5
2	Configure the Router and generate the commands to configure network	6	Upto K5
3	Configure a Network Topology using packet tracer software.	6	Upto K5
4	Installation and connecting to a CISCO Router, as well as an overview of the interfaces. Basic router setup and commands are covered in this tutorial.	6	Upto K5
5	Setup of IP addressing for a number of network topology in a given scenario.	6	Upto K5.
6	Customize a DHCP Server to provide a pool of four IP devices with contiguous IP addresses, a default gateway, and a default DNS address. Integrate a DHCP server with a BOOTP on to support Windows and Linux OS binaries automatically based on the client's' MAC address.	6	Upto K5
7	Configure, implement and debug the following: Use open-source tools for debugging and diagnostics. a).ARP/RAR Protocols b) IP routing protocols	7	Upto K5

	c) BGP routing d) OSPF routing protocols e) Static routes (check using net stat)		
8	Setup DNS: Build a cache DNS client and a DNS Proxy; enforce reverse DNS and forward DNS; characterize traffic using TCP dump / WireShark when the DNS server is up and down.	7	Upto K5
9	Optimize an FTP server on a Linux/Windows computer and characterize the file transfer rate for a cluster of small files of 100k each and a 700mb Video file using an FTP client/SFTP client. Repeat the experiment using a TFTP client.	8	Upto K5
10	Installation IMAP/POP mail server and build a simple SMTP client in C/C++/Java to send and receive emails.	7	Upto K5

Note: The Questions should be asked in the ratio of 100% Programs

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** The practical session establish the student knowledge on configuring FTP DNS IMAP/POP3

#### Course Learning Outcomes

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Tabulate the Physical Network Design	Upto K5
CLO2	Restate Configuring Static Routing and Dynamic Routing Protocols	Upto K5
CLO3	Establish and Compare a router and Switch security	Upto K5
CLO4	Analyze a Network Data Traffic	Upto K5
CLO5	Estimate the new version protocols	Upto K5

**Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)**

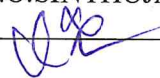
CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	2	3	2	3	3	2	3
CLO 2	2	3	2	2	2	3	2
CLO 3	3	3	3	2	2	2	3
CLO 4	2	2	2	3	2	3	2
CLO 5	2	3	3	3	3	3	3

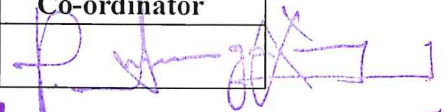
3 – Advance Application

2 – Intermediate Level

1 – Basic Level

<b>Course Designed by</b>	<b>Verified by HOD</b>	<b>Approved by CDC Co-ordinator</b>
Ms.U.SINTHUJA	Dr.R.RANGARAJ	





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

DEPARTMENT OF COMPUTER SCIENCE				CLASS: IMSC COMPUTER SCIENCE				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours / Week	CIA	Ext	Total
II	DSC	22CEP13	Practical IV: Mobile Application Programming	3	5	50	50	100

Knowledge and Skill Oriented	Employability Oriented	✓
	Entrepreneurship Oriented	✓
	Skill Development	✓

#### Course Objectives

- 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
- Construct user interface with Built in view & Layouts

Ex. No	PROGRAM LIST	Hours	K - Level
1	Create a simple Login App using Database	6	Upto K5
2	Design and implement a single screen app that displays information about a fictional small business	7	Upto K5
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	7	Upto K5
4	Create a simple file upload program with user authentication	6	Upto K5
5	Create a simple application to find a Location of your android device	6	Upto K5
6	Create a simple dictionary App	6	Upto K5
7	The Quiz App	7	Upto K5
8	Musical Structure App	6	Upto K5
9	Tour Guide App	7	Upto K5
10	News App	7	Upto K5



Note: The Questions should be asked in the ratio of 100% Programs

**Pedagogy:** Chalk & Talk, Exercise, Assignments & PPTs.

**Rationale for Nature of the Course:** The practical session establish the student knowledge on build android applications

**Course Learning Outcomes**

CLOs	On Completion of the Course, the students should be able to	K - Level
CLO1	Develop a Mobile Application using Android Studio	Upto K5
CLO2	Interpret to use widgets and components in their android applications	Upto K5
CLO3	Apply to work with database locally & cloud	Upto K5
CLO4	Illustrate to deploy the applications by inheriting web services.	Upto K5
CLO5	Asses various Android applications related to layouts & rich uses interactive interfaces	Upto K5

**Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)**

CLOs	Programme Outcomes						
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CLO 1	3	3	2	3	3	3	3
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CLO 3	3	3	3	2	3	2	3
CLO 4	3	2	2	3	3	3	2
CLO 5	2	2	2	3	2	2	3

3 – Advance Application

2 – Intermediate Level

1 – Basic Level

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
K.S.SENTHILKUMAR <i>K.S.</i>	Dr.R.RANGARAJ <i>Dr.R.R.</i>	<i>[Signature]</i>

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