Dr. DHARMAMBAL GOVERNMENT POLYTECHNIC COLLEGE FOR WOMEN

THARAMANI, CHENNAI-113.

(An Autonomous Institution)

(Implemented from 2022 – 2023)

G – SCHEME

R U L E S & R E G U L A T I O N S

(APPLICABLE TO THE THREE YEARS REGULAR DIPLOMA PROGRAMME IN ENGINEERING / COMMERCIAL PRACTICE, 3½ YEARS SANDWICH DIPLOMA PROGRAMME IN ARCHITECTURAL ASSISTANTSHIP AND ONE YEAR DIPLOMA PROGRAMME IN COSMETOLOGY)

(For the batches of students admitted during 2022-2023 and subsequently)

INTRODUCTION:

Dr. Dharmambal Government Polytechnic College for Women, Chennai-113, was established in 1962. As many as 10(ten) diploma programmes are offered in this Polytechnic College. Semester system is followed during the entire course of study.

1. Description of the Course:

a. Full Time (3 years)

The Course for the Full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters* and the First Year is common to all Engineering Branches except commercial Practice.

b. Sandwich (3½ years)

The Course for the Sandwich Diploma in Engineering shall extend over a period of three and half academic years, consisting of 7 semesters*. The Architecture department subjects are starting from First Year onwards.

During 7th semester the students undergo industrial training for six months. Industrial training examination will be conducted after completion of 7th semester.

c. Full Time (1 Year)

The Course for the one year Full Time Diploma in Cosmetology shall extend over a period of one academic year, consisting of 2 semester*. The department subjects are stating from First Year onwards.

*** Each Semester will have 16 weeks duration of study with 35 hrs. / Week for Regular Diploma Courses.**

The Curriculum for all the 6 Semesters of Diploma courses (for three years Regular Diploma Programme in Engineering / Commercial Practice , 3½ years sandwich Diploma Programme in Architectural Assistantship and one year Diploma Programme in Cosmetology) have been revised and revised curriculum is applicable for the candidates admitted from 2022 – 2023 academic year onwards.

2. Condition for Admission:

Condition for admission to the Diploma courses shall be required to have passed in the S.S.L.C Examination of the Board of Secondary Education, Tamil Nadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in Tamil Nadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board of Secondary Education,Tamil Nadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

3. Admission to Second year (Lateral Entry):

A pass in HSC (academic) or (vocational) courses mentioned in the Higher Secondary Schools in Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination & Should have studied the following subjects.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl. No	**Courses**	**H. Sc Academic**	**H. Sc Vocational**		**Industrial Training Institutes Courses**
		Subjects Studied	**Subjects Studied**		
			Related Subjects	**Vocational Subjects**	
1.	All the Regular and Sandwich Diploma Courses	Physics and Chemistry as compulsory along with Mathematics / Biology	Maths / Physics / Chemistry	Related Vocational Subjects Theory & Practical	2 years course to be passed with appropriate Trade

2.	Diploma Course in Commercial Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing,. Banking Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretary ship	-
3	Sandwich Diploma Courses	On par with Council of architecture norms			

- For the Diploma Courses related with Engineering / Technology, the related / equivalent subjects prescribed along with Practicals may also be taken for arriving the eligibility.

- Branch will be allotted according to merit through counseling by the respective Principal asper communal reservation.

- For admission to the Commercial Practice Diploma course, the candidates studied the related subjects will be given first preference.
- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*
- Cosmetology Diploma Course minimum requirement for eligibility to admit is Higher Secondary pass whereas S.S.L.C is not eligible.

4. Age Limit : No Age limit.

5. Medium of Instruction : English

6. BRANCHES OF STUDY :

Candidates may be offered at the time of admission, one of the following branches of study.

S.no	BRANCHES	TYPE OF DIPLOMA PROGRAMME
1	Architectural Assistantship	Sandwich
2	Civil Engineering	Regular
3	Computer Engineering	Regular
4	Electronics & Communication Engineering	Regular
5	Environmental Engineering	Regular
6	Interior Decoration	Regular
7	Instrumentation & Control Engineering	Regular
8	Garment Technology	Regular
9	Commercial Practice	Regular
10	Cosmetology	Regular (one year)

7. Eligibility for the Award of Diploma:

No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, Tamil Nadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Courses are as given below:

Diploma Course	Minimum Period	Maximum Period
Full Time (Three year)	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Full Time (One year)	1 Year	2 Year

This will come into effect from G Scheme onwards i.e. from the academic Year 2022-2023.

8. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical subjects.

The curriculum outline is given in Annexure - I.

9. Examinations:

Autonomous Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment. Autonomous Examinations are conducted for 75 marks.

The total marks for result are 75 + 25 = 100 Marks.

10. Continuous Internal Assessment:

A. <u>For Theory Subjects:</u>

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) <u>Subject Attendance</u> **5 Marks**

(Award of marks for subject attendance to each subject Theory/Practical will be as per the range given below)

80%	-	83%	1 Mark
84%	-	87%	2 Marks
88%	-	91%	3 Marks
92%	-	95%	4 Marks
96%	-	100%	5 Marks

ii) <u>Test #</u> **10 Marks**

Two Tests: Test – I and Test – II each of 2 hours duration for a total of 50 marks are to be conducted. Average of these two test marks will be taken and the marks to be reduced to **5 Marks**

Test – III is the Model Examination covering all the five units and the marks obtained will be reduced to **5 Marks**

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs
Test III	**Model Examination:** Covering all the 5 Units. (Autonomous Examination question paper - pattern).	End of 16th week	75	3 Hrs

From the Academic Year 2022 – 2023 onwards.

Question Paper Pattern for the Test - I and Test – II is as follows. The tests should be conducted by proper schedule. Retest marks should not be considered for internal assessment.

TEST MARK ALLOCATION

Without Choice:

Part A Type questions:	3 Questions × 5 mark	15 Marks
Part B Type questions:	5 Questions × 7 marks	35 Marks
	Total	**50 Marks**

iii) Assignment **5 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 5 marks.

iv) Seminar Presentation **5 Marks**

The students have to select the topics either from their subjects or general subjects which will help to improve their grasping capacity as well as their capacity to express the subject in hand. The students will be allowed to prepare the material for the given topic using the library hour/free hours and they will be permitted to present seminar (For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and eachmember of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all theory subjects and

carries 5 marks for each theory subject. The respective subject faculty may suggest topics to the students and will evaluate the submitted materials and seminar presentation. (2 ½ marks for the material submitted in writing and 2 ½ marks for the seminar presentation). For each subject minimum of two seminars are to be given and the average marks scored should be reduced to 5 marks.

All Test Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one semester after publication of Autonomous Exam results and produced to the flying squad and the inspection team at the time of inspection/verification.

B. <u>For Practical Subjects:</u>

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:-

a	Attendance	**: 5 Marks** (Award of marks same as theory subjects)
b	Procedure observation and tabulation/ Other Practical related Work	**: 10 Marks**
c	Record writing	**: 10 Marks**
	TOTAL	**25 Marks**

- *All the Experiments/Exercises indicated in the syllabus should be completed and thesame to be given for final examinations.*
- The observation note book / manual should be maintained for 10 marks. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical subject during practical classes should be evaluated properly during the practical class hours with date.
- The Record work for every completed exercise should be submitted in the subsequent practical classes and marks should be awarded for 10 marks for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks (including Observation and Record writing) and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks).

- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Autonomous Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory subject. The marks awarded for Observation, Record work and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical subject.

11. Communication Skill Practical, Computer Application Practical and Physical Education:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much stress is given to increase the Communication skill and ICT skill of students.

As per the recommendation of MHRD and under Fit India Scheme, the Physical Education (two Hours) is introduced to encourage students to remain healthy and fit by including physical activities and sports. Two hours are allotted to all I year students as physical activities and sports.

12. Attendance:

Minimum attendance of 80% is prescribed for each courses of study (includes lecture hours, tutorial hours, assignment and test hours). Students falling to get 80% attendance will not be allowed to appear for the examination under any circumstances. However, a candidate who has secured attendance between 70% to 79% in the current semester due to medical reasons(hospitalization / accident / specific illness) or due to participation in College / District / State / National / International level sports events with prior permission from the Principal shall be given exemption from the prescribed attendance requirements and he / she shall be permitted to appear for the current semester examinations, if her progress has been satisfactory and her conduct has been satisfactory.

Candidates who do not qualify to appear for final examinations of any semester from second to sixth for want of attendance and / or progress must get readmitted at the immediate available opportunity and redo that semester courses. Candidates who do not qualify to appear for the final examinations of first semester have to discontinue the programme.

13. Entrepreneurship and Startup:

In V Semester Entrepreneurship and Startup subject is mandatory and common subject for all the departments except Cosmetology department. The total marks for this subject is 75 marks.

TEST MARK ALLOCATION

Theory		**35 Marks**
Part A Type questions:	10 Questions × 2 marks	20 Marks
Part B Type questions:	3 Questions × 5 marks (Either or Pattern)	15 Marks
Practical		**30 Marks**
Submission on Business Plan / Feasibility Report or Report on Unit IV & V		30 Marks
Viva Voce		**10 Marks**
	Total	**75 Marks**

Internal Assessment Mark

Assignment (Unit I & II)	- 10
Seminar (Unit III)	- 10
Attendance	- 5
Total	**- 25**

14. Project Work and Internship:(except sandwich 3 1/2 years and one year programme)

The students of all the Diploma Courses have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

a) **Internal assessment mark for Project Work & Internship:**

Project Review I	:	**10 marks**
Project Review II	:	**10 marks**
Attendance	:	**05 marks** (Award of marks same as theory subject pattern)
Total	:	**25 marks**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Autonomous Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in End Examinations:

Demonstration/Presentation	: 20 marks
Report	: 20 marks
Viva Voce	: 15 marks
Internship Report	: 20 marks
Total	**: 75 marks**

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate (except Diploma in Cosmetology) at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year "Project Work & Internship" for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Autonomous examination.

Diploma in Cosmetology students should undergo internship training for a period of two weeks at the end of I / II Semester vacation. The certificate shall be produced and no mark for internship training.

15. Scheme of Examination:

The Scheme of Examination for subjects are given in Annexure II

16. Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the subjects prescribed in the curriculum.

2. A candidate shall be declared to have passed the examination in a subject if he / she secures not less than *40% in theory subjects* and *50% in practical subjects* out of the total prescribed maximum marks including both the Internal Assessment and the Autonomous Examinations marks put together, subject to the condition that he / she secures at least a minimum of 30 *marks out of 75 marks in the Autonomous End Theory / Drawing / Shorthand / Typewriting Examinations and a minimum of 35 marks out of 75marks in the Autonomous End Practical Examinations.*

17. Classification of successful candidates:

Classification of candidates who will pass out the final examinations from April 2025 onwards (Joined first year in 2022 -2023) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he / she secures not less than 75% of the marks in all the subjects and passes all the semesters in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ years [Full time / Full Time (Lateral Entry) / Sandwich] without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he / she secures not less than 75% of the aggregate marks in all the semesters put together and passes all the semesters except the I and II semester in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ years [Full time / Full Time (Lateral Entry) / Sandwich] without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he / she secures not less than 60% of the aggregate marks in all the semesters put together and passes all the subjects within the stipulated period of study 2 / 3 / 3½ years [Full time / Full Time (Lateral Entry) / Sandwich] without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class** who are all pass out in Autonomous End Examination from April 2025 / October 2025 onwards which is applicable for all regular and sandwich students.

18. Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

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DIPLOMA IN COMPUTER ENGINEERING

SYLLABUS

G – SCHEME

WITH EFFECT FROM ACADEMIC YEAR 2022 – 2023

Dr. Dharmambal Government Polytechnic College for Women

(ISO 9001:2000 Certified Institution)

Tharamani, Chennai-600 113.

Dr. Dharmambal Government Polytechnic College for Women

Tharamani,Chennai-600113.

(ISO 9001:2000 Certified Institution)

Discipline wise task force Meeting held on: 05/01/2022 Time: 10.00AM

Internal and External Members Present:

SL.NO	Name & Address of the Expert	Name of the Institution
Internal Member		
1	Dr. P. KURINCHI HOD/Computer Engg Institution Curriculum Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
2	A RAJALAKSHMI Physical Director Department of Physical Education - Curriculum Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
3	Dr. S ANU H NAIR Lecturer/ Computer Engg Department Curriculum Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
4	S.NITHYA Full Time Temporary Lecturer Department Curriculum Sub Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
External Members		
1	Mrs. P.BHAVANI, HOD/Computer Engg Govt.Poly.College, Purasaiwalkam,Chennai	Govt.Poly.College, Purasaiwalkam, Chennai
2	Dr.S.MUTHURAJKUMAR Assistant Professor Computer Technology Madras Institute of technology(MIT)Campus Anna University,Chennai	Madras Institute of technology (MIT) Campus, Anna University, Chennai
3	Mrs.R.ANGELINE Assistant Professor(S.G)/CSE SRM Institute of Science & Technology, Ramapuram,Chennai	SRM Institute of Science & Technology, Ramapuram,Chennai
4	Mrs.S.MUTHULAKSHMI Director LABTECH ELECTRONICS Pvt.Ltd., Ekkattuthangal,Chennai	LABTECH ELECTRONICS Pvt.Ltd., Ekkattuthangal,Chennai
5	Mr.G.SIVA Associate Project, Cognizant Technology Solution India Pvt.Ltd., Chennai.	CognizantTechnology Solution India Pvt.Ltd., Chennai.
6	Mr.K.SATHISH Lead Engineering HCL Technologies Ltd, Elcot,Sholinganallur, Chennai	HCL Technologies Ltd, Elcot,Sholinganallur, Chennai

Dr. Dharmambal Government Polytechnic College for Women

Tharamani, Chennai-600113.

(ISO 9001:2000 Certified Institution)

Apex Body Meeting held on: 27.01.2022 Time: 10.00AM

Internal and External Members Present:

SL.NO.	Name & Address of the Expert	Name of the Institution
Internal Member		
1	Dr. P. KURINCHI HOD/COMPUTER ENGG Institution Curriculum Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
2	A RAJALAKSHMI Physical Director Department of Physical Education - Curriculum Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
3	Dr. S ANU H NAIR Lecturer/ Computer Engg Department Curriculum Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
4	S.NITHYA Full Time Temporary Lecturer Department Curriculum Sub Co-ordinator	Dr.Dharmambal Govt. Polytechnic College for Women,Ch-113
External Members		
1	Mrs. L. Agnes Lavanya HOD/Computer Engineering Department, GPTC, R.K Nagar, Chennai.	GPTC, R.K Nagar, Chennai.
2	Mrs. S. Anslam Sibi Assistant Professor/Information Technology St. Joseph's Institute of Technology, OMR, Chennai.	St. Joseph's Institute of Technology, OMR, Chennai.
3	Mrs. Lavanya Rajagopal Data Engineer PostgreSQL Automation Team IQZ systems Private Ltd, Coimbatore	IQZ systems Private Ltd, Coimbatore

ANNEXURE – I & II

CURRICULAM OUTLINE & SCHEME OF EXAMINATION

III SEMESTER

Sl.No	COURSE CODE	COURSE NAME	HOURS PER WEEK	EXAMINATION				
				Exam Duration in Hours	Internal Marks (a)	External Marks (b)	Max. Marks (a)+(b)	Min.for pass
1.	CRG301	Basic Electrical and Electronics Engineering	5	3	25	75	100	40
2.	CRG302	Operating Systems	5	3	25	75	100	40
3.	CRG303	C and Data Structures	5	3	25	75	100	40
4.	CRG304	Computer Architecture	5	3	25	75	100	40
5.	CRG371	Electrical and Electronics Engineering Lab	4	3	25	75	100	50
6.	CRG372	Operating Systems Lab	4	3	25	75	100	50
7.	CRG373	C and Data Structures Lab	4	3	25	75	100	50
8.		Physical Education	2	-	-	-	-	-
9.		Library	1	-	-	-	-	-

IV SEMESTER

Sl.No	COURSE CODE	COURSE NAME	HOURS PER WEEK	EXAMINATION				
				Exam Duration in Hours	Internal Marks (a)	External Marks (b)	Max. Marks (a)+(b)	Min.for pass
1.	CRG401	Object Oriented Programming Concepts through C++	6	3	25	75	100	40
2.	CRG402	Relational Database Management Systems	5	3	25	75	100	40
3.	CRG403	Cloud Computing and Internet of Things	5	3	25	75	100	40
4.	CRG471	Object Oriented Programming Concepts through C++ Lab	4	3	25	75	100	50
5.	CRG472	Relational Database Management Systems Lab	4	3	25	75	100	50
6.	CRG473	Cloud Computing and Internet of Things Lab	4	3	25	75	100	50
7.	CRG474	Multimedia Systems Lab	4	3	25	75	100	50
8.		Physical Education	2	-	-	-	-	-
9.		Library	1	-	-	-	-	-

V SEMESTER

SL.No	COURSE CODE	COURSE NAME	HOURS PER WEEK	EXAMINATION				
				Exam Duration in Hours	Internal Marks (a)	External Marks (b)	Max. Marks (a)+(b)	Min. for pass
1.	CRG501	Java Programming	5	3	25	75	100	40
2.	CRG502	Python Programming	5	3	25	75	100	40
3.	CRG503	Computer Networks and Security	5	3	25	75	100	40
	ELECTIVE THEORY SUBJECTS							
4.1	CRG581	System Analysis and Design	5	3	25	75	100	40
4.2	CRG582	Management Information System	5	3	25	75	100	40
4.3	CRG583	Software Engineering	5	3	25	75	100	40
4.4	CRG584	Artificial Intelligence and Data Analytics	5	3	25	75	100	40
5.	CRG571	Java Programming Lab	4	3	25	75	100	50
6.	CRG572	Python Programming Lab	4	3	25	75	100	50
7.	CRG573	Entrepreneurship and Startups	4	3	25	75	100	50
8.		Physical Education	2	-	-	-	-	-
9.		Library	1	-	-	-	-	-

VI SEMESTER

Sl.No	COURSE CODE	COURSE NAME	HOURS PER WEEK	EXAMINATION				
				Exam Duration in Hours	Internal Marks (a)	External Marks (b)	Max. Marks (a)+(b)	Min. for pass
1.	CRG601	Web Technology	5	3	25	75	100	40
2.	CRG602	Computer Hardware and Servicing	5	3	25	75	100	40
	ELECTIVE THEORY SUBJECTS							
3.1	CRG681	Open Source Software	6	3	25	75	100	40
3.2	CRG682	.Net Programming	6	3	25	75	100	40
3.3	CRG683	Mobile Computing	6	3	25	75	100	40
4.	CRG671	Web Technology Lab	4	3	25	75	100	50
5.	CRG672	Computer Hardware and Networking Lab	4	3	25	75	100	50
	ELECTIVE LAB SUBJECTS							
6.1	CRG684	Open Source Software Lab	4	3	25	75	100	50
6.2	CRG685	.Net Programming Lab	4	3	25	75	100	50
6.3	CRG686	Mobile Computing Lab	4	3	25	75	100	50
7.	CRG673	Project Work and Internship	4	3	25	75	100	50
8.		Physical Education	2	-	-	-	-	-
9.		Library	1	-	-	-	-	-

QUESTION PAPER PATTERN

QUESTION PAPER PATTERN

COURSE CODE: **TIME: 3Hrs**

COURSE NAME: **MAX MARKS: 75**

PART - A (5 * 3= 15)

Answer any FIVE from the following Questions.

1.

2.

3.

4.

5.

6.

7.

8.

PART - B (5 * 12= 60)

Answer all Questions choosing any one sub division from each question.

9. A

OR

B

10. A

OR

B

11. A

OR

B

12. A

OR

B

13. A

OR

B

III SEMESTER

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG301- Basics of Electrical and Electronics Engineering

Dr. Dharmambal Government Polytechnic College for Women

Tharamani, Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 301

Semester : III

Subject title : Basics of Electrical and Electronics Engineering

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Basics of Electrical and Electronics Engineering	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	TOPIC	TIME (Hrs)
I	DC AND AC FUNDAMENTALS	13
II	ELECTRICAL MACHINES	12
III	ANALOG DEVICES	16
IV	BOOLEAN ALGEBRA AND LOGIC GATES	16
V	SEQUENTIAL LOGIC SYSTEM	16
TEST AND MODEL EXAM		07
TOTAL		80

OBJECTIVES

On completion of the following units of syllabus contents, the students must be able to:

- Understand the basic essential terms in electricity.
- Define Ohm's Law and Kirchhoff's Laws.
- Know the concept of series and parallel circuits.
- Understand DC and AC fundamentals.
- Understand the working principles of Electrical Machines.
- Know about Analog Devices.
- To explore the electrical safety.
- Use Binary, Octal and Hexadecimal numbers.
- Define logic gates.
- Describe the significance of Boolean algebra in digital circuits.
- Understand the working principles of sequential and combinational logical circuits.
- Define flip-flops and describe behavior of various flip-flops.
- Differentiate asynchronous counters from synchronous counters.
- Draw and explain the circuit diagram of shift registers.

UNIT- I DC AND AC FUNDAMENTALS 13Hrs

1.1 DC Circuits : Concept of Electricity – Various applications of electricity – Definition and units of Voltage, Current, Potential Difference, Power, Energy, resistance, conductance, resistively - Ohm's Law and its practical applications – Kirchhoff's law - Series circuits - parallel circuits – Series Parallel Circuits – Simple problems on ohm's law and series parallel circuits .

1.2 AC Fundamentals: Concepts of alternating voltage and current - difference between AC and DC - definition of cycle, frequency, time period, amplitude, instantaneous value, average value, rms value, maximum value, form factor and peak factor

1.3 Batteries: Basic idea about primary and secondary cells - types of batteries - charging method used for lead acid battery - care and maintenance of lead acid battery - series and parallel connections of batteries – Maintenance free batteries.

1.4 Safety measures: Electric shock – prevention – precautions against electric shock – earthing - Need for earthing - Types of earthing.

UNIT - II ELECTRICAL MACHINES 12Hrs

2.1 DC generator: Construction details - Working Principle – Types – applications - DC Motors – Working principle - back emf – types – Applications - Comparison of shunt and series motors

2.2 AC Motors: Classification - induction motor- construction – types - principle of operation- application - Synchronous motor: Working principle - Alternator- Working principle – stepper motor: construction - Working Principle – applications

-servo motor: definition-working principle- Types and application.

2.3 Single phase transformer: Principle – construction - emf equation of transformer - efficiency - losses in a transformer - auto transformer – step up and step down transformer(Definition only)instrument transformers (C.T and P.T).

UNIT - III ANALOG DEVICES 16Hrs

3.1 Semi conductor theory:- Intrinsic and extrinsic materials - N type and P type materials - majority and minority carriers - Semi conductor diode - PN junction - V I characteristics of PN Junction diode

3.2 Rectifiers: Half wave - full wave - bridge rectifiers (without filters) – circuit diagram –

differences.

3.3 Working principle and V I characteristics of Zener diode - Applications of Zener diode - regulator (series and shunt) - LED - LCD – Opto coupler

3.4 Transistor working principle - Transistor as a switch - Transistor working as an amplifier- common base - common collector- common emitter configuration - input and output characteristics - Introduction to OP Amp

3.5 Bipolar Junction Transistor Definition- Principle of NPN and PNP transistor- Symbol – Transistor terminals - Operating principle (NPN transistor only) -Configurations of transistor – SCR and MOSFCT

UNIT - IV BOOLEAN ALGEBRA AND LOGIC GATES 16Hrs

4.1 Number representation: Decimal, Binary, Octal and Hexa decimal number systems - Conversion of number from one number system to another without decimal points – Binary addition and subtraction.

4.2 Logic gates: Positive and Negative logic – Symbolic representation - Definition, truth tables, symbols and logical equations of logic gates: AND – OR - NOT- NAND - NOR- EXOR - EXNOR (Only 2-inputs) – Universal gates.

4.3 Logic Simplification : Rules and laws of Boolean algebra – Demorgan's Theorem and proof - Simplification of logic functions using Boolean laws - Karnaugh's map Simplification (restricted to three variables) – Duality theorem

4.4 Arithmetic circuits: Half Adder and full adder- Truth table, Circuit diagram – Parallel binary adder – circuit diagram Half subtractor and Full subtractor - Truth table, Circuit diagram - Parity Generator and Parity checker circuit

4.5 Combinational logic circuits: Multiplexer - De multiplexer - Encoder- Decoder (Basic Circuits)

UNIT - V SEQUENTIAL LOGIC SYSTEM 16Hrs

5.1 Flip flop: S-R, D, flip-flop – operation and truth table - Race Condition – JK flip flop – T flip flop – Edge Triggered Flip-flop - J-K Master Slave flip flop.

5.2 Counters: Asynchronous counter- 4 bit Asynchronous Counter – Mod n counter (3, 5, 7)- decade counter - Synchronous counter – 4 bit Synchronous binary counter

5.3 Registers: Functions – Serial –in – serial out, Serial –in – parallel out, Parallel –in – serial out, parallel – in – parallel out – 4 bit right shift and 4 bit left shift registers.

REFERENCE BOOKS:

S.No	TITLE	AUTHOR	PUBLISHER
1	Electrical Technology	B.L. Theraja	S.Chand and Co, New Delhi
2	Principles of Electrical Engineering	B.R. Gupta	S.Chand and Co, New Delhi
3.	Electronic Devices and Circuits – An introduction	Allen Mottershed	Prentice-Hall of India
4.	Digital Principles & Applications	Albert P.Malvino& Donald P.Leach	McGraw-Hill
5.	Principles of Electronics	V.K.Metha	S.Chand& Co.
6.	Digital Electronics Principles and Applications	Tokheim	Tata McGraw-Hill
7.	Digital Electronics	R.P. Jain	TMH, New Delhi

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG 302 – OPERATING SYSTEMS

Dr. Dharmambal Government Polytechnic College for Women
Tharamani, Chennai-600 113.
Diploma in Engineering / Technology Syllabus
G-SCHEME
(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

CourseName : 1052 - Diploma in Computer Engineering

SubjectCode : CRG 302

Semester : III

Subjecttitle : Operating Systems

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Operating Systems	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

Unit	Topic	Hrs.
I	Introduction to Operating System	16
II	Process Management	17
III	Memory Management	13
IV	I/O and File Management, Security and Protection	13
V	Linux–Case study	14
Test and Model Exam		07
Total		**80**

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to

- Understand the purpose, goals, functions and evolution of Operating Systems.
- Understand the concept of process, process states and their scheduling.
- Classify different types of schedulers and scheduling algorithms.
- Identify the significance of inter-process communication and synchronization.
- Know about the usage of semaphore in inter-process communication.
- Understand the condition for a dead lock, ways to prevent or recover from the deadlock.
- Know about memory protection against unauthorized access and sharing.
- Compare and contrast paging and segmentation techniques.
- Define virtual memory and its underlying concepts.
- Describe page replacement policies and disk scheduling techniques.
- Describe the features and brief history of Linux
- Compare Unix and Linux
- Explain Linux architecture
- Describe the process management, memory management handled by LINUX
- Describe file management, device drivers handled by Linux
- Learn to manage accounts in Linux OS.
- Learn to write shell script.

DETAILED SYLLABUS

UNIT-I INTRODUCTION TO OPERATING SYSTEMS 16 Hrs

1.1 Basics of Operating Systems

Definition–Types of Operating Systems: Mainframe- Desktop- Multiprocessor- Distributed- Clustered- Multiprogramming- Real time- Embedded and Timesharing- Mobile OS (Android-iOS).

1.2 Operating System Components

Process Management component– Memory Management component -I/O Management component – File Management component-Protection System– Networking Management component– Command interpreter.

1.3 Operating System Services

Process Execution – I/O operations– File manipulations – Communications–Error detection and recovery–Resource allocation – Accounting–System Protection-System Calls–System call Execution.

1.4 Operating System Structures

Simple structure- Layered- Monolithic- Microkernel Operating Systems– Hybrid Operating System – Views – User- System view–Concept of Virtual Machine–Booting.

1.5 User Interface

Command Line Interface(CLI)based OS–DOS- Unix–Graphic User Interface (GUI) based OS–Windows- Linux–Difference between CLI and GUI.

UNIT- II PROCESS MANAGEMENT 17 Hrs

2.1 Processes

Definition–Process Relationship-Process states–Process State transitions Process Control Block–Context switching–Threads – Concept of multithreads –Benefits of threads–Types of threads.

2.2 **Process Scheduling**

Definition–Scheduling objectives–Types of Schedulers–Scheduling criteria – CPU utilization-Throughput- Turnaround Time- Waiting Time- Response Time (Definition only)–Scheduling algorithms –Preemptive and Non – preemptive – FCFS – SJF –SRT–PS–RR-MQ-Multiprocessor scheduling– Types-Performance evaluation of the scheduling.

2.3 .**Inter-process Communication and Synchronization**

Definition–Shared Memory System– Message passing–Critical section –Mutual Exclusion-Semaphores.

2.4 **Deadlocks**

Definition –Deadlock characteristics–Deadlock Prevention–Deadlock Avoidance –Deadlock detection and Recovery.

UNIT- III MEMORY MANAGEMENT 13 Hrs

3.1 **Basic Memory Management**

Definition – Logical and Physical address map – Memory allocation – Contiguous Memory allocation – Partition allocation -Single- Fixed and Variable partition–Internal and External fragmentation and Compaction –Swapping - Paging – Principle of operation – Page allocation – Hardware support for paging – Protection and sharing – Disadvantages of paging.

3.2 **Virtual Memory**

Basics of Virtual Memory – Hardware and control structures – Locality of reference- Page fault - Working Set - Dirty page/Dirty bit – Demand paging- Segmentation

3.3 **Page Replacement Algorithms**

Optimal (OPT) - First In First Out (FIFO)- Second Chance (SC)- Not Recently Used (NRU)- Least Recently Used (LRU) and Most Recently Used (MRU) Advantages and Disadvantages of Virtual Machine.

UNIT- IV I/O AND FILE MANAGEMENT 13 Hrs

4.1 **Disk Management**

Disk Structure – Physical structure- Logical structure- Disk formatting- Disk Scheduling and its algorithms-First Come Fist Served (FCFS)- Shortest Seek Time First (SSTF)- SCAN- C-SCAN- RAID structure of disk- RAID levels0-6.

4.2 **File Management**

File concept – File attributes – Name- Identifier- Type- Location- Size- Time- Date- user identification–File Operations-File system structure–Byte sequence- Record sequence and Tree-based Directory Structure–Single level- Two levels- Tree structured Directory.

4.3 **Access Methods**

Sequential- Random access – File allocation methods – Contiguous- Linked- Indexed.

4.3 **Security and Protection**

Security threats–Security Policies and mechanisms–Authentications

UNIT-V Linux–Case study **14 Hrs**

5.1 **Introduction**

History of Linux – Features of Linux – Components of Linux system – User space – Kernel space - Linux Architecture - Popular Flavors of Linux- FSF/GNU-Linux Desktop: GNOME-KDE.

5.2 **File System**

Second extended file system–ext2–Virtual File System–Different types of files - File Management – File Security – 3 levels – Mounting file system–Unmounting

5.3 **Managing Accounts**

Types of accounts–Root- System- User–Manage Users and

Groups – Create- Modify- Delete a Group – Create- Modify- Delete an account.

5.4 **Shell Programming**

Linux shell – Types – Graphical- Command Line –Characteristics of Various shells – Bash-Csh/Tcsh- Zsh- Fish–Shell Prompt– Shell scripting–Need for Shell script–Shell script advantages and disadvantages – Script example.

REFERENCE BOOKS

- "Operating System Internal and Design Principles"- William Stallings- Pearson Education-7th Edition
- "Operating System- Principles & Design"- Pal Chaudhury- PHILearning-FirstEdition
- "OperatingSystem"-RohitKhuranaITLESE-VikasPublishingLtd-FirstEdition2011
- "Operating System concepts"- Abraham Siberschatz Galvin-Gagne- Wiley Publishers-9th Edition

● “Operating Systems”- Harvey M. Deiteland Paul J.Deitel- David R.Choffnes- Pearson Education- NewDelhi- ThirdEdition-2007

Learning Websites

https://en.wikipedia.org/wiki/Operating_system

https://computer.howstuffworks.com/operating- system.htm

https://www.tutorialspoint.com/operating_system/index.htm

https://www.geeksforgeeks.org/operating-systems

https://codescracker.com/operatingsystem

https://www.computerhope.com/os.htm

Shell Script Programs Website links

http://www.codepoc.io/blog/unix

https://books.google.co. in

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG 303 – C and Data Structures

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052:Diploma in Computer Engineering

Subject Code : CRG303

Semester : III

Subject title : C and Data Structures

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
C Programming and Data Structures	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

Unit	Topics	Hours
I	PROGRAM DEVELOPMENT & INTRODUCTION TO C	18
II	DECISION MAKING- ARRAYS - STRINGS- FUNCTIONS	18
III	STRUCTURES- UNIONS AND POINTERS	17
IV	INTRODUCTION TO DATA STRUCTURES- STACK- QUEUES	17
V	LINKED LIST- TREES- SORTING- SEARCHING	19
TEST AND MODEL EXAM		07
TOTAL		**80**

OBJECTIVES:

At the end of the Course- the Students will able to

- Define Program- Algorithm and flow chart
- List down and Explain various program development steps
- Write down algorithm and flow chart for simple problems.
- Describe the concepts of Constants- Variables- Data types and operators.
- Develop programs using input and output operations.
- Use of command line arguments.
- Explain compiler controlled directives.
- Understand the structure and usage of different looping and branching statements.
- Define arrays and string handling functions.
- Explain user-defined functions- structures and union.
- Define pointers and using the concept of Pointers.
- Define Linear and non-linear data structures.
- List and discuss the different types of linear data structures.
- Define a tree and the different terms related with trees.
- Write the algorithm for different types of sorting and searching.

DETAILED SYLLABUS

Unit –I PROGRAM DEVELOPMENT & INTRODUCTION TO C 18 Hrs

1.1 **Program**

Program Definition - Program development cycle – Algorithm –flowchart – symbols- importance & advantage of flow chart.

1.2 **Introduction to C**

History of C - Features of C Language - Structure of a C program – Execution of C Program : Compiling- Link and Run a program – Diagrammatic representation of program execution process.

1.3 **Variables- Constants & Data types**

C character set – Tokens – Constants - Keywords – identifiers and Variables - Data types and storage – Data type Qualifiers – Declaration of variables – Assigning values to variables – Escape sequences – Defining symbolic constants

1.4 **C operators**

Arithmetic- Logical- Assignment- Relational- Increment and Decrement- Conditional- Bitwise- Special Operator precedence and Associativity. C expressions – Arithmetic expressions- Evaluation of expressions- Type cast operator.

1.5 **I/O statements**

Formatted input- formatted output- Unformatted I/O statements

UNIT-II DECISION MAKING- ARRAYS - STRINGS- FUNCTIONS 18 Hrs

2.1 **Control Statements**

Simple if statement – if-else- else-if-ladder statements- switch statement- Looping Statements – while- do _ while and for loop- go to- continue and break statements.

2.2 **Arrays**

Definition – Array element and subscript - Declaration – Initialization of one dimension array elements – Two dimensional arrays – initialization of elements.

2.3 **Strings**

Introduction – Declaring and Initializing string variables- Reading strings - Writing strings-String handling functions – strlen() - strcpy()- strcmp()- strcat() and strrev() functions.

2.4 **Built in Functions**

Declaration and definition of function. Math functions – Console I/O functions – Standard I/O functions – Character Oriented functions .

2.5 **User defined functions**

Defining functions & Needs- Scope and Life time of Variables- Function call- return values- Recursion.

UNIT-III STRUCTURES- UNIONS AND POINTERS 17 Hrs

3.1 **Structures and Unions**

Structure Definition – Variable declaration – initialization – Accessing and giving values to structures- Structures within structures- Arrays within structures. Unions: Declaration – initialization. Difference between Union and Structure.

3.2 **Pointers**

Introduction – Advantages of pointers – Accessing the address of a variable – Declaring and Initializing pointers – Accessing a variable through its pointer –Pointer Expressions.

3.3 **Dynamic memory allocation**

Advantages – malloc()- calloc()- realloc() and free() functions.

3.4 **Command line arguments :**

Introduction – argv and argc arguments .

UNIT-IV INTRODUCTION TO DATA STRUCTURES- STACK- QUEUES 17 Hrs

4.1 **Introduction to Data Structures**

Introduction - Data and Information - Elementary data structure organization - Types of data structures - Primitive and Non Primitive data structures- Operations on data structures: Traversing- Inserting- Deleting- Searching- Sorting- Merging- Different Approaches to designing an algorithm: Top-Down approach- Bottom-up approach (Definition and examples only)

4.2 **Definition of a Stack**

Operations on Stack (PUSH & POP) - Implementation of stack through arrays - Polish notations – Conversion of infix to postfix expression.

4.3 **Queues**

Definition – Representation of Queue using arrays – Circular Queue- Dequeue (Definition and Examples only)

UNIT-V LINKED LIST- TREES- SORTING- SEARCHING 19 Hrs

5.1 **Terminologies**

Node- Address- Pointer- Information- Null Pointer- Empty list -. Type of lists : Singly linked list - Doubly linked list- Circular list - Representation of singly linked lists in Memory-Difference between Linked & sequential List – Advantages and Disadvantages of Linked list. (Concepts only- no implementations)

5.2 **Trees**

Terminologies: Degree of a node- degree of a tree- level of a node- leaf node- Depth / Height of a tree- In-degree & out-Degree- siblings. In order traversal- Preorder traversal- Post order traversal. (Concepts only- no implementations)

5.3 **Sorting**

Introduction- Types of sorting - Bubble sort - Quick Sort - Examples.

5.4 **Searching**

Definition – Algorithms and "C" programs for Linear search and Binary search.

TEXT BOOKS:

Sl.No	TITLE	AUTHOR	PUBLISHER
1.	Programming in ANSI C	Prof. E. Balagurusamy	Tata Mc-Graw Hill- New Delhi- 4th Edition

REFERENCE BOOKS:

S.No	TITLE	AUTHOR	PUBLISHER
1.	A Text Book on C	E. Karthikeyan	PHI Private Limited- New Delhi
2.	Programming with C	Byron Gottfried.	Schaum Series –TMGH

3.	Programming and Problem solving using C	ISRD Group- Lucknow	Tata Mc-GrawHill- NewDelhi
4.	Let us C	Yashavent Kanethar	BPB Publication- 2005- New Delhi
5.	Introduction to Data structures with applications.	Trembley and Sorenson	Tata Mc-GrawHill- NewDelhi
6.	Fundamentals of Data structures in C	Horowitz - sahni Anderson- freed	University Press- Hyderabad
7.	Introduction to Data structures	Bhagat Singh	TMGH- New Delhi
8.	Data Structures and Algorithms	G.A. Vijayalakshmi Pai	TMGH- New Delhi

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG 304 – COMPUTER ARCHITECTURE

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 304

Semester : III

Subject title : Computer Architecture

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Computer Architecture	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	INTRODUCTION AND RESIGTER TRANSFER LOGIC	17
II	CPU	14
III	INPUT – OUTPUT SYSTEM	16
IV	MEMORY ORGANISATION	14
V	MICROPROCESSOR AND MICROCONTROLLER	12
	REVISION- TEST	07
	TOTAL	80

OBJECTIVES

On completion of the following units of syllabus contents- the students must be able to :

- Study about the register Transfer Language
- Explain the function of CPU and its registers
- Need for I/O interface
- Explain different types of asynchronous data transfer.
- Explain different modes of data transfer
- Use of I/O Processor
- To study about the different memory types and their operations
- Study about the processors architecture

DETAILED SYLLABUS

UNIT-I INTRODUCTION AND REGISTER TRANSFER LOGIC 17Hrs

1.1 Data Representation: Data types – number system- binary- octal and Hexadecimal representation- alpha numeric representation- complements- fixed point representation- integer representation- decimal fixed point representation- floating point representation; ASCII codes- BCD codes- conversion of BCD to decimal and vice versa- Error detection and correction code.

1.2 Register Transfer Logic: Register transfer language – register transfer – bus and memory transfer – Arithmetic micro operations – Logic micro operations – Shift micro operations – One stage of arithmetic and logic shift unit.

UNIT-II CPU 14 Hrs

2.1 Central Processing Unit: Major components – General register organization – Bus system– Control word – ALU – Examples of micro operation – Stack Organization – LIFO; Stack pointer – PUSH – POP – Memory stack.

2.2 Instruction format: Three address – Two address – One- Zero address instructions- Addressing modes- various addressing modes – RISC-CISC and ARM Architecture and Characteristics.

2.3 Parallel processing: Throughout – Multiple functional units – Pipe lining – Introduction Hazards – types of Hazards – Control Hazards – Data Hazards – Structural Hazards – Arithmetic pipeline – Instruction pipeline – vector processing.

2.4 Control unit: Structure of control unit – fetch – Indirect execute interrupt and Instruction cycle – Types of control unit – Hardwired control – Micro programmed control.

UNIT-III INPUT – OUTPUT SYSTEM 16Hrs

3.1 I/ O interface – Need for I/O interface – I/O commands – Major functions of the I/O interface – I/O versus memory bus – isolated versus memory mapped I/O– Asynchronous data transfer Strobe control- handshaking – Asynchronous serial transfer – Asynchronous communication interface.

3.2 Mode of Transfer: Three possible modes; examples for programmed I/O – interrupt initiated I/O – priority interrupt – daisy chain priority – parallel priority interrupt – priority encoder – Interrupt cycle – Software routines – Initial operations – DMA – DMA controller – DMA transfer.

3.3 I/O Processor – I/O Programming – CPU – IOP communications - Data Communication Processor – Serial and Parallel Communication.

UNIT-IV MEMORY ORGANISATION 14Hrs

4.1 Memory organization: Memory hierarchy; Main memory- Auxiliary memory.

4.2 Associative memory: Hardware organization- Match logic- Read operation- Write operation.

4.3 Cache memory: Need for cache memory- organization of cache memory- operational principle of cache memory- different mapping techniques- cache initialization.

4.4 Virtual memory: Address space and memory space- address mapping- associative memory page table page replacement.

UNIT-V MICROPROCESSOR AND MICROCONTROLLER 12Hrs

5.1 Term related to Microprocessor: Microprocessor – Hardware – Software – Bit– Word – Byte – Nibble – Peripherals – Bus – Data Bus – Address Bus - Multiplexed address / Data bus – Control Bus.

5.2 PC Architecture: Block diagram of 8086 - Feature of 8086 - Registers - Segment registers; Address-Effective address- Segment address- Physical address; Flag registers

5.3 8051 Architecture: Block diagram of Microcontroller – Comparison of Microprocessor with Microcontroller – Features of 8051- Memory organization of 8051.

REFERENCE BOOKS

SNo	TITLE	AUTHOR	PUBLISHER
1.	Computer System Architecture	Morris Mano.M.-	Prentice Hall of India- 3rd Edition - 2001
2.	Computer Organisation and Architecture	William Stallings	Prentice Hall of India -2002
3.	Microprocessor and Microcontroller	R. Theagarajan	SciTech Publication.
4.	8051 Microcontroller : Architecture programming and Applications	Kerneth J.Ayala	Penram International Publication.

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG371- Electrical and Electronics Engineering Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 371

Semester : III

Subject title : Electrical and Electronics Engineering Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Electrical and Electronics Engineering Lab	4	64	25	75	100	3Hrs

DETAILED SYLLABUS

COURSE CODE: CRG371

LAB EXERCISES

1. Verify Ohm's law and Kirchoff's law.
2. Draw the forward bias characteristics of a PN Junction diode and determine the forward resistance of the diode.
3. Draw the reverse bias characteristics of a Zener diode.
4. Common Emitter Configuration characteristics .
5 Construct and test half - wave and full - wave rectifier circuits.
6. Verify truth tables of logic gates using IC 7404- 7408- 7432- 7402- 7400 and 7486.
7. Realize the logic gates using Universal gates.
8. Realize the circuit to simplify the logic equation by using karnaugh map.
9. Verify De-Morgan's Theorems.
10. Construct Half adder and full adder circuits using ICs and verify their truth table.
11. Construct Half subtractor and full subtractor circuits using ICs and verify their truth table.
12. Verify the operation of a multiplexer and de-multiplexer using IC'
13. Verify the operation of a decoder and encoder circuits.

    Implement and Test RS- JK- T and D flip-flops.
14. Verify the operation4- bit ripple counter and observe the output waveform
15. Verify the operation Asynchronous counter
16. Verify the operation Modulo N counter and observe the output waveform
17. Verify the operation Decade counter and observe the output waveform.

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Experiment – 1	**Circuit Diagram- - Truth table**	**35**
	Tabular Column- Equation / Formula	**20**
	Construction	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

LIST OF EQUIPMENTS / COMPONENTS REQUIRED

S.No	Name of the Equipments	Range	Required Nos
1	Ammeter	(0-50)ma	6
2	Voltmeter	(0-20)V,(0-1v)	6
3	Power supply	0-30V	6
4	Digital Trainer Kit		6
5	Bread Board		6
6	Fixed dual power supply	0-15V	2
7	Signal generator	1MHz	2
8	CRO Dual Trace OR DSO	50MHz	6

COMPONENTS

S.No	Name of the components	
1	Resistors	1150Ω,1KΩ,2.2KΩ,10KΩ,220Ω
2	Capacitor	10μF, 4.7μF
3	PN Diode	IN4007
4	Zener Diode	Z11.1
5	Transistor	SL100,CL100
6	IC7400, IC7402, IC7404, IC7408,IC7432,IC7486	
7	Ic74180,IC74153,IC7476,IC7474	
8	IC7490,IC7493,IC7495	

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG 372 – OPERATING SYSTEMS LAB

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.
Diploma in Engineering / Technology Syllabus
G-SCHEME
(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

CourseName : 1052 - Diploma in Computer Engineering

SubjectCode : CRG 372

Semester : III

Subjecttitle : Operating Systems Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Operating Systems Lab	4	64	25	75	100	3Hrs

LAB EXERCISES

PART–A
LINUX COMMANDS

Write down the syntax and usage of the following exercise with all options.
Check the commands with the system

1. (a) Logon to LINUX and logoff.

   (b) Directory management command: ls- cd- pwd- mkdir- rmdir

   (c) File Management commands: cat- chmod- cp- mv- rm- more Commands.

2. General Purpose commands: wc- cal- date- who- tty- ln

3. Simple filters: pr- head- tail- cut- paste- nl -sort

4. Advanced filters: Search for a pattern using grep- egrep- fgrep

5. Execute process status- pscommand- Process management commands: nohup- kill-nice.

6. Communication Command: news- write- mail- wall- calendar.

7. Device pattern using meta character to match each of the following situation:

   a. All two character filenames.

   b. All filenames consisting of two lowercase letters.

   c. All filenames ending with c.

   d. All filenames beginning with a ‘c’ and ending with a digit.

   e. All filenames beginning with ‘p’ and having ‘p’ at somewhere.

PART– B
SHELL SCRIPTS

1 Write a shell script that accepts a numerical value N. Then display the Decrementing value of N till it reaches 0.

2 Write a shell script to search a string and display it.

3 Write a shell script that takes three command line arguments. The first argument is the name of the destination file and the other two arguments are names of files to be placed in the destination file.

4 Write a shell script to print contents of file from given line number to next given number of lines.

5 a)Write Shell script to say Good morning/Afternoon/Evening as you log in to system.

b)Write a shell script that print out date information in this order: time- day of The week- day number- year– that is like this.21:18:00 IST Mon16 Aug2021

6 Develop a Basic math Calculator using case statement.

7 Write a shell script that represents a multiple choice question- gets the user’s Answer and report back whether the answer is right- wrong or not one of the choices.

8 Write a shell script that takes a command line argument and reports on whether it is a directory- a file or something else.

AUTONOMOUS EXAMINATION

DETAILED ALLOCATION OF MARKS

Program 1	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Program 2	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

HARDWARE AND SOFTWARE REQUIREMENTS

Minimum Hardware Requirements:

Desktop Computers: 30 Nos.
Laser printer: 1 No.
Minimum Software Requirements:

Operating System: Any Linux Based GUI Operating System

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

III SEMESTER

G - SCHEME

CRG373 – C and Data Structures Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 373

Semester : III

Subject title : C and Data Structures Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester : 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
C and Data Structures Lab	4	64	25	75	100	3Hrs.

*

OBJECTIVES:

At the end of the Course- the Students will able to

- Analyze the given problem.
- Think the logic to solve the given problem.
- Describe the concepts of constants- variables- data types and operators.
- Develop programs using input and output operations.
- Write programs using command line arguments.
- Write programs using compiler control directives.
- Write programs using different looping and branching statements.
- Write programs based on arrays.
- Write Programs using string handling functions.
- Write programs using user-defined functions- Structures and Union.
- Write programs using the concept of Pointers.
- Understand the use of arrays
- Implement linear data structure algorithms using C language.
- Implement non - linear data structure algorithms using C language.
- Write programs for traversing a binary tree.
- Write programs for searching and sorting.

DETAILED SYLLABUS

Contents: Practical

PART – A

1. Write a simple C Program
    a. Print your Name and Address
    b. Find Simple interest and Compound interest.
2. Write a C program to swap two variable's using
   (i) third variable and (ii) without using a third variable.
3. Write a program to find the largest number between given three numbers.
4. Write a program to print all prime numbers from 1 to N.
5. Write a program to prepare the total marks for N students by reading the Reg.No- Name- Mark1 to Mark6 by using array of structures.
6. Write a program using the function power (a-b) to calculate the value of a raised to b.
7. Write a program to find the length of the given string using pointers.
8. Write a program to find factorial of a number using recursion.

PART – B

9. Write a program in 'C' to create a singly linked list containing at least five elements. Make necessary assumptions.
10. Write a "C" program to perform operations in stack using array.
11. Write a "C" program to convert an infix expression into post fix expression.
12. Write a "C" program to perform operations in queue using array.
13. Write a "C" program to add two 3 x 3 matrices and display the result in Matrix form.
14. Write a "C" program to read 10 elements and sort the above numbers using bubble sort.
15. Write a "C" Program for binary searching.

AUTONOMOUS EXAMINATION

DETAILED ALLOCATION OF MARKS

Program 1	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Program 2	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

HARDWARE REQUIREMENT

Desktop Computers - 30 No's

Laser Printer - 1 No

SOFTWARE REQUIREMENT

C – Compiler with Editor.

IV
SEMESTER

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG 401 – Object Oriented Programming Concepts through C++

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG401

Semester : IV

Subject title : Object Oriented Programming Concepts through C++

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Object Oriented Programming Concepts through C++	6	96	25	75	100	3Hrs.

Topics and Allocation of Hours

Unit	Topic	Hours
I	PRINCIPLES OF OOPS AND C++ BASICS	16
II	C++ CLASSES AND OBJECTS	17
III	POLYMORPHISM AND VIRTUAL FUNCTIONS	16
IV	TEMPLATES AND CONSOLE I/O OPERATION	20
V	FILES AND EXCEPTION HANDLING	20
TEST AND MODEL EXAM		07
TOTAL		**96**

OBJECTIVES

On completion of the following units of syllabus contents- the students must be able to:

- Understand the Principles of oops
- Know about C++ basics
- Understand about C++ Classes and objects
- Understand about Polymorphism
- Understand about Virtual Functions
- Understand about Templates & Console I/O Operation
- Understand about Files & Exception Handling

DETAILED SYLLABUS

UNIT-I **PRINCIPLES OF OOPS AND C++ BASICS** **16 Hrs**

1.1 Software Evolution – Procedure Oriented Programming – OOPS Paradigm – Basic concepts and characteristics of OOPS – Benefits and application of OOPS.

1.2 Structure of C++ program - Data types - Declaration of variables – Expressions operators – operator precedence – evaluation of expressions – type conversions pointers – arrays – pointers and arrays – strings – structures – references.

1.3 Flow control statement – if- switch- while- for- do- break- continue- goto statements.

1.4 Functions – scope of variables - parameter passing – default arguments – inbuilt function - String function - inline functions – recursive functions – pointers to functions – dynamic memory allocation and deallocation operators – new and delete –preprocessor directives.

UNIT-II **C++ CLASSES AND OBJECTS** **17 Hrs**

2.1 Class definition – class structure – class objects – class scope – this pointer friends to a class – static class members – constant member functions.

2.2 Constructors and destructors and its types – dynamic creation and destruction of objects – data abstraction – type conversion.

UNIT-III **POLYMORPHISM AND VIRTUAL FUNCTIONS** **16 Hrs**

3.1 Polymorphism - Overloading Introduction – Unary and Binary Operator –- Function overloading – Operator overloading.

3.2 Inheritance – defining a class hierarchy – different forms of inheritance – defining the base and derived classes – access to the base class members – base and derived class construction – destructors – virtual base class.

3.3 Static and Dynamic bindings – base and derived class virtual functions – dynamic binding through virtual functions – virtual function call mechanism – pure virtual functions – abstract classes – implications of polymorphic use of classes – virtual destructors.

UNIT-IV **TEMPLATES AND CONSOLE I/O OPERATION** **20 Hrs**

4.1 Generic programming – necessity of templates – function templates and class templates – Member Function Template.

4.2 C++ Stream Classes – Unformatted and Formatted Console I/O Operation –overloading << & >> operators.

UNIT-V **FILES AND EXCEPTION HANDLING** **20 Hrs**

5.1 I/O functions – stream classes hierarchy- stream I/O – file streams and string streams - error handling during file operations – formatted I/O.

5.2 Exception handling – benefits of exception handling – throwing an exception – the try block – catching an exception – exception objects – exception specifications – rethrowing an exception – catching all exceptions exception handling.

REFERENCE BOOKS:

Sno	TITLE	AUTHOR	PUBLISHER
1.	Object Oriented Programming with C++	E. Balagurusamy	TMH
2.	Object Oriented Programming in Turbo C++	Robert Lafore	Galgotia

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG 402 – Relational Database Management Systems

Dr. Dharmambal Government Polytechnic College for Women
Tharamani- Chennai-600 113.
Diploma in Engineering / Technology Syllabus
G-SCHEME
(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering
Subject Code : CRG 402
Semester : IV
Subject title : Relational Database Management Systems

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Relational Database Management Systems	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	Concepts of Databases and Data Modeling	15
II	Relational Data model & MYSQL Administration	15
III	Interactive MYSQL	15
IV	MYSQL Performance Tuning	14
V	Stored Program Concepts & Development	14
Test and Model Exam		07
Total		**80**

OBJECTIVES:

On completion subject- the students must be able to

- Describe data- database- database management systems and database models.
- To make the students to understand the concept of relational model and constraints.
- To make the students to understand the concept of Client/Server technology- Data warehousing- Data mining and Big Data.
- State CODD's rules.
- Understand Normalization and explain different types of normal form.
- To know DDL- DML- DCL and all related commands.
- Write logical and conditional statement for database query.
- Works with Procedures and functions.
- Create and use Cursors and Triggers.

DETAILED SYLLABUS

UNIT-I **CONCEPTS OF DATABASES AND DATA MODELING** **15 Hrs**

1.1 Basic Concepts

Data- Databases- Database Management System – Components of Database – Data Dictionary – Architecture: Overall Architecture of DBMS- Three level architecture.

1.2 Data Models

Types of Database models: Hierarchical Database Model- Network Database Model and Relational Database Model. E-R model: Entities - Attributes – Relationships – E-R diagram – Samples.

1.3 Database Administrator

Server / Client and distributed concept – DBA tasks – DBA Tools/Utilities – Database Maintenance – Backup & Recovery.

1.4 Advanced Concepts

Introduction to Data warehousing and Data mining – Applications– Data marts. Big Data: Definition – Characteristics – Various Technologies used – Applications – Overview of NoSQL: Difference between RDBMS and NoSQL – Tools used in Big Data- Scalability and Understanding storage architecture.

Introduction to Data Migration and upgradation.

UNIT-II **RELATIONAL DATA MODEL & MYSQL ADMINISTRATION** **15Hrs**

2.1 Relational data model

CODD's rules – components of DBMS – Table Structure – Records- rows- tuples- attributes. Keys: Primary key- foreign key- composite key. Meta data – Data Dictionary – Data Integrity – Data constraints and validation – Types of constraints – Difference between SQL and MySQL.

2.2 Normalization

Benefits – Normal forms: 1st Normal form- 2nd Normal form- 3rd Normal form- BCNF- 4th Normal Form and 5th Normal Form.

2.3 MySQL Installation

Install- Configure and test the MySQL server on Microsoft Windows.

2.4 Working with MySQL Admin

Creating (CREATE cmd)- Selecting (USE cmd) and Describing database (DESC cmd) – SHOW cmd – backing up databases.

UNIT-III **INTERACTIVE MYSQL** **15 Hrs**

3.1 Introduction to MySQL

MySQL datatypes - Data Definition Commands–Data Manipulation Commands – Data retrieval commands.

3.2 MySQL Operators and Expressions

Types of Operators – Arithmetic- Comparison and logical operators – Pattern matching – Import and Export of data.

3.3 Built-in Functions

Single row functions – Aggregate functions – Conversion functions.

3.4 Querying the table

Selecting rows using Where- Order by- group by & Having clauses. Sub-queries – correlated sub-queries.

3.5 Flow control

IF()- IF NULL()- CASE- LOOP- LEAVE- ITERATE- REPEAT- WHILE

UNIT-IV MYSQL PERFORMANCE TUNING 14 Hrs

4.1 Indexes and sequences

Index types- Creating of an Index: Simple and Composite Index- Dropping Index. Sequences: creating- altering and dropping sequences.

4.2 Views

Introduction – Advantages of views – Creating- Updating and Deleting views.

4.3 Joins & Set Operators

Joins – definition - Types of Joins: natural join- inner join- self join- outer join. Unions: Types: Union- Union All- Union Distinct - Minus- Intersect and Limit handling.

4.4 User and Transaction management

Creating- deleting- renaming users grant & revoke commands – Transaction command: commit- rollback and save points.

UNIT-V STORED PROGRAM CONCEPTS & DEVELOPMENT 14 Hrs

5.1 MySQL Procedures & Functions

Creating – Executing and Deleting stored procedures –Creating –Executing and Deleting stored functions – Advantages.

5.2 MySQL Trigger & Cursor

Use of Trigger–Creating Trigger – Types of Triggers – Cursor: Creation and Deletion- Cursor Types and Attributes- Exception Handling in MySQL.

5.3 MySQL and Web

Need for own MySQL programs – MySQL Application Programming Interfaces

5.4 MySQL with PHP

Database connections –Managing Database connections– Performing Queries – Closing Connections.

REFERENCE BOOKS

1. "Abraham Silberschatz- Henry F.Forth- S.Sudarshan"- "Database System Concepts"-Mc Graw Hill Education. SeventhEdition.
2. "Joel Murach"- "Murach's MySQL"- Mike Murach & Associates- Inc. 3rdEdition.
3. "Vikram Vaswami"- "The Complete ReferenceMySQL".
4. "Paul DuBois"- "MySQL Developers library"- Addison Wesley (4thEdition).

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG 403 – Cloud Computing and Internet Of Things

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 403

Semester : IV

Subject title : Cloud Computing And Internet Of Things

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Cloud Computing And Internet Of Things	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	TOPIC	Hours
I	INTRODUCTION TO CLOUD COMPUTING	15
II	CLOUD COMPUTING ARCHITECTURE AND SERVICES	15
III	SECURITY IN THE CLOUD	15
IV	INTRODUCTION TO INTERNET OF THINGS	14
V	INTERNET OF THINGS PLATFORM: DESIGN AND DEVELOPMENT	14
REVISION-TEST		07
TOTAL		**80**

OBJECTIVES:

- To understand an overview of the basic concepts of cloud Computing;
- To understand the highlight and advantages of deploying cloud Computing;
- To know the practical adoption of a cloud deployment through real life case studies.
- To Know the Advantages and limitations of cloud Computing and List the benefits of cloud computing
- To understanding Cloud architecture
- To Know the Cloud services and benefits
- To address the security issues in cloud
- To assess the vision of IoT
- To understand the dynamic- self-configuring and inter-operable network of things
- To understand the design and development methodology for IoT domains.
- To build simple IoT systems using Raspberry Pi.

DETAILED SYLLABUS

UNIT I: INTRODUCTION TO CLOUD COMPUTING 15 Hrs

1.1 Cloud computing overview - Origins of Cloud computing - Cloud components -Essential characteristics – on-demand self-service- Broad network access- Location independent resource pooling- Rapid elasticity- measured service

1.2 Architectural influences-High-performance computing- utility and enterprise grid computing- Autonomic computing- Service consolidation- Horizontal scaling- Web services- High scalability architecture

1.3 Cloud scenarios- Benefits - scalability- simplicity- vendors- security. Limitations - Sensitive information- Application development - Security concerns -privacy concern with a third party- security level of third party-

1.4 security benefits. Regularity issues - Government policies.

UNIT II: CLOUD COMPUTING ARCHITECTURE & SERVICES 15 Hrs

2.1 Cloud architecture: Cloud delivery model – SPI framework- SPI evolution- SPI vs. traditional IT Model. Software as a Service (SaaS): SaaS service providers – Web Services.

2.2 Web 2.0 – Web Operating system -Google App Engine- Salesforce.com and google platform – benefits – Operational benefits- Economic benefits.

2.3 Evaluating SaaS Platform as a Service (PaaS): Cloud Plat form & Management - Computation& Storage - PaaS service providers - Right Scale - Rackspace - Force.com – services and benefits.

2.4 Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2- GoGrid - Microsoft implementation and support - Amazon EC service level agreement - recent developments - benefits.

2.5 Cloud deployment model: Public clouds – private clouds – community clouds – hybrid clouds - Advantages of Cloud computing.

UNIT III: SECURITY IN THE CLOUD 15Hrs

3.1 Understanding Cloud Security - Securing the Cloud - Security service boundary: CSA Cloud Reference Model - Securing Data - Brokered cloud storage access - Storage location and tenancy – Encryption.

3.2 Cloud Computing Security Challenges - Security Policy Implementation -Policy Types - Virtualization Security Management - Virtual Threat

UNIT IV: INTRODUCTION TO INTERNET OF THINGS 14Hrs

4.1 Definition and characteristics of IOT - Physical design of IOT - Things in IOT- IOT Protocols- Logical Design of IOT - IOT functional blocks- IOT communication Models - IoT communication API’s

4.2 IOTenabling Technologies: Wireless sensor networks-Cloud Computing- Big Data Analytics- Communication protocols- embedded systems.

4.3 IOT Levels and Deployment templates: IOT Level-1- IOT Level-2- IOT Level-3-IoT Level-4 - IOT Level-5- IOT Level-6.

UNIT V: IOT PLATFORMS : DESIGN AND DEVELOPMENT 14Hrs

5.1 Introduction- IOT Design and Methodology- Purpose and requirements specification- Process specification- Domain model specification- Information model specification- service Specification - IoT level specification- functional view specification -Operational view specification - Device and component integration- application development.

5.2 What is an IOT device? - Basic Building blocks of an IoT Device -Exemplary Device: Raspberry Pi - About the Board - Linux on Raspberry Pi- Raspberry Pi Interfaces- Other IOT devices.

REFERENCE BOOKS

1	CLOUD SECURITY: A Comprehensive Guide to Secure Cloud Computing	Ronald L. Krutz Russell Dean Vines	Wiley Publishing- Inc
2	Cloud Computing A Practical Approach 2008 Edition	Cloud Computing A practical Approach	Tata McGrawHill
3.	Cloud Computing Bible	Barrie Sosinsky	Wiley Publishing- Inc
4	Internet of Things – A Hands on Approach	By Arshdeep Bahga and Vijay Madisetti	Universities Press- ISBN: 9788173719547
5	Designing the Internet of Things	Adrian McEwen & Hakim Cassimality	Wiley India- ISBN: 9788126556861

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG471 – Object Oriented Programming Concepts through C++ Lab

Dr. Dharmambal Government Polytechnic College for Women
Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME
(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG471

Semester : IV

Subject title : Object Oriented Programming Concepts through C++ Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Object Oriented Programming Concepts through C++ Lab	4	64	25	75	100	3Hrs.

OBJECTIVES:

- To write- test and debug simple C++ programs
- To Implement C++ Programs with conditionals and Loops
- To use functions for structuring C++ Programs
- To implement string manipulation functions using C++ Program
- To implement List and its built-in functions and methods
- To implement Tuples and passing tuple as arguments
- To Develop programs with Exception Handling

OBJECT ORIENTED PROGRAMMING CONCEPTS THROUGH C++ LAB

LAB EXCERCISES

1. Write programs to calculate the following functions to 0.0001% accuracy. Sin

   x=x-x3/3! + x5/5! – x7/7! + ….

   Sum = 1+(1/2)2 + (1/3)3 + (1/4)4 + …

   Cos x=1-x2/2! + x4/4! – x6/6! + …

2. Write a program that simulates a simple calculator. It reads two integers and a character. If the character a is **+**- the sum is printed- if it is **--** the difference is printed- if it is ***-** the product is printed- if it is **/**- the quotient is printed and if it is **%**- the remainder is printed. Use switch statement.

3. Calculate the following using function overloading.

   f() = 100 ; f(x) = x^2 ; f(x-y) = $x^2 + y^2$; f(x-y-z) = $x^2 + y^2 + z^2$

4. Define a class GCD having the data and there member functions read()- print() and result(). Write a program to find GCD by nesting the function result() in print().

5. a) Write a function power() to raise a number m to a power n. The function takes a double value for m and int value for n and returns the result correctly. Use a default value of 2 for n to make the function to calculate squares when this argument is omitted. Write a main function that gets the values of m and n from the user to test the function.

   b) Write a function that performs the same operation as that of program (a) but takes an int value for m. Both the functions should have the same name. Write a main that calls both the functions. Use the concept of function overloading.

6. Define a class to represent a bank account . Including the following members. Data members: 1) Name of the depesitor ; 2) Account number 3) Type of account 4) Balance amount in Account Member functions: 1) To assign initial values ; 2) To deposit an amount 3) To withdraw an amount after checking the balance; 4) To display name and

   balance .Write a main program to test the program.

7. Create two classes DM and DB which store the values of distance. DM stores distances in meters and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB. Use a friend function to carry out the addition operation. The object that stores the result may be a DM object or DB object- depending on the units in which the results are required. The display should be in the format of feet and inches or meters and centimeters depending on the object on display.

8. Define a class string that could work as a user defined string type. Include constructors that will enable us to create an uninitialized string.String S1;// string with length 0 and also to initialize an object with string constant at the time of creation like string S2 (“Well Done”);Include a function that adds two strings to make a third string.

Note that the statement. S2=S1; will be perfectly reasonable expression to copy one string to another. Write a complete program to test your class to see that it does the following tasks.1)Create uninitialized string objects. 2) Create objects with string constants. 3) Concatenate two strings properly.4) Displays a desired string object.

9. Write a C++ program that implements dynamic constructor.
10. Write a program to show the difference between static and non-static member variables.
11. A Book shop maintains the inventory of books that are being sold at the shop. The List includes details such as Author- title- Price- Publisher and Stock position.Whenever a customer wants a book- the sales person inputs the title and author and the system searches the list when display whether it is available or not. If it is not- an appropriate message is displayed. If it is- then the system displays the book details and request for the no of copies required. If the requested copies are available- the total cost of the requested copies are displayed otherwise the message "Required copies are not in stock" is displayed. Design a system using a class called books with suitable member functions and constructors. Use new3 operator in constructors to allocate memory space required.
12. Create a class MAT of size m x n. define all possible matrix operations for MAT type objects.
13. Define two classes Polar and rectangle to represent a points in the polar and rectangle systems. Use conversion routines to convert from one system to the other.
14. Assume that a bank maintains two kinds of accounts for customers- one called as savings account and the other as current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level- A service change is imposed. Create a class account that stores customer_name- accountno and type of account. From this derive the classes cur_acct and sav_acct to make them more specific to their requirements. Include necessary member function in order to achieve the following tasks. 1)Accept deposit from a customer and update the balance. 2)Display the balance. 3)Compute and deposit interest. 4)Permit withdrawal and update the balance.5)Check for minimum bal- impose penalty- necessary and update the balance.Do not use any constructors. Use member functions to initialize the class members.
15. Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class- a member function get_data() to initialize base class data members and another member function display_area () to compute and display the area of figures. Make display_area() as virtual function and redefine the function in the derived classes to suit their

requirements. Using this three classes- design a program that will accept dimensions of rectangle or a rectangle interactively- and display the area.Remember the two values given as input will be treated as length of two sides in the case of rectangles- and as base and height in the case of triangles and used as follows: Area of rectangle =x*y - Area of triangle = ½ *x*y

16. Write a program which reads a text from the key board and displays the following information on the screen in two columns:

    a) Number of lines.
    b) Number of words.
    c) Number of characters.

String should be left-justified a numbers should be right-justified in a suitable field Width.

17. A file contains a list of telephone nos in the following form.

    John 23456
    Ahmed 9876

This names contain only one word and the names and telephone nos are separated by white space. Write a program to read the file and output the list into columns. The names should be left-justified and the nos right-justified.

18. a) Write a program that will create a data file containing the list of telephone numbers given in program (17). Use a class object to store each set of data.

b) Write an interrupt menu-driven program that will access the file created in program (18. a.) and implement the following tasks.

    (i) Determine the telephone number of the specific person.
    (ii) Determine the name if a telephone number is known. (iii)Update the telephone number- whenever there is a change.

19. a) Write a function template for finding the minimum value contained in an array .

b) Write a class template to represent a generic vector. Include member functions to perform the following tasks.

a) To create the vector.
b) To modify the value of a given element.
c) To multiply by a scalar value.
d) To display the vector in the form(10-20-30-etc….)

20. Write a program for the following :

a) A function to read two double type numbers from keyboard.
b) A function to calculate the division of these two numbers.
c) a try block to throw en exception when a wrong type of data is keyed in.
d) A try block to detect and throw an exception if the condition.

divide – by-zero" occurs. Appropriate catch block to handle the exceptions thrown.

AUTONOMOUS EXAMINATION

DETAILED ALLOCATION OF MARKS

Program 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

LIST OF EQUIPMENTS

Software:

- C++ Compiler with editor

Hardware:

- Computer with Pentium IV / Dual core Processors. – 36 Nos
- Printer – 6 Nos.

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG 472 – RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB

Dr. Dharmambal Government Polytechnic College for Women
Tharamani- Chennai-600 113.
Diploma in Engineering / Technology Syllabus
G-SCHEME
(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 472

Semester : IV

Subject title : Relational Database Management Systems Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Relational Database Management Systems Lab	4	64	25	75	100	3Hrs

DETAILED SYLLABUS

PART – A

1. Install- configure and connect to MySQL server and MySQL workbench in windows. Create a database- backup and restore the database.
2. To study Basic MySQL commands (create database- create table- use- drop- insert) and execute the following queries using these commands:
    - Create a database named ‘employee’.
    - Use the database ‘employee’ and create a table ‘emp’ with attributes ‘ename’- ‘ecity’- ‘salary’- ‘enumber’- ‘eaddress’- ‘deptname’.
    - Create another table ‘Company’ with attributes ‘cname’- ‘ccity’- ‘empnumber’ in the database ‘employee’.
3. To study the viewing commands (select- update) and execute the following queries using these commands:
    - Find the names of all employees who live in Chennai.
    - Increase the salary of all employees by Rs.5-000.
    - Change the company city to Chennai where the company name is ‘TCS’.
4. To study the commands that involve compound conditions (and- or- in- not in- between- not between- like- not like) and execute the following queries using these commands:
    - Find the names of all employees who live in ‘Chennai’ and whose salary is between Rs.20-000 to Rs.30-000.
    - Find the names of all employees whose names begin with either letter ‘A’ or ‘B’.
    - Find the company names where the company city is ‘Chennai’ and the number of employees is not between 5000 and10-000.
    - Find the names of all companies that do not end with letter ‘A’
5. a) Create a database ‘polytechnic_college’. Create 2 users namely ‘staff’ and ‘student’.
    - Grant all privileges to the user ‘staff’ and grant only ‘create’ privilege to ‘student’ user and verify the same.
    - Revoke all privileges to the 2 users and verify the same.

    b) Implement the following transactions control statements.

    i) Commit ii) Rollback iii) Save point

6. Create table ‘author’ with the following structure

   author_id

   author_name

   address mobile

   book_title

   pages

   published_on

   i) Insert 4 books published by 3 authors each. (12 records)

   ii) Fetch all the rows and observe how the data duplicated.

   iii) Apply 1st and 2nd normal forms to fix it.

7. To study the commands for views and execute the following queriesusing these commands:

   - Create a view having ename and ecity
   - In the above view change the ecity to ‘Chennai’ where ename is ‘John’.
   - Create a view having attributes from both the tables.
   - Update the above view and increase the salary of all employees of IT department byRs.1000.

8. Create a library table with proper fields. Create another table called library1 and insert rows from library table.

   Hint:

   CREATE TABLE new_table LIKE original_table;

   INSERT INTO new_table SELECT * FROM original_table;

PART – B

9. Create a table to store the details of a customer in a Bank. Do some transactions like withdrawal- deposit. Find the Balance amount (Credit Limit). Based on customer’s credit limit- write a program using **IF** or **CASE** flow control statements to find the customer levels namely SILVER- GOLD or PLATINUM.

   If the Credit limit is

   - greater than 50K- then the customer level is PLATINUM
   - less than 50K and greater than 10K- then the customer level is GOLD
   - less than 10K- then the customer level is SILVER

10. Create two tables with the following structure.

    a) users - tablename

    user_id - UNSIGNED- INT- AUTO INCREMENT- PRIMARY KEY

    username - VARCHAR (60)

    password - VARCHAR (128)

email - VARCHAR (255)

b) users_profiles

user_id - FOREIGN KEY refers to user_id field of user table

first_name - VARCHAR(60) last_name - VARCHAR(60)

mobile - VARCHAR(15)

i) SELECT all the users along with their profile details. (Hint: Use INNERJOIN)

ii) SELECT the users who do not have profiles (Hint: USE LEFT JOIN andexclude the rows generated with NULL values from joining table)

11. Create an employee database and create a stored procedure that accepts employee_Id as input and returns complete details of employee as output.
12. Create two tables with the following structure

Authors *author_id - INT*

name VARCHAR (60)

titles_count INT -- holds the total number numbers of titles authored.

Titles *author_id - INT*

name VARCHAR (512) -- name of the title

a. Create a trigger to update the titles count field of respective row in authors table each time a title gets inserted into titlestable.
b. Create **logtable** with the following structure

author_id –INT

name VARCHAR (512) -- name of the title

status VARCHAR(25) --- ADDITION-DELETION-UPDATION

and insert an entry in that table each time the tile is added- deleted or updated. Use a trigger to accomplish this.

13. Create a table containing phone number- user name- address of the phone user. Write a function to search the address using phone number.
14. Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number- employee name and net salary. Use cursor to update the employee.
15. Write a program to connect PHP with MySQL and create a database using PHP MySQL.

AUTONOMOUS EXAMINATION
DETAILED ALLOCATION OF MARKS

Program 1	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Program 2	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

LIST OF EQUIPMENTS

HARDWARE

1. Desktop Computers – 30Nos
2. Printer – 1Nos

SOFTWARE

1. mysql 2.0

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG 473 – CLOUD COMPUTING AND INTERNET OF THINGS LAB

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai – 600 113.

Diploma in Engineering / Technology Syllabus

G – SCHEME

(To be Implemented for the students admitted from the year 2022 – 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 473

Semester : IV

Subject title : Cloud Computing and Internet of Things Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examinations	Total	
Cloud Computing and Internet of Things Lab	4	64	25	75	100	3Hrs.

DETAILED SYLLABUS

Part – A : List of Experiments Performed for Cloud Computing

1. To implement program on SaaS to Create an word document of your class time table and store locally and on cloud with doc and pdf format.
2. To implement program on SaaS to Create a spread sheet to generate a mark sheet for student progress report.
3. To implement web services by create your BlogSpot and Collaborating via Wikis.
4. To implement on PaaS to Install Google App Engine- create a program to validate user; create a database login (username- password) in mysql and deploy to cloud.
5. Install Virtual box / VMware Workstation with different flavours of linux or windows OS on top of windows7 or 8.
6. Install OpenStack and use it as Infrastructure as a Service and use technology own Cloud.
7. **Case Study**: Any one of Eucalyptus- Amazon EC2.

Part – B : List of Experiments Performed for IoT

8. To implement LED Blink and LED Pattern With Arduino.
9. To implement LED Pattern with Push Button Control With Arduino.
10. To display “Hello World “ in LCD 16X2 Display With Arduino.
11. To implement the Servo Motor Control with Arduino.
12. To implement and monitor the LM35 Temperature Sensor and Ultrasonic Distance Measurement with Arduino.
13. To implement the IR Sensor Analog Input With Arduino.
14. Using Think Speak Cloud Reading Temperature Sensor Monitoring With Node MCU /Raspberry Pi

AUTONOMOUS EXAMINATION

DETAILED ALLOCATION OF MARKS

Program 1	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Program 2	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

REQUIREMENTS:

Software Requirement:

1. Arduino SDK

Hardware Requirements:

1.	Arduino kit	10 Numbers
2.	Node MCU / Raspberry Pi	10 Numbers
3.	LED Blub	10 Numbers
4.	330K Resistor	10 Numbers
5.	Push Button	10 Numbers
6.	Servo Motor 5 V DC	10 Numbers
7.	5V DC Relay	10 Numbers
8.	Mini Bread Board	10 Numbers
9.	16x2 LCD Display	10 Numbers
10.	IR Sensor	10 Numbers
11.	LM35 Temperature Sensor	10 Numbers
12.	Connecting Wires	

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
II YEAR

IV SEMESTER

G - SCHEME

CRG 474 – MULTIMEDIA SYSTEMS LAB

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 474

Semester : IV

Subject title : Multimedia Systems Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Multimedia Systems Lab	4	64	25	75	100	3Hrs

DETAILED SYLLABUS

PHOTOSHOP

1. Publish Picture on paper using color printer
2. To create visiting card containing atleast one graphics and text information.
3. To prepare the cover page of the book in your subject area- plan your own design.
4. Adjust the brightness and contract of the picture .so that it give elegant look.
5. To Type a Word And Apply The Effect Shadow And Emboss.

FLASH PLAY WITH TEXT

6. a)To create text tool using flash.
   b) To create transforming text tool using flash.
7. a) To create skew-break apart and colortext using flash.
   b) To create vertical text-rotate text-zoom text using flash.

SPECIAL EFFECT

8. a) To create shape tween using flash.
   b) To create mask using flash.
9. a) To create spotlight using flash.
   b) To create motion guides using flash.

PLAY WITH SOUND

10 a) To create add background music using flash.
   b) To create add sound effect using flash.

3D MAX

11. To create box and cone primitive using 3D max.
12. To create sphere and Geosphere primitive using 3D max.

COREL DRAW

13. Create an invitation using arrange menu commands like transformations- align and distribute- and order.
14. Create a calendar with the help of Grid Tool- Power clip and Import commands.
15. Transform one object into another object using blend tool.
16. Record the video from the outside source & compressing it. Use various recording format.
17. Mixing the audio and video.
18. a. Design a 3D animation picture.
    b. Edit a movie.
    c. Convert a text in . Doc format to P D F format
    d. Convert V C D to D V D
    e. Video and Audio format conversion.
19. Create photo album using Scanner
20. Create photo/video album using Cell phone

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Program 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

SOFTWARE REQUIREMENTS

CD writing software- Page maker- cell phone software.

HARD WARE REQUIREMENTS

1. Computer system with multimedia & Hard ware configuration Recommended for installing and running the above software
2. Handy cam for video recording with D V D recording facilities
3. Digital camera
4. Camera cell phone
5. Photo quality color printer and Color Scanner
6. Video capturing card

V

SEMESTER

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG 501 – JAVA PROGRAMMING

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 501

Semester : V

Subject title : Java Programming

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Java Programming	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

Unit	Topics	Hours
I	INTRODUCTION TO OOPS AND JAVA	15
II	CONTROL STRUCTURES- ARRAYS- VECTORS AND STRINGS	13
III	CLASSES- INTERFACES AND PACKAGES	15
IV	APPLETS- AWT CONTROLS AND EXCEPTION HANDLING	15
V	MULTITHREADS-STREAMS-NETWORKING & DATABASE CONCEPTS	15
REVISION- TEST		07
TOTAL		**80**

OBJECTIVES

On completion of the following units of syllabus contents- the students must be able to

- Know the paradigms of programming languages.
- Understand the concepts of Object Oriented Programming.
- State the benefits and applications of Object Oriented Programming.
- Know the history of development of Java.
- Comprehend the features and tokens of Java.
- Explain about the control structures used in Java.
- Use of Arrays and Vectors in Java Program.
- Demonstrate the use of string and String Buffers.
- Define Class with the attributes and methods.
- Understand the need for interfaces.
- Implement Interfaces in classes.
- Create packages. Write simple Applets
- .List the types of AWT Components and types of exceptions..
- Understand the concepts of multithreading.
- Develop multithreaded programs in Java & Define stream and list the types of streams.

UNIT- I INTRODUCTION TO OOPS AND JAVA 15 Hrs

1.1 Introduction to Oops – Paradigms of Programming Languages - Basic concepts of Object Oriented Programming – Objects and Classes – Data abstraction and Encapsulation- Inheritance- Polymorphism- Dynamic binding- Message communication – Benefits of OOP – Application of OOPs.

1.2 Java History – Java features – Java Environment – JDK – API.

1.3 Introduction to Java – Types of java program – Creating and Executing a Java program – Java Tokens: Keywords- Character set- Identifiers- Literals- Separator
– Java Virtual Machine (JVM) – Command Line Arguments – Comments in Java program.

1.4 Constants – Variables – Data types - Scope of variables – Type casting – Operators: Arithmetic - Logical – Bit wise operator – Increment and Decrement – Relational – Assignment – Conditional – Special operator – Expressions – Evaluation of expressions.

UNIT - II CONTROL STRUCTURES- ARRAYS- VECTORS AND STRINGS 14Hrs

2.1 Decision making and Branching: Simple if statement – if – else statement – Nesting if – else – else if Ladder – switch statement – Decision making and Looping: While loop – do – While loop - for loop – break – labelled loop – continue Statement.

2.2 Arrays: One Dimensional Array – Creating an array – Array processing – Multidimensional Array –Vectors – Wrapper classes

2.3 Strings: String Array – String Methods – String Buffer.

UNIT - III CLASSES- INTERFACES AND PACKAGES 13 Hrs

3.1 Class and objects: Defining a class – Methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members – Nesting of Methods – this keyword – command line input

3.2 Inheritance – Defining a subclass – deriving a sub class – Single Inheritance – Multilevel Inheritance – Hierarchical Inheritance – Overriding methods – Final variables and methods – Final classes – Finalizer methods - Abstract methods and classes – Visibility Control: Public access- Private access- friend- protected. Interfaces: Multiple Inheritance - Defining interface – Extending interface - Implementing Interface - Accessing interface variables

3.3 Packages: Java API Packages – System Packages – Naming Conventions – Creating & Accessing a Packages – Adding Class to a Packages – Hiding Classes

UNIT- IV APPLETS- AWT CONTROLS & EXCEPTION HANDLING 15Hrs

4.1 Applets – Introduction – Applet Life cycle – Creating & Executing an Applet – Applet tags in HTML – Parameter tag – Aligning the display - Graphics Class: Drawing and filling lines- Rectangles-Polygon-Circles – Arcs – Line Graphs – Drawing Bar charts.

4.2 Applets – Introduction – Applet Life cycle – Creating & Executing an Applet – Applet tags in HTML – Parameter tag – Aligning the display - Graphics Class: Drawing and filling lines- Rectangles-Polygon-Circles – Arcs – Line Graphs – Drawing Bar charts.

4.3 AWT Components and Even Handlers: Abstract window tool kit – Event Handlers – Event Listeners – AWT Controls and Event Handling: Labels – TextComponent – ActionEvent – Buttons – CheckBoxes – ItemEvent - Choice – Scrollbars – Layout Managers- Input Events – Menus

4.4 Exception Handling: Limitations of Error handling – Advantages of Exception Handling - Types of Errors – Basics of Exception Handling – try blocks – throwing an exception – catching an exception – finally statement – built in exceptions – creating own exception sub classes.

UNIT- V MULTITHREADS- STREAMS- NETWORKING & DATABASE CONCEPTS 15Hrs

5.1 Multithreading: Creating Threads – Life of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization – Implementing runnable interface – Thread Scheduling.

5.2 I/O Streams: File – Streams – Advantages - The stream classes – Byte streams – Character streams.

5.3 **Networking:** Introduction – Manipulating URLs – Reading a file on a Web server – Establishing simple Client – Server - Interaction with Stream Socket- Datagram Socket

5.4 **JDBC:** JDBC – ODBC Drivers – JDBC ODBC Bridges – Seven Steps to JDBC – Importing java SQL Packages –Loading &Registering the drivers – Establishing connection. Creating & Executing the statements. Introduction & overview of Swings concept.

5.5 **Advanced Java**: Java Server Pages (JSP): Introduction- Java Server Page Overview- A First Java Server Page Example- Implicit Objects- Scripting- Standard Actions- Directives- Custom Tag Libraries.

REFERENCE BOOKS:

SNo	TITLE	AUTHOR	PUBLISHER
1-	Programming with Java	E. Balagurusamy	Tata McGrawhill Publishers- II Edition
2.	Java – The Complete Reference	Herbert Schildt	Tata McGrawhill Publishers- V Edition
2.	Java for you	Koparkar	TMH
3.	Java Programming Language	Ken Arnold - James Gosling	Addison wesley
4.	Introducing to Oops with Java	C Thomas WU. – 4th Edition	Tata Mc-Graw Hill

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG502 – Python Programming

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG502

Semester : V

Subject title : Python Programming

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Python Programming	5	80	25	75	100	3Hrs.

Topics and Allocation of Hours

Unit	Topic	Hours
I	INTRODUCTION	14
II	CONTROL STRUCTURE AND FUNCTIONS	15
III	STRINGS AND LISTS	14
IV	TUPLE- SET-DICTONARIES	15
V	FILES AND EXCEPTION HANDLING	15
TEST AND MODEL EXAM		07
TOTAL		**80**

OBJECTIVES:

On completion of the following units of syllabus contents- the students must be able to

- To read and write simple Python programs.
- To develop Python programs with conditionals and loops
- To define Strings in Python and operations on String.
- To define Python functions and call them.
- Decompose a Python program into functions.
- Represent compound data using Python lists- tuples- dictionaries.
- To use Python data structures –- lists- tuples- dictionaries.
- To do input/output with files in Python.
- To do exception handling in Python

.

DETAILED SYLLABUS

UNIT	NAME OF THE TOPICS	Hours
I	**Introduction to Python** **Features of Python** - Installing and running Python - interpreter and Interactive mode - Identifiers - Reserved Keywords - Variables - Comments in Python **Data Types** – Numeric- String- List- Sets- Tuple- Dictionary- Boolean; Operators – Arithmetic- Relational- Assignment- Logical- Bitwise- Membership operator- identity operator. Statements and Expressions- String Operations; Boolean Expressions- Data Type Conversion- Type coercion; Input from keyboard - input function- raw_input function- Mutable and immutable Objects; Illustrative programs.	14
II	**Decision Making- Control structure and Functions** **Decision Making** – Simple if- if…else and if … elif statement; Control Statement - for loop- range()- while- break - continue- pass **Functions:** Built in functions-Mathematical functions- Date and Time- dir()- help() Functions; User defined functions-Return values- parameters and arguments- function calls- local and global scope- function composition- recursion- anonymous functions.Writing Scripts in Python; Illustrative programs.	15
III	**Strings and Lists** **Strings :**Strings in python- String functions and methods- string slicing- immutable property- string Traversal- Escape Characters- string formatting operators and functions. **Lists** – Creation of List- values and accessing elements- mutable property- Traversing a List- copying the list- altering values- deleting elements from list. Built-in List operators and built-in methods. Illustrative Programs	14

IV **Tuples and Dictionaries**: **15**

Tuples-creating- accessing values- immutable property- assignment of tuples- returning tuples- tuples as arguments - variable length arguments - basic tuple operations- Built-in tuple functions.

Dictionaries: Creating a Dictionary - accessing values- updating dictionary- deleting elements from dictionary; dictionary keys- Properties- operations in Dictionary- Built-in dictionary methods- Illustrative Programs.

V **Files and Exception Handling** **15**

Files: Text files- opening a file- closing a file- reading from a file and writing into a file- file opening modes- closing a file- File Object Attributes- File positions- renaming- deleting a file and files related methods.

Directory : Directory methods – mkdir()- chdir()- getcwd()- rmdir().

Exceptions in Python: Definition - Built-in exceptions- Handling Exceptions-try…except- except with No Exception- except with Multiple Exceptions- try…finally; User defined exceptions. Illustrative programs

REFERENCES

S.No	Title	Author	Publisher	Year of Publishing Edition
1	Introduction to Computing and Problem Solving using Python	E.Balagurusamy	McGraw Hill Education(India) Pvt. Ltd.	1st Edition / 2016
2.	Learning Python Programming	Jeffrey Elkner- Allan B. Downey- Chris Meyers	Samurai Media Limited.	2016
3.	Taming Python By Programming	Jeeva Jose	Khanna Book Publishing Co(P) Ltd	2017 Reprinted 2019
4.	Python Programming	Ashok Namdev Kamthane and Amit Ashok Kamthane	McGraw HillEducation(India) Pvt. Ltd.	2018

5.	Learn and Practice Python Programming	Swapnil Saurav	Eka Publishers	2nd Edition/ 2020
6.	Programming in Python	Dr.Pooja Sharma	BPB Publications	2017
7.	Python Programming	Dr.A.Kannan		2018

Python Online Learning Resources:

https://www.learnpython.org www.python.org - https://www.tutorialspoint.com/python

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG503- Computer Networks and Security

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 503

Semester : V

Subject title : Computer Networks and Security

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Computer Network and Security	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	TOPIC	TIME (Hrs)
I	DATA COMMUNICATIONS	15
II	OSI MODEL AND LAN PROTOCOLS	16
III	TCP/IP SUIT	15
IV	NETWORK SECURITY	13
V	APPLICATIONS OF NETWORK SECURITY	14
REVISION- TEST		07
TOTAL		80

OBJECTIVES

On completion of the following units of syllabus contents- the students must be able to

- Understand the concept of data communication..
- Understand the concept of data communication.
- Know different network classification based on different category.
- Understand the different layers of OSI and their functions.
- Study about ISDN and FDDI concepts and its applications.
- Identify the protocols used in TCP /IP and compare with OSI model.
- Understand the basic concepts of network security.
- Identify the attacks and threats.
- Understand the basic concepts of RAID and digital Signatures.
- Study about Cryptography and different Cryptography Algorithms..
- Know the applications of Network Security
- Discuss about VPN and Firewalls.
- Identify the Wireless Security Issues.

UNIT I DATA COMMUNICATIONS 15Hrs

1.1 Data Communication: Components of a data communication – Data flow: Simplex – Half duplex – Full duplex; Networks – Network criteria – Types of Connections: Point to point – multipoint; Topologies: Star- Bus- Ring- Mesh- Hybrid – Advantages and Disadvantages of each topology.

1.2 Types of Networks: Need for computer Networks - LAN – MAN – WAN –CAN – HAN –Internet – Intranet – Extranet - Client-Server- Peer to Peer networks

.

1.3 Transmission Media : Characteristics of Transmission Media - Classification Of transmission media - Guided – Twisted pair – Coaxial – Fiber optics – Unguided – Radio waves – Infrared – Low Orbit satellite (LOS) – VSAT – Cabling and Standards.

1.4 Network devices: Features and Concepts of Switches – Routers (Wired and Wireless) –Gateways.

UNIT II OSI MODEL AND LAN PROTOCOLS 16Hrs

2.1 Network Models: Protocol definition - Standards - OSI Model – Layered Architecture–Functions of all layers.

2.2 802.X Protocols : Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) –Token ring (802.5) – Ethernet – Types of Ethernet (Fast Ethernet- gigabit Ethernet) –Comparison between 802.3- 802.4 and 802.5

2.3 FDDI: Frame format – Advantages and disadvantages of FDDI.

2.4 Switching: Definition – Circuit switching – Packet switching – Message Switching.WAN Networks: Different layers in Service Provider Networks – Protocols Involved – High level design of Data Centre Networks.

2.5 ISDN : Concepts – Services – Broad Band ISDN.

UNIT III TCP/IP SUIT 15Hrs

3.1 Overview of TCP / IP: OSI & TCP/IP – Transport Layer Protocol– Connection Orientedand Connectionless Services – Sockets - TCP & UDP.

3.2 Network Layers Protocol: IP – Interior Gateway Protocols (IGMP- ICMP- ARP- RARP Concept only).

3.3 IP Addressing : Dotted Decimal Notation –Subnetting & Supernetting – VLSM Technique-IPv6 (concepts only).

3.4 Application Layer Protocols: FTP– Telnet – SMTP– HTTP – DNS – POP-MQTT Protocol.

3.5 OAM– Concepts of OAM in networks Protocols – Fault detection and isolation.

UNIT IV NETWORK SECURITY **13Hrs**

4.1 Introduction to Network security: Definition – Need for security – Principles of Security – Threats-Attacks – Types of Attacks – Criminal attacks – Legal Attacks – Passive and Activeattacks – Security Services – Security Mechanisms

4.2 Cryptography: Definition Block Encryption Algorithms – DES- AES – Stream ciphers – RC4 – Digestfunction – Public key Cryptography Principles–RSA-Diffe-Hellman algorithm–Digital Signature(Definition only).

.

4.3 Network Security Application: Authentication applications – Kerberos (concepts only) - Overview- Motivation –Encryption Techniques;

4.4 Internet Security: Email security – PGP - S/MIME - IP security – Overview- IP Security Architecture - Web security - SSL- TLS -SET (Concepts only) – Link Layer MACSEC security overview- Network Address Translation NAT - Distributed Denial of Service attacks– DDoS and its mitigation – Lawful intercept of traffic flow overview.

UNIT V APPLICATIONS OF NETWORK SECURITY **14Hrs**

5.1 Introduction to network security : Definition and Basic concepts.Basic concepts of RAID levels(0-1-2-3-4-5-6).

5.2 Hackers Techniques: Historical hacking techniques & open sharing-Bad Passwords- Advanced Techniques- Viruses-worms-Trojan horses-SPAM.

5.3 Security Mechanism : Introduction – Types of Firewalls – Packet filters – Application gate ways – Limitations of firewalls

5.4 IDS: Intruders– Intruder detection – Classification of Intruder Detection systems –Honey pots

5.5 Wireless Security Issues: Definition and Types -Transmission Security-Authentication -WLAN Detection- Eaves Dropping- Active Attacks- WEP Definition and Features.

Reference Books:

S.No	TITLE	AUTHOR	PUBLISHER
1	Cryptographyandnetworksecurity	William Stallings	Sixth Edition
2	ComputerCommunicationNetworks	achyuts.Godbole	Tata McGraw-Hill-New Delhi
3	ComputerNetworks	AndrewS.tanenbaum	Prentice-hall of indiapvt limited fourth edition
4	Cryptographyand network security	behrouza.Forouzen	Tata McGrawHill-New Delhi. Thirdedition

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG 581 – SYSTEM ANALYSIS AND DESIGN

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai – 600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 581

Semester : V

Subject title : System Analysis and Design

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
System Analysis and Design	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

Unit	Topics	Hours
I	BASIC CONCEPTS	15
II	PLANNING AND DESIGNING	15
III	DESIGN	15
IV	TESTING	14
V	HARDWARE AND SOFTWARE	14
TEST AND MODEL EXAM		07
TOTAL		**80**

OBJECTIVES:

On completion of the following units of syllabus contents- the students must be able to:

- Know about the basic concepts of a system
- Know about the role of system analyst
- Know about the Planning and designing of a system
- Know about the stages of system Design
- Know about System Testing

DETAILED SYLLABUS

UNIT	NAME OF THE TOPICS	Hours
I	**BASIC CONCEPTS** The system concept – characteristics – elements and types of a system. The system development life cycle – considerations for candidate systems – prototyping. The role of system analyst.	15
II	**PLANNING AND DESIGNING** System planning and initial investigation information gathering – information gathering tools. Structure analysis - the tools of structured analysis (DFD- Data dictionary- Decision tree and Pseudo Codes – Decision Tables) – Pros and cons of each tools. System performance definition – description of outputs – Feasibility study cost / Benefit analysis: Data analysis – cost/benefit analysis – The system proposal.	15
III	**DESIGN** The process and Stages of System Design: Design methodologies- development activities. Input design – output design – types of forms – basics of form design – layout considerations and forms control.	15
IV	**TESTING** File structure – file organization – objectives of database – data structure. System testing and Quality assurance – Why system testing – What do we test for – The test plan quality assurance – trends in testing – role of data processing auditor – Training and Documentation.	14
V	**HARDWARE AND SOFTWARE** Implementing and Software maintenance – Conversion – combating resistance to change – post implementation review – software maintenance. Hardware/software Selection and the Computer contract – suppliers –procedure for hardware / software selection – financial considerations in selection – the computer contract.System security –Disaster recovery Planning.	14

REFERENCE BOOKS:

S.No	TITLE	AUTHOR	PUBLISHER
1.	System Analysis and Design	Elias M.Awad	Galgotia Publications (P) Ltd
2.	System Analysis and Design	International Ed.- Perry Edwards	McGraw Hill Publications
3.	Information Technology and Computer Applications	V.K.Kapoor	Sultan Chand and Sons- New Delhi

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG582- MANAGEMENT INFORMATION SYSTEM

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 582

Semester : V

Subject title : MANAGEMENT INFORMATION SYSTEM

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
MANAGEMENT INFORMATION SYSTEM	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME(Hrs)
I	INTRODUCTION TO MIS	14
II	BASICS OF MIS	14
III	APPLICATIONS OF MIS	15
IV	ENTERPRISE RESOURCE PLANNING	15
V	INTELLIGENCE INFORMATION SYSTEM	15
TEST AND REVISION		07
TOTAL		80

OBJECTIVES:

On completion of the following units of syllabus contents- the students must be able to:

- Know about the basic concepts of Management information System
- Know about the Applications of MIS
- Know about the Enterprise resource Planning
- Know about the intelligence Information system

UNIT –I INTRODUCTION TO MIS **14Hrs**

1.1 Introduction :Definition of MIS-Impact of MIS-MIS and the user – approaches to management-management as a control system-role of MIS in management – MIS as a tool for management.

1.2 Organization structure and strategic management :Organization structure-organization behavior-organization as a system-MIS for organization planning-essentials of strategic planning-types of strategies-tools of strategies-tools of planning-MIS for business planning.

UNIT –II BASIC OF MIS **14Hrs**

2.1 Descision making and information: decision making concepts-decision methods- tools and procedures-organizational decision making-MIS and decision making concepts-information concepts-Quality of information- classification of information-methods of data and information collection-value of information-human as an information processor-MIS and the information concepts.

2.2 System concepts- system analysis and design: system concepts – system control – types of system –MIS and system concepts – needs of system analysis system analysis of existing system – system development cycle – system development methods – computer system design – MIS and system analysis.

2.3 Development of MIS: development of long range plans for MIS – Ascertaining the class of information – determining the information requirement – development and implementation of MIS – management of quality in MIS – organization for development of the MIS – MIS - the factors of ofsuccessandfailure.

Unit-III APPLICATION MIS **15Hrs**

3.1 Application in Manufacturing and service -sector: personnel management – production management – materials management – Marketing management – Introduction to service sector – Application in service industry

3.2 Decision support system: Concept – Attributes of DSS – Types of tools/ models – Management science models – Project planning and control models –Artificial intelligence systems- knowledge based expert system – MIS and the role of DSS

UNIT IV ENTERPRISE RESOURCE PLANNING 15Hrs

4.1 Enterprise Resource Planning : Introduction -Objectives – ERP how different from convectional packages – curtain Raiser to ERP system – Brief history of ERP strong and successful – Need for ERP- ERP components – Distinctive ways of implementing an ERP – Guidelines for ERP implementation – Practicalities in an ERP implementation – option for implementation an ERP system – Conquering implementation of ERP – Dynamics that shape the price tag of ERP .

4.2 ERP benefits – Customers expectation in ERP packages – Stumbling blocks – ERP System accomplishment – Steps for avoiding pitfall – Suggestions to an ERP vendors – FAQ – Customer Relationship management – Supply chain Management.

UNIT V INTELLIGENCE INFORMATION SYSTEM 15Hrs

5.1 Knowledge Management in organization : First and Second Generation knowledge management – Knowledge – Approach for successful implementation of knowledge management

5.2 Creating- Developing and sharing knowledge – knowledge creation and sharing Capturing knowledge – Knowledge transfer and organization - Drivers of knowledge management – knowledge representation

5.3 Role of Bussiness Intelligence: Marketing – Sales and order – Human resource – Finance and Accounts –Bussiness intelligence tools – business intelligence report

REFERENCE BOOKS

S.NO	TITLE	AUTHOR	PUBLISHER
1.	MANAGEMENT INFORMATION SYSTEM	GORDON B DAVIS AND MARGETHE H OLSON	TMGH- NEW DELHI
2.	MANAGEMENT INFORMATION SYSTEM	SADAGOPAN	PRENTICE HALL OF INDIA

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG 583 – SOFTWARE ENGINEERING

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 583

Semester : V

Subject title : Software Engineering

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Software Engineering	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME(Hrs)
I	INTRODUCTION TO SOFTWARE ENGINEERING	15
II	SOFTWARE DESIGN AND PLANNING	15
III	SOFTWARE MAINTENANCE AND RISK MANAGEMENT	15
IV	SOFTWARE TESTING	13
V	SOFTWARE RELIABILTY AND QUALITY ASSURANCE	15
TEST AND REVISION		07
TOTAL		80

OBJECTIVES:

On completion of the following units of syllabus contents- the students must be able to:

- Define Software Engineering.
- Understand the characteristics of Software Engineering.
- Explain different software development models.
- Learn about the phases of software development cycle.
- Understand the significance of requirement analysis.
- Know various tools and techniques used for requirement analysis.
- Understand architectural and modular design.
- Understand the different types of project metrics.
- Understand different software estimation techniques.
- Describe CASE.
- Need for software maintenance.
- Identify and mange risks.
- Know the different scheduling methods.
- Define the basic terms used in testing terminology.
- Describe black box and white box testing.
- Describe testing tools.
- Understand the concepts of Software quality and quality assurance.
- Know the concepts of software reliability and software quality standards.
- Define software re-engineering.
- Differentiate forward engineering from re-engineering.

UNIT I INTRODUCTION TO SOFTWARE ENGINEERING 15Hrs

1.1 Basics of Software Engineering **:** Need for Software Engineering – Definition – Software Characteristics – Software Myths – Program versus Software Products

1.2. Software Development Life cycle: Requirement Analysis – Design – Coding- Testing – Maintenance.

1.3. Software Development Life Cycle Models: Introduction –- Waterfall Model – Prototyping model – Spiral Model – Iterative Enhancement model - RAD model – Object Oriented Model - Advantages and Disadvantages of above models – Comparison of various models.

1.4 Software Requirement Analysis (SRS) : Value of good SRS – Requirement Process – Requirement Specification – Desirable characteristics of an SRS

– Components of an SRS – Structures of a requirements documents - Problems in SRS – Requirements gathering tools – Analysis tools – Data flow diagram – Data dictionary – ER diagram

UNIT – II SOFTWARE DESIGN AND PLANNING 15 Hrs

2.1. Software Design : Definition of software design – Objectives of software design – Process of software design – Architectural design – Modular design – Structure chart – Coupling and Cohesion – Different types – Interface design – Design of Human Computer Interface.

2.2. CODING: Information Hiding – Programming style – Internal documentation

– Monitoring and Control for coding – Structured programming.

2.3. Software Planning: Software metrics - Definition – Types of metrics – Product and Project metrics – Function point and feature point metrics – Software project estimation – Steps for estimation – Reason for poor and inaccurate estimation – Project estimation guidelines – Models for estimation – COCOMO Model – Automated tools for estimation.

2.4. CASE : CASE and its scope – Architecture of CASE environment – Building blocks for CASE – CASE support in software Life cycle – Objectives of CASE – Characteristics of CASE tools – List of CASE tools – Categories- advantages and advantages of CASE tools.

UNIT – III SOFTWARE MAINTENANCE AND RISK MANAGEMENT 15 Hrs

3.1. Software Maintenance: Software as an evolution entity – Software configuration management activities – Change control process – Software version control – Software configuration management – Need for maintenance – Categories of maintenance – Maintenance cost – Factors affecting the effort – Modelling maintenance effort

3.2. Risk management **:** Definition of risk – Basics for different types of software risks – Monitoring of risks – Risk management – Risk avoidance – Risk detection – Risk control – Risk recovery – Sources of risks – Types of risks

3.3. Project scheduling : Introduction – Factors affecting the task set for the project – scheduling methods – Work breakdown structure – Flow graph – Gant chart - PERT

UNIT – IV SOFTWARE TESTING 13 Hrs

4.1. Software Testing **:** Introduction to testing – Testing principles – Testing objectives – Test Oracles - Basic terms used in testing – Fault – Error – Failure - Test cases – Black box and white box testing – Advantages and disadvantages of above testing – Methods for Block box testing strategies – Methods for white box testing strategies – Testing activities – Test plan.

4.2. Levels of testing**:** Unit testing - Integration tests – System testing – Types.

4.3. Software Testing strategies**:** Static testing strategies – Formal technical reviews – Code walkthrough – Code inspection - Debugging – Definition – Characteristics of bugs – Life cycle of a Debugging task – Debugging approaches.

4.4 Software Testing Tools**:** Need for tools – Classification of tools – Functional/Regression Testing tools – Performance/Load Testing Tools – Testing process management Tools – Benefits of tools – Risk Associated with tools – Selecting tools – Introducing the tool in the testing process - Different categories of tools – Examples for commercial software

UNIT – V SOFTWARE RELIABILITY AND QUALITY ASSURANCE 15 Hrs

5.1. Software Quality Assurance: Verification and validation – SQA - Objectives and Goals – SQA plan - Definition of software quality – Classification of software qualities - Software quality attributes – Important qualities of software products -

Importance of software quality – SEI – CMM - Five levels

- ISO 9000 – Need for ISO Certification – Benefits of ISO 9000 certification – Limitation of ISO 9000 certification – Uses of ISO - Salient features of ISO 9000 Requirements – Introduction to ISO 9126.

5.2 Software Reliability **:** Definition – Reliability terminologies – Classification of failures – Reliability metrics – Reliability growth modeling - Reliability measurement process.

5.3 Reverse Software Engineering**:** Definition – Purpose - Reverse engineering Process – Reverse engineering tasks – Characteristics and application areas of reverse engineering – Software re-engineering – Principle – Re- engineering process – Difference between forward engineering and re- engineering.

REFERENCES :

S. No	TITLE	AUTHOR	PUBLISHER	Year of Publishing / Edition
1.	Software Engineering	Ian Sommerville	Pearson Education	Sixth Edition
2.	Fundamentals of Software Engineering	Rajib Mall	PHI Learning Pvt Limited-New Delhi	28th Printing – August 2011

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG584 – Artificial Intelligence and Data Analytics

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052:Diploma in Computer Engineering

Subject Code : CRG584

Semester : V

Subject title : Artificial Intelligence and Data Analytics

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester 16 Weeks

Subject	Instructions		Examination			
Artificial Intelligence and Data Analytics	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
	5	80	25	75	100	3 Hrs

Topics and Allocation of Hours

Unit No.	Topic	No. of Hours
I	Artificial Intelligence	15
II	Introduction to Machine Learning	14
III	Data Analytics and NumPy Library	15
IV	Data Analysis with Pandas	15
V	Visualization with Matplotlib	14
Test and Revision		07
Total		80

OBJECTIVES:

After studying this subject students will be able

- To understand the fundamentals of Artificial Intelligence and its importance.
- To understand the techniques used in AI.
- To understand how the knowledge is represented- and the characteristics of intelligent agents.
- To Identify and formulate appropriate AI methods for solving a problem.
- To understand some of the search strategies and the constraint satisfaction problems.
- To understand the principles of Machine Learning.
- To explore some of the real-world applications of Machine learning techniques.
- To understand a range of topics and concepts related to data analytics.
- To familiarize with the Python NumPy library for array processing.
- To utilize the Pandas packages in Python for exploratory data analytics.
- To create informative visualizations with matplotlib to identify patterns.

DETAILED SYLLABUS

Unit	Name of the Topics	Hours
I	**Artificial Intelligence**	**15**

1.1 Artificial Intelligence: What is AI?-Types of AI-History of AI- Turing Test- Structure of AI-Goals of AI-Importance of AI- Techniques used in AI-Perception- Understanding and Action- Technological drivers of modern AI.

1.2 Knowledge: Definition-Knowledge Representation-objectives and requirements-practical aspects of representation-Components **Intelligent Agents**: Agents and Environments-Properties of environments-characteristics of agents- classification of agents -

1.3 Problem Solving: Problem Formulation-Goal Formulation- State Space Search-Search Problem-Basic search algorithm- Search Tree-Search strategies –Uninformed and informed search- Breadth First Search- Depth First Search- Best First Search- Constraint Satisfaction Problem (CSP)-Backtracking Search. Problem Definitions: N Queen Problem- 8 Puzzle Problem- Tic-Tac- Toe.

II	**Introduction to Machine Learning**	**14**

2.1 Learning: Strategies of Learning- Learning Model- Classes of Learning (Supervised- Unsupervised- Reinforcement)- Process of ML-Common types of ML algorithms.

2.2 Neural Network: Biological and Artificial- Mathematical model of a neuron

2.3 Machine Learning Applications: Learning Associations- Regression-Classification- Prediction-Natural Language Processing (NLP)- Automatic Speech Recognition (ASR)- Machine Vision- Robotics.

III	**Data Analytics and Computing with NumPy**	**15**

3.1 Data Analytics: Data-Types of Data- Importance of Data- Data Analysis Vs Data Analytics-Types of Data Analytics- Elements of Analytics- Data Analysis Process- Qualitative and Quantitative analyses-Open-Source Data.

3.2 Introduction to Python: Features of Python-Installing Python-

Python IDEs- PyPI Python Package Index- Pip Python package manager-Importing Libraries and Functions- Python data structures (list- set- tuple-dict)- Functional programming (map- filter- reduce- lamda- list comprehension).

3.3 NumPy Library: Introduction- Installation- Ndarray: creating an array- intrinsic creation of an array- Data types- basic operations- aggregate functions- Indexing- slicing- Iterating- Conditions and Boolean arrays- Array manipulation: Joining- splitting- shape changing- sorting- Structured arrays- Reading and Writing array data on a File.

IV Data Analysis with Pandas **15**

4.1 Introduction: Pandas data structures: **Series** - Declaration- selecting elements- assigning values- Filtering values- operations- mathematical functions- evaluating values- Handling missing data- creating series from dictionaries- adding two series.

4.2 Data Frame: Defining- Selecting elements- assigning values- membership- deleting a column- filtering. **Index Objects**: Indexing- Reindexing- Dropping- sorting and ranking- Descriptive Statistics

Data Loading: Reading and Writing csv- xls- text data files-

Data Cleaning and Preparation: Handling missing data- Removing duplicates- replacing values- Vectorized String Methods- Hierarchical Indexing- Merging and Combining- Data aggregation and Grouping.

V Visualization with Matplotlib **14**

5.1 Data Visualization: Introduction to Matplotlib -PyPlot package- Figures and Subplots-showing plots and images

5.2 Customizing Plots: Colors- Markers- Line Styles- Limits- Tics- Labels- Legends- Grids - Annotating with text-Matplotlib configuration

5.3 Chart types: Line- Bar- stacked bar- Box plots- pie chart - Histogram and Density plots- Scatter plot- Saving Plots to a file- Close and clear plots.

Reference books

1. Tom Taulli - Artificial Intelligence Basics. A Non-Technical Introduction-A press (2019)
2. Chowdhary K.R - Fundamentals of artificial intelligence-Springer (2020)
3. Stuart J.Russell-Peter Norvig- Artificial Intelligence A Modern Approach- (Prentice Hall- 2010- Edition 3)
4. NPTEL Web Content-Artificial Intelligence- Prof.P.Mitra- Prof.S.Sarkar- IIT Kharagpur (Link: https://nptel.ac.in/courses/106/105/106105078/)
5. Fabio Nelli- Python Data Analytics- APRESS- 2015
6. Wes McKinney- Python for Data Analysis: Data Wrangling with Pandas- NumPy-and IPython- O'REILLY 2018- Second Edition

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG 571– JAVA PROGRAMMING LAB

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 – 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 571

Semester : V

Subject title : Java Programming Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Java Programming Lab	4	64	25	75	100	3Hrs

DETAILED SYLLABUS

Contents: Practical

PART - A

1. Write a program to read the temperature in Celsius and convert into Fahrenheit.

2. Write a program to read 2 integers and find the largest number using conditional operator.

3. Write a program to read an integer and find the factorial of a number.

4. Write a program to implement Vector class and its methods.

5. Write a program to read a string and check whether it is palindrome or not.

6. Write a program to create a class with following data members
   1. register number
   2. Name
   3. Marks in 3 subjects and

   Member functions:
   1. parameterised constructor – to assign values to members
   2. method to find total mark
   3. method to display register number- name- total mark Create 3 objects from the above class and use the members

7. Write a program that accepts radius of a circle from command line and display its area.

PART - B

8. Write a program to implement multilevel inheritance.

9. Write a program to create a own exception subclass that throws exception if the given number is not in a range of numbers.

10. Write a program that creates three threads. First thread displays “Good Morning” everyone second- the second thread displays “Hello” every two seconds and the third thread displays “Welcome” every three seconds.

11. Write a program to create a file using Byte stream or Character stream class.

12.Write a program to demonstrate Mouse events.

13. Write a program to display basic shapes using Graphics class and fill them using Color class

14. Write a program to create a simple calculator to perform addition- subtraction- multiplication and division using button- label and text field.

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Program 1	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Program 2	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

REQUIREMENTS:

Software:

- JDK1.3 OR JDK1.4
- MS -ACCESS

Hardware:

- Computer with Pentium IV / Dual core Processors. – 36 Nos
- Printer – 3 Nos

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG572 – Python Programming Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG572

Semester : V

Subject : Python Programming Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Python Programming Lab	4	64	25	75	100	3Hrs.

Objectives:

- To write- test and debug simple Python programs
- To Implement Python Programs with conditionals and Loops
- To use functions for structuring Python Programs
- To implement string manipulation functions using Python Program
- To implement List and its built-in functions and methods
- To implement Tuples and passing tuple as arguments
- To create Python Dictionaries and updating Dictionaries
- To develop programs to read and write data from or to files in Python
- To Develop programs with Exception Handling

DETAILED SYLLABUS

PART – A

1. i) Write a Python program to compute GCD of two numbers
   ii) Write a Python Program to print prime numbers in the given range.
2. i) Write a Python Program to check the given year is leap year or not.
   ii) Write a Python Program to print Armstrong numbers between given range.
3. i) Write a Python Program to do basic trim and slice operations on String.
   ii) Write a Python Program to accept line of text and find the number of characters- vowels and blank spaces on it
4. i) Write a Python Program using function to display all such numbers which is divisible by 3 but are not multiple of 5 in a given range.
   ii) Write a Python Program using recursion to print 'n' terms in Fibonacci series.
5. Write a Python Program to add 'ing' at the end of a given string if the string has 3 or more characters . If the given string is already ends with 'ing' then add 'ly' instead. If the string has less than 3 characters- leave it unchanged.
6. Write a Python program to find minimum and maximum of a list of numbers
7. Write a Python program to display a list in reverse order.
8. Write a Python Program to print the first half values of tuple in one line and last half values in next line.

PART – B

9. Write a Python Program to take a list of words and return the length of the longest one using string.
10. Write a Python Program to find an element in a given set of elements using Linear Search
11. Write a Python Program to sort a set of elements using Selection sort.
12. Write a Python Program to multiply two matrices.
13. Write a Python program to demonstrate different operations on Tuple.
14. Write a Python Program to demonstrate to use Dictionary and related functions.
15. Write a Python Program to copy file contents from one file to another and display number of words copied.

AUTONOMOUS EXAMINATION

DETAILED ALLOCATION OF MARKS

Program 1	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Program 2	**Aim & Procedure**	**10**
	Program	**10**
	Execution & Output	**10**
	Result	**05**
Viva-Voce		**05**
Total		**75**

LIST OF EQUIPMENTS

HARDWARE:

1. Desktop Computers - 30 Nos.
2. Printer – 1 No

SOFTWARE:

1. Windows / Linux Operating System
2. Python (to run as interactive mode and IDLE mode)

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

V SEMESTER

G - SCHEME

CRG573 – Entrepreneurship and Startups

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG573

Semester : V

Subject title : Entrepreneurship and Startups

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Entrepreneurship and Start ups	4	64	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	Topics	Hours
1	Entrepreneurship – Introduction and Process	10
2	Business Idea and Banking	10
3	Start ups- E-cell and Success Stories	10
4	Pricing and Cost Analysis	10
5	Business Plan Preparation	10
Revision- Field visit and Preparation of case study report		14
Total		64

OBJECTIVES:

At the end of the study of5th semester the students will be able to

- To excite the students about entrepreneurship
- Acquiring Entrepreneurial spirit and resourcefulness
- Understanding the concept and process of entrepreneurship
- Acquiring entrepreneurial quality- competency and motivation
- Learning the process and skills of creation and management of entrepreneurial venture
- Familiarization with various uses of human resource for earning dignified means of living
- Know its contribution in and role in the growth and development of individual and the nation
- Understand the formation of E-cell
- Survey and analyze the market to understand customer needs
- Understand the importance of generation of ideas and product selection
- Learn the preparation of project feasibility report
- Understand the importance of sales and turnover
- Familiarization of various financial and non financial schemes
- Aware the concept of incubation and starts ups

DETAILED SYLLABUS

Unit	Name of the Topics	Hours
1	**ENTREPRENEURSHIP – INTRODUCTION AND PROCESS**	**10**
●	Concept- Functions and Importance	
●	Myths about Entrepreneurship	
●	Pros and Cons of Entrepreneurship	
●	Process of Entrepreneurship	
●	Benefits of Entrepreneur	
●	Competencies and Characteristics	
●	Ethical Entrepreneurship	
●	Entrepreneurial Values and Attitudes	
●	Motivation	
●	Creativity	
●	Innovation	
●	Entrepreneurs - as problem solvers	
●	Mindset of an employee and an entrepreneur	
●	Business Failure – causes and remedies	
●	Role of Networking in entrepreneurship	
2	**BUSINESS IDEA AND BANKING**	**10**
●	Types of Business: Manufacturing- Trading and Services	
●	Stakeholders: Sellers- Vendors and Consumers	
●	E- Commerce Business Models	
●	Types of Resources - Human- Capital and Entrepreneurial tools	
●	Goals of Business and Goal Setting	
●	Patent- copyright and Intellectual Property Rights	
●	Negotiations - Importance and methods	
●	Customer Relations and Vendor Management	
●	Size and Capital based classification of business enterprises	
●	Role of Financial Institutions	
●	Role of Government policy	
●	Entrepreneurial support systems	
●	Incentive schemes for State Government	
●	Incentive schemes for Central Government	
3	**STARTUPS- E-CELL AND SUCCESS STORIES**	**10**
●	Concept of Incubation centre's	
●	Activities of DIC- financial institutions and other relevance institutions	
●	Success stories of Indian and global business legends	
●	Field Visit to MSME's	
●	Various sources of Information	
●	Learn to earn	

- Startup and its stages
- Role of Technology – E-commerce and Social Media
- Role of E-Cell
- E-Cell to Entrepreneurship

4 PRICING AND COST ANALYSIS 10

- Calculation of Unit of Sale- Unit Price and Unit Cost
- Types of Costs - Variable and Fixed- Operational Costs
- Break Even Analysis
- Understand the meaning and concept of the term Cash Inflow and Cash Outflow
- Prepare a Cash Flow Projection
- Pricing and Factors affecting pricing
- Understand the importance and preparation of Income Statement
- Launch Strategies after pricing and proof of concept
- Branding - Business name- logo- tag line
- Promotion strategy

5 BUSINESS PLAN PREPARATION 10

- Generation of Ideas-
- Business Ideas vs. Business Opportunities
- Selecting the Right Opportunity
- Product selection
- New product development and analysis
- Feasibility Study Report – Technical analysis- financial analysis and Commercial analysis
- Market Research - Concept- Importance and Process
- Marketing and Sales strategy
- Digital marketing
- Social Entrepreneurship
- Risk Taking-Concept -Types of business risks

REFERNCE BOOKS:

5 Dr. G.K. Varshney- Fundamentals of Entrepreneurship- Sahitya Bhawan Publications- Agra - 282002

6 Dr. G.K. Varshney- Business Regulatory Framework - Sahitya Bhawan Publications- Agra - 282002

7 Robert D. Hisrich- Michael P. Peters- Dean A. Shepherd- Entrepreneurship - McGraw Hill (India) Private Limited- Noida - 201301

8 M.Scarborough- R.Cornwell- Essentials of Entrepreneurship and small business management- Pearson Education India- Noida - 201301

9 Charantimath Poornima M. Entrepreneurship Development and Small Business Enterprises- Pearson Education- Noida - 201301

10 Trott- Innovation Management and New Product Development- Pearson Education- Noida - 201301
11 M N Arora- A Textbook of Cost and Management Accounting- Vikas Publishing House Pvt. Ltd.- New Delhi-110044
12 Prasanna Chandra- Financial Management- Tata McGraw Hill education private limited- New Delhi
13 I. V. Trivedi- Renu Jatana- Indian Banking System- RBSA Publishers- Rajasthan
14 Simon Daniel- HOW TO START A BUSINESS IN INDIA- BUUKS- Chennai - 600018
15 Ramani Sarada- The Business Plan Write-Up Simplified - A practitioners guide to writing the Business Plan- Notion Press Media Pvt. Ltd.- Chennai 600095.

DETAILED ALLOCATION OF MARKS

Sl.No	Description	Marks
Part – A	Written Examination - Theory Question and answer (10 questions x 2 marks:20 marks & (3 questions x 5 marks: 15 marks)	35
Part – B	Practical Examination –Submission on Business Plan/Feasibility Report or Report on Unit 4 & 5	30
Part – C	Viva voce	10
	Total	75

VI

SEMESTER

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG601 – WEB TECHNOLOGY

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 601

Semester : VI

Subject title : Web Technology

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Web Technology	5	80	25	75	100	3Hrs

DETAILED SYLLABUS

Topics and Allocation of Hours

Unit	Topics	Hours
I	INTERNET AND HTML	15
II	ADVANCED HTML AND CSS	14
III	CLIENT SIDE SCRIPTING (JAVASCRIPT)	15
IV	SERVER SIDE SCRIPTING (JSP)	15
V	AJAX	14
TEST AND MODEL EXAM		07
TOTAL		**80**

OBJECTIVES:

- Create local HTML pages and move them to a remote web server.
- Design and develop basic web pages using XHTML and CSS.
- Use graphics and tables in Web pages. Link pages so that they create a Website.
- Design and develop web pages using CSS styles- internal and/or external style sheets.
- Design and develop web pages using CSS for layout.
- Use operators- loop constructs and functions of JavaScript.
- Define objects in JavaScript. Understand how to construct input and output boxes using Java Script.
- Discuss about events and Event Handlers in JavaScript.
- Define jquery and difference between javascript and jquery
- Differentiate server side scripting and client side scripting.
- List the advantages and disadvantages of JSP.
- Discuss about JSP elements and implicit objects. Write simple JSP scripts.
- To introduce the main difference between the conventional web development and Ajax

DETAILED SYLLABUS

UNIT I INTERNET & HTML **15 Hrs**

1.1 Introduction to Internet: Definition of Internet – History of Internet –Types of Connections and its advantages and disadvantages -Dial-up connections– ISDN– ASDL– DSL – Leased Line –Satellite Connections Modem-Internet tools – Web server –Domain name-Search Engines –web browser –IP address – Versions (concepts only) –Internet Protocols – TCP/IP–FTP – HTTP – Telnet – WAIS

1.2 Introduction to HTML**:** Introduction - Basic Tags of HTML - HTML Tag - TITLE Tag -BODY Tag ; Formatting of Text : Headers - Formatting Tags: Bold -Tt- Italics- Underline- Paragraph- Strikethrough- EM -BR and HR tags - PRE Tag - FONT Tag - Special Characters - Working with Images - META Tag

1.3 HTML5: Definition HTML5-Difference between HTML&HTML5-New elements in HTML5-canvas elements - Media elements – Form elements-Semantic and structural element.

UNIT II ADVANCED HTML & CSS **14 Hrs**

2.1. Advanced HTML: Links - Anchor tag –Lists - Ordered Lists–Unordered Lists -Definition Lists-Tables tags- TABLE- TR and TD –Colspan and Rowspan; Frames: Frameset - FRAME Tag – Frame inside other frames – NOFRAMES Tag ; Forms : FORM and INPUT Tag - Text Box - Radio Button – Checkbox – SELECT Tag Pull Down Lists-Hidden - Submit -Reset-Some Special Tags COLGROUP - THREAD- TBODY- TFOOT -- _blank- _self- _parent- _top – IFRAME –LABEL - Attribute for <SELECT> - TEXT AREA .

2.2 CSS: Introduction – Features – Style Sheet basics - Working with CSS files – Syntax - Types of Style Sheets Inline Styles - Embedded Styles - External or Linked Styles-What is CSS3? Animation – Borders – Backgrounds – Fonts – Multiple columns – Text effects.

2.3 Formatting Text and Fonts: Font Style- Font Size Kerning- Leading- and Indenting - Formatting Colors and Backgrounds: The Color Attribute The Background Attribute Background Colors and Images.

2.4 Exploring CSS Class and ID Attributes: Defining the CSS Class Attribute – Defining the CSS ID Attribute - Dynamic effects with CSS - Lists- Tables – Forms - simple Examples of CSS.

UNIT III CLIENT SIDE SCRIPTING (JAVASCRIPT) 15 Hrs

3.1. JavaScript Basics **:** Need of scripting languages – Variables and Data Types : Declaring Variables – Life span of variables - Data Types - Operators : Assignment - comparison- computational and logical operators - Control Structures : Conditional Statements – Loop Statements (for- while- else switch- break and continue statements

3.2. Object-Based Programming and Message boxes**:** Functions - Executing Deferred Scripts - objects : Document object Model - Predefined objects- Array object- History object - Location object - Dialog Boxes - Alert Boxes - Confirm Boxes - Prompt Boxes

3.3. Javascript with HTML**:** Events - Event Handlers : onLoad and onUnload – onFocus and onBlur – onError - Forms : Forms Array – Form element properties – Example

3.4 JavaScript with URLs : Client-side Image maps – Server Side Image Maps – Status bar – Cookies – Live Connect – Java Console – Java Script to Java – Java to JavaScript Communication.

3.5 JQuery : Introduction-Uses of JQuery-Difference between javascript and JQuery.

UNIT IV SERVER SIDE SCRIPTING (JSP) 15 Hrs

4.1. Introduction: Client side scripting versus Server Side scripting –Servlet – JSP Vs Javascript - Advantages and disadvantages of JSP – Client and server responsibilities – Installing and configuring Tomcat server – JSP Architecture– Life cycle of a JSP page - JSP vs Servlets –JSP Vs ASP.NET.

4.2. JSP Elements: Comments – Directives: Page- Include and taglib directives – Scripting elements:Declarations - Scriplets – expressions – Simple JSP page

4.3. Implicit objects: Request- response- pagecontext- application- out- config- page-session- exception – Scope: Application – Session – Request . Writing Simple JSP programs: Read the form date and display date.

4.4 Database Access: Mysql- create records<sql:set Datasource>var-driver -url attributes- JdbcOdbcDriver- creating connection- creating statement- execute update()-execute query() methods-select- insert update -delate operations.

UNIT-V AJAX (ASYNCHRONOUS JAVASCRIPT AND XML) 14 Hrs

5.1. Introduction to AJAX : Purpose – Traditional web application – Ajax Application – Alternatives to AJAX

5.2. Ajax Framework :Creating an XML Http - Request Object – Use Prototype and Script.aculo.us - Basic communication techniques with server - Interact with XML files in the Web Server – Implementing basic AJAX techniques

5.3. Simple AJAX applications : i) Hello World application ii) Develop a html search page using Ajax functionality and a server side script that returns results based on search criteria.iii) Develop a html search page containing a textbox for taking search string as input from the user and get the results from the server using Ajax functionality- and display them on the page.

TEXT BOOKS

S.NO	TITLE	AUTHOR	PUBLISHER
1.	Web Technology	N.P.Goplan-J.Akilandeswari	PHI Learning Pvt Limited- New delhi.2011
2.	Internet Technology and Web Design	ISRD Group	Tata McGraw Hill Publishing Ltd .2011
3.	HTML and Web designing	Kris Jamsa and Konrad King	Tata McGraw Hill Publishing Ltd .2010

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG602- Computer Hardware and Servicing

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 602

Semester : VI

Subject title : Computer Hardware and Servicing

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Computer Hardware and Servicing	5	80	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	TOPIC	TIME (Hrs)
I	MOTHERBOARD COMPONENTS	15
II	MEMORY AND I/O DEVICES	13
III	DISPLAY- POWER SUPPLY and BIOS	15
IV	MAINTENANCE &TROUBLESHOOTING OF DESKTOP & LAPTOP COMPUTERS	15
V	MOBILE PHONE SERVICING	15
REVISION- TEST		07
TOTAL		80

OBJECTIVES

On completion of the following units of syllabus contents- the students must be able to

- Explain about the principle of operations of Keyboard- Mouse and Displays.
- Know the Basics- working principle- specification and modern technology of different types of drives.
- Know the technology of high quality multiple color graphic output devices like Dot matrix-Inkjet-Laser- Line Printers
- Acquire information about the modern devices like digital camera- scanners- web camera-and Biometric devices .
- Know the aspects related to Power Supply.
- Understand the common problems in the computer system and the peripherals
- Trouble shoot the problems in Personal computers.
- Trouble shoot the problems in Computer peripherals.
- Explain diagnostic Software.
- Know and explain the major components of Laptop.
- Trouble shoot the problems in Laptop and Mobile Phones.
- Learn about Data Communication
- Know the types of Network and Network devices.

DETAILED SYLLABUS

UNIT I MOTHERBOARD COMPONENTS 12Hrs

1.1 Motherboard components: Processor sockets/slots – Memory sockets – Chipsets – Cache– BIOS – Clock generator – RTC – Super I/O Controller – Power connector – Battery –Keyboard/Mouse Connectors – Jumpers – Ports and Headers – Pin Connectors -Motherboard Form factor - Hardware-Software and Firmware. Architecture and block diagram

1.2 Processors: Introduction –Core2 Duo processor- Quad core processor-Core i3- i5- i7 series- AMD A10 series- Xeon Processor.

1.3 Chipsets**:** Chipset basics - North / South Bridge architecture and Hub architecture– Construction – Working Principles Troubleshooting Hard disk drives.

1.4 Bus Standards: Overview and features of PCI- AGP- USB- & Processor Bus.

UNIT II MEMORY AND I/O DEVICES 13Hrs

2.1 Primary and Secondary Memory**:** Introduction - Memory speed - Access time - Wait states. Main Memory – types - Memory errors. Hard Disk: Introduction – Construction – Working Principle – Formatting and Troubleshooting.

2.2 Removable Storage and Special Devices: DVD-ROM – Recordable DVD - Rewritable DVD. Blu-ray: Introduction - Blu-ray Disc Parameters - Recording and Playback Principles. Special drives: External drives- Memory stick- USB flash drive- Solid state drive.

2.3 Keyboard and Mouse: Keyboard: Interfacing and Signals (USB- Wireless)-Types of keys- Keyboard Matrix- Key bouncing- Types of keyboard (Simple-Mechanical).Mouse: Optical mouse operation – Optical mouse cleaning – Troubleshooting flowchart for a mouse.

2.4 Printers and Scanners: Printer: Introduction – Types of printers – Dot Matrix-Inkjet- Laser- Thermal- MFP printer - Operation and Troubleshooting. Scanner: Introduction- Scanner mechanism- working principle – Types of Scanners (Barcode-Handheld- Flatbed) – Preventive maintenance and Troubleshooting.

UNIT III DISPLAY- POWER SUPPLY and BIOS 12Hrs

3.1 Displays and Graphic Cards: Displays: LCD Principles – Plasma Displays – TFT Displays - LED Displays. Graphic Cards: Video capture card.

3.2 SMPS: Block diagram – Basic Principles and Operations – O/P Voltage – Cable color code – Connectors and Power Good – Common Failures (No circuit diagram to be discussed)

3.3 BIOS: Bios functions – Cold and Warm booting – BIOS error codes – BIOS interrupts – BIOS advanced setup. Upgrading BIOS- Flash BIOS-setup. Identification of different BIOS (AMI- AWARD BIOS).

3.4 POST: Error- Beep Codes- Error messages- Post – Faults related to Hardware.

UNIT IV MAINTENANCE &TROUBLESHOOTING OF DESKTOP & LAPTOP COMPUTERS 14Hrs

4.1 Laptop: Difference between laptop and desktop- Types of laptop – Block diagram –working principles–configuring laptops and power settings - SMD components- ESD and precautions.

4.2 Laptop components: Adapter – Types- Battery –Types and basic problems- RAM– types- CPU – types- Laptop Mother Board - block diagram- Laptop Keyboard.

4.3 Installation and Troubleshooting: Formatting- Partitioning and Installation of OS –Trouble Shooting Laptop and Desktop computer problems.

4.4 Preventive Maintenance and Upgrading: Preventive Maintenance: Tools required –active and passive maintenance – Types of Diagnostics software – Preventive Maintenance Schedule. Upgrading of Systems: Motherboard- Memory- CPU- Graphics Card- BIOS up gradation and Updating of System & Application software.

UNIT V MOBILE PHONE SERVICING **14Hrs**

5.1 Mobile phone components: Basics of mobile communication- Components: battery- antenna-ear piece- microphone -speaker-buzzer-LCD- keyboard. Basic circuit board components – Names and functions of different ICs used in mobile phones.

5.2 Tools & Instruments used in mobile servicing: Mobile servicing kit -- soldering and de-soldering components using different soldering tools - Use of multi-meter and battery booster.

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5.3 Installation & Troubleshooting: Assembling and disassembling of different types of mobile phones – Installation of OS - Fault finding & troubleshooting- Jumper techniques and solutions.

5.4 Software: Flashing- Formatting- Unlocking- Use of secret codes- Downloading- Routing.

5.5 Diagnostic Software and Viruses: Mobile Viruses – Precautions – Antivirus Software.

REFERENCE BOOKS:

S.No	TITLE	AUTHOR	PUBLISHER
1	Computer Installation and Servicing	D.Balasubramanian	TataMc-Graw Hill-New Delhi-Eleventh Reprint 2010
2	PC Repair and Maintenance	Joel Rosenthal	Fire wall Media-New Delhi First Edition 2007-Reprint : 2008.
3	Modern Computer Hardware	Manahar Lotai	BPB Second Revised
4	PC Hardware in a nutshell	Robert Bruce Thompson	O'Reilly Media Third Edition

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG681 – OPEN SOURCE SOFTWARE

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 681

Semester : VI

Subject title : Open Source Software

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Open Source Software	6	96	25	75	100	3Hrs

Topics and Allocation of Hours

Unit	Topics	Hours
I	OVERVIEW OPEN SOURCE SOFTWARE AND OPERATING SYSTEM	16
II	OPEN SOURCE PROGRAMMING LANGUAGE-PHP	17
III	OPEN SOURCE DATABASE	16
IV	PYTHON	20
V	OPEN SOURCE SOFTWARE TOOLS AND TECHNOLOGIES	20
TEST AND MODEL EXAM		07
TOTAL		**96**

OBJECTIVES:

- Understand the need- advantages and disadvantages of Open Source software.
- Understand the general concepts and modes of Linux Operating System.
- Understand the advanced concepts like Scheduling- Time Accounting Personalities and coning.
- Understand Linux Networking.
- Know the basic concepts of Open Source Database.
- Know how to connect MYSQL database and closing connection.
- Write Simple MYSQL Programs.
- Creating database and tables in MYSQL.
- Manipulate database tables in MYSQL.
- Understand the concepts of Record Selection technologies
- Install and Configure of PHP on Windows.
- Understand the basic concepts of PHP.
- Understand the String and Array concepts in PHP.
- List the advanced features of PHP.
- Discuss the Memory Management- Parameter Handling and Variables PHP.
- Understand how to access a database using PHP
- Discuss about the advanced Database techniques.
- Discuss about the Apache Web Server and Configuring the server.
- Explain the History and Architecture of Eclipse IDE Platform.
- Understand the basics of Python
- Knowing the building blocks of python language
- Knowing the development process of a Python program-
- Understanding file handling using python

DETAILED SYLLABUS

UNIT – I OVERVIEW OPEN SOURCE SOFTWARE AND OPERATING SYSTEM 16hrs

1.1 Introduction : Need of Open Sources – Advantages of Open Sources – Applications –FOSS – FOSS usage – Free Software Movement- Commercial aspects of Open source movement - Certification courses issues - global and Indian. Application of open Sources

1.2 Open source software operating systems – LINUX – features of linux –linux architecture - Linux advanced concepts

1.3 Open SPARC Project – Open source compilers – Model driven architecture – Eclipse IDE Platform.

UNIT – II OPEN SOURCE PROGRAMMING LANGUAGE-PHP 17hrs

2.1 Introduction: What is PHP? - Basic Syntax of PHP - programming in web environment - Common PHP Script Elements - Using Variables - Constants – Data types Operators: Statements - Working With Arrays –Using Functions – OOP -String Manipulation and Regular Expression

2.2 File and Directory Handling - Including Files - File Access

2.3 Working With Forms -Processing Forms -Form Validation – Introduction to advanced PHP concept Simple programs Using PHP.

UNIT –III OPENSOURCE DATABASE 16hrs

3.1 MySQL: Introduction - Setting up an account - Starting- Terminating and writing your own MySQL Programs – Record Selection Technology - Working with Strings– Date and Time - Sorting Query Results module – GeneratingSummary– Working with Metadata - Using Sequences – MySQL and Web.

3.2 Database**:** Create ODBC connection-connecting to an ODBC retrieving records- Retriving fields from a record-Closing an ODBC connection.

3.3 PHP Database Connectivity: Retrieving data from MySQL - Manipulating data in MySQL using PHP.

UNIT – IV PYTHON **20hrs**

4.1 Basic features of Python**:** Overview –Python Features– Installing – Running in windows/Linux

4.2 Variables and Strings**:** Data types - Operators – Decision Control – Conditional Statements - Loops – Example Programs.

4.3 Sequences: Lists: Introduction – Lists and Loops –Assignment and references – Identity and equality – Sorted lists – Tuples: Tuples and string formatting – String functions - Sets: Unordered Collections.

4.4 Dictionaries: Introduction – Combining two dictionaries with UPDATE – Making copies – Persistent variables – Internal Dictionaries

4.5 Functions and Files**:** Functions - File Handling – Exception – Handling Exceptions.

UNIT V OPEN SOURCE SOFTWARE TOOLS AND TECHNOLOGIES **20hrs**

5.1 WEB SERVER**:** Apache Web server – Working with web server – Configuring and using apache web server

5.2 Open Source Software tools and Processors**:** Introduction – Eclipse IDE Platform – Compilers – Model driven architecture tools

5.3 CASE STUDY: Government Policy toward Open Source (E- Governance) – Wikipedia as an open Source Project.

REFERENCE BOOKS:

Sl.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1	THE Complete Reference Linux	Richard peterson	TataMcGraw Hill-New Delhi Third Edition
2	Web Programming	Chris Bates	Wiley India New Delhi Third Edition-Reprint 2011
3	MySql Bible	Steve Suchring	John Wiley Sons 2002
4	Programming PHP	Rasmus Lerdorf and Levin Tatroe	O'Reilly Publications 2002

WEBSITES:

http://developer.android.com

Learning to Program-A free Python Web-book by Alan Gauld

http://www.freenetpages.co.uk/hp/alan.gauld/

http://en.wikibooks.org/wiki/python _Programming

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 682 – .NET PROGRAMMING

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 682

Semester : VI

Subject title : .NET Programming

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
.Net Programming	6	96	25	75	100	3Hrs

Topics and Allocation of Hours

Unit	Topics	Hours
I	INTRODUCTION TO .NET FRAMEWORK	18
II	INTRODUCTION TO VISUALBASIC.NET	18
III	APPLICATION DEVELOPMENT USING ADO .NET	17
IV	INTRODUCING ASP.NET	18
V	XML WEB SERVICES	18
TEST AND MODEL EXAM		07
TOTAL		**96**

OBJECTIVES:

On completion of the following units of syllabus contents- the students must be able to:

- List the major elements of the .NET Framework and describe some of the major enhancements to the new version of Visual Basic.
- Describe the basic structure of a Visual Basic .NET project and use the main features of the integrated development environment (IDE).
- Use the new language features and syntax in Visual Basic .NET.
- Explain the basic concepts and terminology of object-oriented design specifically for Visual Basic .NET.
- Create applications by using Microsoft Windows Forms.
- Create Internet applications that use Web Forms and Web Services.
- Create applications that use ADO.NET.
- Create components in Visual Basic .NET.
- Set up and deploy various types of Visual Basic .NET-based applications.
- Prepare existing Visual Basic-based applications for upgrade to VB .NET.
- Develop Web applications and .NET applications using XML as back end database

DETAILED SYLLABUS

UNIT	NAME OF THE TOPICS	Hours
I	**INTRODUCTION TO .NET FRAMEWORK**	18

Introduction to .NET framework – Features and advantages of .Net Managed code and the CLR Architecture - Intermediate Language- Metadata and JIT Compilation - Automatic Memory Management.

Language Concepts and the CLR - Visual Studio .NET - Using the .NET Framework .Net – Based Languages – Comparison- Visual Studio .Net IDE.

The Framework Class Library: Name Spaces and their components – CTS- CLS - .NET objects- ASPNET-.NET web services-Windows Forms.

II **INTRODUCTION TO VISUALBASIC.NET** **18**

Elements: Variables and constants – data types – declaration- Data validation. Operators – types – precedence. Expressions. Program flow – Decision statements – if .. then- if..then..else- select..case– Loop statements – while..end while- do..loop- for..next- for..each..next- methods and procedures – Exception handling.

Types: Value data types – Structures- Enumerations. Reference data types- Single-dimensional – Multi-dimensional arrays – jagged arrays – dynamic arrays.

Windows programming – creating windows Forms – windows controls – Button- Check box- Combo box- Label- List box- Radio Button- Text box. Adding controls to a form- Organizing controls on a form events – Click- close- Deactivate- Load- Mousemove- Mousedown- MouseUp – Creating simple applications using windows controls.

Menus and Dialog Boxes-Creating menus-menu items-context menu- Using dialog boxes – showDialog() method – Procedures. Creating inherited and drag- and – drop application using .Net.

III **APPLICATION DEVELOPMENT USING ADO .NET** **17**

Features of ADO.NET. Architecture of ADO.NET – ADO.NET providers – Connection – Command – Data Adapter – Dataset.

Accessing Data with ADO.NET- Connecting to Data Source- Accessing Data with Data set and Data Reader – Using multiple tables - Create an ADO.NET application- Displaying a

dataset in a List-Bound control - Using Stored Procedures.

Printing and Reporting in Windows Forms Applications- Using the print preview- Page setup and Print Dialogs Creating Reports by Using Crystal Reports.

IV **INTRODUCING ASP.NET** **18**

ASP.NET Features: Change the Home Directory in IIS - Add a Virtual Directory in IIS- Set a Default Document for IIS - Change Log File Properties for IIS - Stop- Start- or Pause a Web Site.

Creating Web Controls: Web Controls - HTML Controls- Using Intrinsic Controls- Using Input Validation Controls- Selecting Controls for Applications - Adding web controls to a Page.

V **XML WEB SERVICES** **18**

Overview of XML-XML Serialization in the .NET Framework -SOAP Fundamentals-Using SOAP with the .NET Framework.

Introduction to web services - Web Services protocol and standards – WSDL Documents - Overview of UDDI - Calling a Web Service from a Browser - Calling a Web Service by Using a Proxy - Creating a simple web service - Creating and Calling a Web Service by Using Visual Studio .NET using HTTP and Proxy - Simple applications development.

REFERENCE BOOKS:

S.No	TITLE	AUTHOR	PUBLISHER
1.	Introduction to Visual basic.NET	NIIT	Prentice Hall of India-2005
2.	Introducing Microsoft .NET	David S. Platt	Microsoft Press”- Saarc Edition- 2001
3.	Introduction to Microsoft® ASP.NET Work Book	Microsoft	Microsoft Press
4.	Developing XML Web Services Using Microsoft® ASP.NET	Microsoft	Microsoft Press

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 683 – MOBILE COMPUTING

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 683

Semester : VI

Subject title : Mobile Computing

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Mobile Computing	6	96	25	75	100	3Hrs

Topics and Allocation of Hours

UNIT	TOPIC	TIME (Hrs)
I	Introduction to Mobile Computing	**16**
II	Mobile and Smart TV OS	**17**
III	Android Development Environment	**16**
IV	Basic and Advanced Views	**20**
V	Location Based Services and SQLite	**20**
	REVISION- TEST	**07**
	TOTAL	**96**

OBJECTIVES

On completion subject- the students must be able to:

- To introduce the characteristics- basic concepts and systems issues in mobile Computing
- To illustrate architecture and protocols in Mobile computing and to identify the trends and latest development of the technologies in the area
- To understand the network protocols governing the mobile communication
- To know the different kinds of mobile OS prevailing in the market
- To know Android OS in detail
- To know Apple iOS and Smart TV OS
- To understand the components of a Mobile App.
- To give practical experience in the area through the development of Mobile apps
- To design successful mobile computing applications and services
- To evaluate critical design tradeoffs associated with different mobile technologies- architectures- interfaces and business models and how they impact the usability- security- privacy and commercial viability of mobile and pervasive computing services and applications
- To know the development of Mobile apps using SQLite database
- To know the cross platform application development tools

UNIT I Introduction to Mobile Computing **16Hrs**

1.1 Introduction to Mobile Computing :Evolution of Mobile Computing -Important terminologies

1.2 Wireless LAN and Protocols:WI-FI and WI-MAX - Bluetooth -RFID- Wi-Fi-Direct- Li-Fi- LTE- and LoWPAN - VoLTE

1.3 Cellular Network Generations :Features of 1G-2G -3G -4G -5G

UNIT II Mobile and Smart TV Operating System **17Hrs**

2.1 Mobile Operating Systems: Evaluation of Mobile Operating System-Handset Manufactures and their Mobile OS- Mobile OS and their features. Linux Kernel based Mobile OS

2.2 Apple Mobile Operating Systems: History and features of Apple Operating Systems - iPadOS- tvOS and watchOS

2.3 Smart TV operating systems: Smart TV Operating System development History – versions and their features

2.4 Android Operating System: Android Operating System development History - versions and its feature - The various Android devices on the market - The Android Market application store

UNIT III Android Development Environment **16Hrs**

3.1 Android Development Environment: System Requirements- Android SDK- Installing Java- and ADT bundle - Eclipse Integrated Development Environment (IDE)- Creating Android Virtual Devices (AVDs) – Android Studio

3.2 Android Architecture: Android Architecture - The Linux Kernel- Android Runtime – Dalvik Virtual Machine- Android Runtime – Core Libraries- Dalvik VM Specific Libraries- Java Interoperability Libraries- Android Libraries- Application Framework

3.3 Creating a New Android Project:Defining the Project Name and SDK Settings- Project Configuration Settings- Configuring the Launcher Icon

3.4 Activity: Creating an Activity- Running the Application in the AVD- Stopping a Running Application- Modifying the Example Application- Reviewing the Layout and Resource Files

UNIT IV Basic and Advanced Views **20Hrs**

4.1 Basic Views: Text View- Button- Image Button- Edit Text- Checkbox- Toggle Button- Radio Button and Radio Group Views- Progress Bar View- Auto Complete Text View

4.2 Advanced Views: Time Picker View and Date Picker View – List Views – Image View– Menus – Analog and Digital View – Dialog Boxes

4.3 Displaying Pictures & Menus with Views: Image View – Gallery View – Image Switcher – Grid View –Creating the Helper Methods – Options Menu – Context Menu

4.4 SMS and Dialer: Sending SMS – Receiving SMS – Making phone call.

UNIT V Location Based Services and SQLite **20Hrs**

5.1 Location Based Services: Obtaining the Maps API Key- Displaying the Map – Zoom control– Navigating to a specific location – Adding Marker – Geo Coding and reverse Geo coding

5.2 Content Provider and Storage: Sharing data – view contacts – Add contacts – Modify contacts – Delete Contacts - Store and Retire data's in Internal and External Storage – SQLite - Creating and using databases

5.3 Android Service: Consuming Web service using HTTP- downloading binary Data – Downloading Text Content – Accessing Web Service

5.4 Cross Platform App Development: Cross platform application development tools and their features:

REFERENCE BOOK:

S.NO	TITLE	AUTHOR	PUBLISHER
1.	Beginning Android Programming with Android Studio	J. F. DiMarzio	Wiley-4th Edition (2016)
2.	Beginning Android 4 Application Development	Wei-MengLee	Wiley India Edition 2012
3.	Mobile Computing	Asoke K Talukder-Hasan Ahmed-Roopa R Yavagal	MGH 2005

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 671 – Web Technology Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai – 600 113.

Diploma in Engineering / Technology Syllabus
G – SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering
Subject Code : CRG 671
Semester : VI
Subject title : Web Technology Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Web Technology Lab	4	64	25	75	100	3Hrs.

DETAILED SYLLABUS

1. Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading- a horizontal rule- three links and your photo. Also- write three HTML documents for the links. Include facilities for forward- backward and HOME.

2. Design a HTML tag about your friends. List your friends. Each friend's name is a link. Prepare separate HTML documents for each friend and call them in the n the appropriate link.

3. Design a single page website for your polytechnic containing a description of the courses offered. It should also contain some general information about the university such as its history- the campus- its unique features and so on. The site should be colored and each section should have a different color.

4. Create a web page that provides links to five different webpage.
Design a web page that has 5 equal columns. The table should look the same screen resolutions.

5. Make out a brief bio-data of yours and code it as an HTML page. You can Consider using tables to show your academic history.

6. a)Write a Java script code that converts the entered text to uppercase

   b) Write a Javascript code to validate the username and password.

7. Create a website for Online Shopping application Using Frames and Event.

8. a) Write Javascript function that finds the maximum of three given numbers.
   b) Write HTML document with Javascript to count the number of vowels in a text typed in a TextArea.

9. Create a site containing banner advertisement at the top of the page. The ads are changed every 10 or 15 seconds.

10. Write jQuery Program for Count the number of milliseconds between the two click events on a paragraph.

11. Write jQuery Program for Disable/enable the form submit button & Blink the text.

12. Write a Code in Java Script to count number of times you move over a link or record.

13. Write a program to check whether a person will be permitted to open a

particular page or not. Use permission checker component.

14. Write a program using CSS to create a time table for the class.
15. Write a program using CSS to set the background colors- fonts and paragraphs(certificate Design) .
16. Write a JSP code to manipulate cookies.
17. Develop a simple Hello World application using AJAX .

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Program 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

HARDWARE REQUIREMENT

- Desktop Computers – 36 Nos
- Laser Printer – 4 Nos
- Internet facility to be improved

SOFTWARE REQUIREMNT

- Notepad or any one Editor
- Web browser
- Apache Tomcat 4.0 x or JRun 3.x

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG672- Computer Hardware and Networking Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 672

Semester : VI

Subject title : Computer Hardware and Networking Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Computer Hardware and Networking Lab	4	64	25	75	100	3Hrs

DETAILED SYLLABUS

COURSE CODE: CRG672

LAB EXERCISES

1. HARDWARE

1 **Identification of System Layout.**

a) Front panel indicators & switches and Front side & rear side connectors.

b) Familiarize the computer system Layout:Marking positions of SMPS- Motherboard-
FDD- HDD- CD- DVD and add on cards.

c) Configure bios setup program and troubleshoot the typical problems using BIOS utility.

d) Study of Solid State Drive(SSD)- Solid Disk Drive(SDD)

2. **HARD DISK**

a) Install Hard Disk.

b) Configure CMOS-Setup.

c) Partition and Format Hard Disk.

d) Identify Master /Slave / IDE Devices.

e) Practice with scan disk- disk cleanup- disk De-fragmenter- Virus Detecting and Rectifying Software.

3 a) Install and Configure a DVD Writer and a Blu-ray Disc writer.

b) Recording a Blank DVD and Blu-ray Disc.

4 **Printer Installation and Servicing:**

a) Head Cleaning in dot matrix printer

b) Install and configure Dot matrix printer and Laser printer

c) Troubleshoot the above printers.

d) Check and connect the data cable connectivity

SERVICING

5.Install and configure Scanner- Web cam- Cell phone and bio-metric device with system.
Troubleshoot the problems.

NETWORK

6 Installation of Windows 2008 / 2013 Server.

7 Installation and configuration of DHCP Server.

8 Installation and configuration of Active directory Services. Create a user and permission using logon script and group permissions.

9 Do the following Cabling works in a network

a) Cable Crimping b) Standard Cabling c) Cross Cabling d) IO connector crimping e) Testing the crimped cable using a cable tester.

10.Configure Host IP- Subnet Mask and Default Gateway in a system in LAN (TCP/IP Configuration).Configure Internet connection and use IPCONFIG- PING / Tracert and Netstat utilities to debug the network issues.

11 Interface two PCs using Peer To Peer network using connectivity devices – Switch and Router in a LAN and share the Drives and Folders.

12 Transfer files between systems in LAN using FTP Configuration- install Print server in a LAN and share the printer in a network.

13 Configure DNS to establish interconnection between systems and describe how a name is mapped to IP Address.

14 Install and configure Network Devices: HUB- Switch and Routers.

15 Install and Configure Wired and Wireless NIC and transfer files between systems inLAN andWireless LAN.

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Experiment – 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

LIST OF EQUIPMENTS

Hardware Requirements :	
Desktop Systems	30 Nos
Hard disk drive	06 Nos
DVD, Blu-ray Drive	06 Nos
Blank DVD , Blu-ray Disc	30 Nos
Head cleaning CD	01 No
Dot matrix Printer	01 No
Laser Printer	01 No
Ink Jet Printer	01 No
Web camera	01 No
Biometric Device	01 No
Scanner	01 No
Crimping Tool	06 Nos
Screwdriver set Network Cables	06 Nos 50 mtrs
Switch	01 No
Hub	01 No
Router Wires / Wire cutters	01 No
Software Requirements:	
Windows server OS Windows /Linux OS	
DVD and Blu-ray Burning S/W.	

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 684 – Open Source Software Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai – 600 113.

Diploma in Engineering / Technology Syllabus
G – SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering
Subject Code : CRG 684
Semester : VI
Subject title : Open Source Software Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Open Source Software Lab	4	64	25	75	100	3Hrs.

DETAILED SYLLABUS

1. Install Linux Server in Linux Environment
2. Set up a Local Area Network in Linux Environment
3. Setting up a Web server in Linux Environment
4. Generate a PHP script will display the multiples of the numbers 1 to 5 upto 5 times. The output should column format
5. a) Display the week date of the current date of the machine serving PHP pages
   b) Generate a list of possibility for two digit numbers consisting of numbers 0 to 5 using nested for loop
6. a) Generate a PHP script that will display the grade on the basis of marks as follows i)Distinction – 80 and above ii)First Class – From 60 to below 80 iii) Second Class – From 45 to below 60 iv)Pass – From 35 to below 45 v) Fail –Below 35
   b) Test the above program using the following set of values stored in an array : 67- 82- 23- 37- 57- and 97
7. Create a function to calculate 33% tax on the given salary Rs. 65-500. Generate Fibonacci series for the numbers 1 to 70.

8. Create a form to capture book details.
The HTML form should perform the following: 1Capture the data such as the Book name- Author name- Publisher name- Category and the Synopsis Clears the form fields when reset button is clicked .Submit the captured data when submit button is clicked

9. Create a PHP code- which will retrieve the data captured by the HTML form- display the name of the form and also display the message Data Entered Successfully on the HTML form page after performing the following validations:

i)That the book name form field is not left blank ii)That the author name form field is not lef blank iii)That the publisher name form field is not left blank iv)That the synopsis form field is not left blank

10. Develop a form to capture Personnel Information The HTML based form should perform the following: i)Enter data such as name- date of birth- address- city- state and Email ii)Clear the form fields when the Clear button is clicked iii)Submit captured information- when Save button is clicked

11. Create a PHP file that will validate data captured by the form. This program uses regular expressions to validate and format data.

12. To Write a code using PHP and MYSQL for Ticket Reservation system.
13. Create a table that will store valid book information. The structure of the MySQL table will be as follows.

(i) Table Definition (ii) Column Definition (iii) Table Description

14. Create a Book Master form- which will allow (i) Inserting records in BookMaster (ii) Updating records that already exists in the BookMaster. (iii) Viewing records available in BookMaster (iv) Deleting Records from BookMaster.

15. Using MySql -Create a table “Customer” with the following fields. Id -First Name Last name- Company Name -Address -City -State - Pin Code Perform the following Operations i) Change the pin code of any customer ii) Insert a new record into the table iii) Update the field’s First name and LastName into name. iv) Find the customer who does not have a last name

16) Write a simple programs on Python to perform Operation:

a) String concatenation b) Python Dictionary.

17) Write a simple programs on Python to perform Operation:
a)Functions on Tuples b)Function in List

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Program 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

HARDWARE:

1. A Server with 36 computers networked
2. Printers – 3 Nos

SOFTWARE:

1 .WAMP-Windows-Apache-Mysql-Php. (OR) LAMP –Linux-Apache-Mysql-Php.
2. Any Texteditor
3. Browser with Javascript Support.

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 685 – .Net Programming Lab

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai – 600 113.

Diploma in Engineering / Technology Syllabus
G – SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 685

Semester : VI

Subject title : .Net Programming Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
.Net Programming Lab	4	64	25	75	100	3Hrs.

DETAILED SYLLABUS

1. Accept a character from console and check the case of the character.

2. Write program to accept any character from keyboard &display whether is vowel or not.

3. Write a VB.Net program to accept a string and convert the case of the characters.

4. Develop a menu based VB.Net application to implement a text editor with cut- copy- paste- save and close operations.

5. Write a program to implement a calculator with memory and recall operations.

6. Develop a Form in VB.NET to pick a date from Calendar control and display the day- month- year details in separate text boxes.

7. Develop a VB.Net application to perform timer based quiz of 10 questions.

8. Develop a VB.Net application using the File- Directory and Directory controls to implement a common dialog box.

9. Develop a database application to store the details of students using ADO.NET.

10. Develop a database application using ADO.NET to insert- modify- update and delete operations.

11. Develop a VB.Net application using Data grid to display records.

.

12. Develop a VB.Net application using Data grid to add- edit and modify records.

ASP.NET

13. Create a simple ASP.NET page to Output Text with a form- two HTML text boxes- an HTML button- and an HTML element. Create an event procedure for the button.

14. Create a web controls to a page with three different controls to the ASP.NET page for reserving rooms in hotel. The three controls are a button control- a label control- and a drop-down list control.

15. Create a application for Accessing a SQL Database by Using ADO.NET by connecting to the SQL Server database and call a stored procedure. You then display the data in a Repeater control.

16. Create a web services application for calling a Web service for a hotel named full. And you will call another Web service for a hotel named Empty- and then retrieve information regarding room availability.
The Web service for the Full hotel is named Hotel_Full.dll. The Web service for the Empty hotel is named Hotel_Empty.dll. There are five methods in each service.
Reserve takes room types and starts and end dates and returns a Boolean value that indicates whether a room is available.

<WebMethod()>public Function Reserve (strRoomType1 As String- strRoomType2 As String- dtmStartDate As Date- dtmEndDate As Date) As BooleanPrice returns a double value that is the cost of the rent for one day.
<WebMethod()>public Function Price(strRoomType1 As String) As Double Description returns a string that describes the hotel.

<WebMethod()>public Function Description() As String Room returns a string that describes the rooms of the hotel.
<WebMethod()>public Function Room() As String Food returns a string that describes the food available at the hotel.
<WebMethod()>public Function Food() As String.

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Program 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

Software Required:

- **.**Net Frame Work
- VB.Net
- ASP.Net

Hardware Required:

- Computer with Pentium IV / Dual core Processors. – 36 Nos

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 686 – MOBILE COMPUTING LAB

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 686

Semester : VI

Subject title : Mobile Computing Lab

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Mobile Computing Lab	4	64	25	75	100	3Hrs

DETAILED SYLLABUS

1. Write a program to demonstrate activity (Application Life Cycle)
2. Write a program to demonstrate different types of layouts
3. Write a program to implement simple calculator using text view- edit view- option button and button
4. Write a program to demonstrate list view
5. Write a program to display Text in Text View using different Font Style
6. Write a program to demonstrate AutoComplete Text View
7. Write a program to demonstrate Image Button View
8. Write a program to demonstrate Date picker and time picker
9. Develop an simple application with context menu and option menu
10. Develop an application to send SMS
11. Write a program to view- edit and contact
12. Write a program to send e-mail
13. Write a program to display map of given location/position using map view
14. Write a program to demonstrate the application of intent class
15. Write a program to demonstrate SQLite (Create Database- Table- Insert- Update- delete and view records)

AUTONOMOUS EXAMINATION

DETAILED MARK ALLOCATION

Program 1	**Aim & Procedure**	**20**
	Program	**30**
	Execution & Output	**15**
	Result	**05**
Viva-Voce		**05**
Total		**75**

HARDWARE REQUIREMENTS:

Desktop Computers with minimum 4 GB RAM-30 Nos

Printer-1 No

SOFTWARE REQUIREMENTS:

Android Studio / Netbeans /Eclipse- Android ATD

Android SDK- JDK 6.0 or above

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER PATTERN
III YEAR

VI SEMESTER

G - SCHEME

CRG 673– Project Work and Internship

Dr. Dharmambal Government Polytechnic College for Women

Tharamani- Chennai-600 113.

Diploma in Engineering / Technology Syllabus

G-SCHEME

(To be Implemented for the students admitted from the year 2022 - 2023 onwards)

Course Name : 1052 - Diploma in Computer Engineering

Subject Code : CRG 673

Semester : VI

Subject title : Project Work and Internship

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Project Work and Internship	4	64	25	75	100	3Hrs

Minimum Marks for pass is 50 out of which minimum 35 marks should be obtained out of 75 Marks in the Autonomous Board Examination alone.

OBJECTIVES:

1. Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment.
2. Develop software packages or applications to implement the actual needs of the community.
3 Get exposure on industrial environment and its work ethics.
4 Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required
5 Carry out cooperative learning through synchronous guided discussions within the class in key dates- asynchronous document sharing and discussions- as well as to prepare collaborative edition of the final project report.
6 Expose students to the field of computing and to gain experience in software design.
7 Understand and gain knowledge about disaster management.

GUIDELINES FOR PROJECT FORMULATION

The project work constitutes a major component in most of the professional programmes and it is to be carried out with due care and should be executed with seriousness by the candidates. Batch size: Maximum 6 students per batch

TYPE OF PROJECT

As majority of the students are expected to work out a real life project in some industry / research and development laboratories / educational institutions / software companies- it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. Students are encouraged to work in the areas listed at the end. However- it is not mandatory for a student to work on a real life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The students of all the Diploma Courses have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training- Tamil Nadu. In order to encourage students to do worthwhile and innovative projects- every year prizes are awarded for the best three projects i.e. institution wise- region wise and state wise. **The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the following form:

1 Title of the Project.

2 Introduction and Objectives of the Project.

3 Project Category (DBMS/OOPS/Networking/Multimedia/Artificial Intelligence / Expert Systems etc.).

4 Tools / Platform- Hardware and Software Requirement specifications.

5 Analysis (DFDs at least up to second level - ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).

6 A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules.

6.1. Process logic of each module.

6.2. Testing process to be used.

6.3. Reports generation (Mention tentative content of report).

7. Are you doing this project for any Industry/Client? Mention Yes/No.

- If Yes- Mention the Name and Address of the Industry or Client.

8 Future scope and further enhancement of the project. Also mention limitation of the project.

9. SUGGESTIVE AREAS OF PROJECT WORK:

- Database Management Systems
- Software Engineering and Software Development
- Web page Designing
- Digital Image Processing
- Computer Graphics and Animation
- Multimedia Systems
- Computer Networks
- Artificial Intelligence
- Internet and e-commerce
- Computer Security and Cryptography
- Computer hardware and embedded systems
- Internet Of Things
- Cloud Computing
- Mobile Computing
- Mobile Application Development
- Augmented reality (AR) and Virtual Reality (VR)

● Any other related area found worth.

INTERNSHIP TRAINING

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year “Project Work & Internship” for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Board examination

INTERNAL ASSESSMENT:

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	Period of assessment	Max.Marks
First Review	6th week	10
Second Review	12th week	10
Attendance	Entire semester	5
Total		**25**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Autonomous Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

EVALUATION FOR AUTONOMOUS BOARD EXAMINATION:

Details of Mark allocation	Max.Marks
Demonstration/Presentation	20
Report	20
Viva Voce	15
Internship report	20
Total	**75**

EQUIVALENT COURSES					
2017 Syllabus Revision (w.e.f from 2018 in the dept)			**2022 Syllabus**		
S.No	**Subject Code**	**Subject**	**S.No**	**Subject Code**	**Subject**
1	CRE301	Basic Electricals and Electronics Engineering	1	CRG301	Basic Electricals and Electronics Engineering
2	CRE302	Operating systems	2	CRG302	Operating systems
3	CRE303	C and Data Structures	3	CRG303	C and Data Structures
4	CRE304	Computer Architecture	4	CRG304	Computer Architecture
5	CRE305	Electrical and Electronics Lab	5	CRG371	Electrical and Electronics Lab
6	CRE306	Operating Systems Lab	6	CRG372	Operating Systems Lab
7	CRE307	C and Data Structures Lab	7	CRG373	C and Data Structures Lab
8	CRE401	Object Oriented Programming through C++	8	CRG401	Object Oriented Programming Concepts through C++
9	CRE402	Relational Database Management Systems	9	CRG402	Relational Database Management Systems
10	CRE403	Computer Hardware and Servicing	10	CRG602	Computer Hardware and Servicing
11	-	-	11	CRG403	Cloud Computing and Internet of Things
12	CRE404	Object Oriented Programming Concepts through C++ Lab	12	CRG471	Object Oriented Programming Concepts through C++ Lab
13	CRE405	Relational Database Management Systems Lab	13	CRG472	Relational Database Management Systems Lab
14	CRE406	PC Hardware Servicing and Networks Lab	14	CRG672	Computer Hardware And Networking Security Lab
15	CRE501	Java Programming	15	CRG501	Java Programming
16	CRE502	Computer Networks and Security	16	CRG503	Computer Networks and Security
17	-	-	17	CRG502	Python Programming
18	CRE503	Web Technology	18	CRG601	Web Technology
19	CRE504	System Analysis and Design	19	CRG581	System Analysis and Design
20	CRE505	Management Information System	20	CRG582	Management Information System
21	CRE506	Software Engineering	21	CRG583	Software Engineering
22	CRE507	Information Storage and Management	22	CRG584	Artificial Intelligence and Data Analytics
23	CRE508	Java programming Lab	23	CRG571	Java Programming Lab
24	-	-	24	CRG572	Python Programming Lab
25	-	-	25	CRG573	Entrepreneurship and Startups
26	CRE509	Multimedia Systems Lab	26	CRG671	Multimedia Systems Lab
27	CRE510	Web Technology Lab	27	CRG573	Web Technology Lab
28	CRE601	.NET Programming	28	CRG682	.Net Programming
29	CRE602	Mobile Computing	29	CRG683	Mobile Computing
30	CRE603	Open Source Software	30	CRG681	Open Source Software
31	CRE604	Advance Java Programming	31	CRG501	Java Programming
32	CRE605	Embedded Systems	32	-	-
33	CRE606	.Net Programming Lab	33	CRG685	.Net Programming Lab

34	CRE607	E-Publishing Lab	34	CRG474	E-Publishing Lab
35	CRE608	Open Source Software Lab	35	CRG684	Open Source Software Lab
36	-	-	36	CRG686	Mobile Computing Lab
37	CRE609	Project planning and Entrepreneurship	37	CRG673	Project Work and Internship

SYLLABUS COMPARISON WITH WPT OLD SYLLABUS AND DOTE SYLLABUS

S. NO	SEM	DDGPCW G-SCHEME/ SUBJECT	UNIT	DOTE N-SCHEME / SUBJECT	DOTE SYLLABUS CONTENT	NEW CONTENT INCLUDED IN ADDITION TO DOTE SYLLABUS
1	III	CRG 301 Basic Electricals and Electronics Engineering	All V Units	4052310 Basic Electrical and Electronics Engineering	I unit AC Fundamentals only in DOTE Syllabus	I unit we have both AC and DC Fundamentals- Remaining all units are same as in dote syllabus
2		CRG302 Operating Systems	All V Units	4052320 operating system	DOTE Syllabus	As per as dote syllabus
3		CRG303 C and Data Structures	All V Units		DOTE Syllabus	As per as dote syllabus
4		CRG304 Computer Architecture	All V Units	4052410 Computer Architecture	DOTE Syllabus	As per as dote syllabus
5		CRE371 Electrical and Electronics Lab	All Exercises	4052340 Electrical and Electronics practical	DOTE Syllabus	As per as dote syllabus
6 7.		CRG372 Operating Systems Lab CRG373 C and Data Structures Lab	All Exercises All Exercises	4052350 Linux practical As Per Dote Syllabus	DOTE Syllabus DOTE Syllabus	As per as dote syllabus- subject name changed As per as dote syllabus

S. NO		DDGPCW G-SCHEME/ SUBJECT	UNIT	DOTE N-SCHEME / SUBJECT	DOTE SYLLABUS CONTENT	NEW CONTENT INCLUDED IN ADDITION TO DOTE SYLLABUS
8		CRG401 Object Oriented Programming Concepts through C++	All Exercises	-	No such subject	
9		CRG402 Relational Database Management Systems	Unit 1 Unit 3 Unit 4 Unit 5	4052440 Relational Database Management Systems	Studying based on MySQL	Studying based on SQL
10	IV	CRG403 Cloud Computing and Internet of Things	All V Units	4052520 Cloud Computing and Internet of Things	Studying in V semester	As Per Dote Syllabus but the subject is in V semester
11		CRG471 Object Oriented Programming Concepts through C++ Lab	All Exercises	-	No such subject	New subject Introduced
12		CRG472 Relational Database Management Systems Lab	All Exercises	4052470 Relational Database Management Systems Practical	Studying based on MySQL	Studying based on SQL
13		CRG473 Cloud Computing and Internet of Things Lab	All Exercises	4052550 Cloud Computing and Internet of Things Lab	Studying in V semester	As Per Dote Syllabus Studying in V semester
14		CRG474 Multimedia Systems Lab	All Exercises	4052652 Multimedia Systems Lab	DOTE Syllabus	As Per Dote Syllabus

S. NO	SEM	DDGPCW G-SCHEME/ SUBJECT	UNIT	DOTE N-SCHEME / SUBJECT	DOTE SYLLABUS CONTENT	NEW CONTENT INCLUDED IN ADDITION TO DOTE SYLLABUS
15	V	CRG501 Java Programming	All V Units	-	No such subject	
16		CRG502 Python Programming	All V Units	4052510 Python Programming	Studying in V semester	As Per Dote Syllabus
17		CRG503 Computer Networks and Security	Unit 1 Unit 3 Unit 4	4052620 Computer Networks and Security	Dote Syllabus	DOTE syllabus
18		CRG581 System Analysis and Design	All V Units	-	No such subject	Management subject is included in the syllabus
19		CRG582 Management Information System	All V Units	-	No such subject	Management subject is included in the syllabus
20		CRG583 Software Engineering	All V Units	4052631 Software Engineering	DOTE syllabus	As per DOTE syllabus
21		CRG584 Information Storage and Management	All V Units	-	No such subject in DOTE syllabus	New Subject Introduced
22		CRG571 Java Programming Lab	All Exercises	Dote Syllabus	DOTE syllabus	Dote Syllabus
23		CRG572 Python Programming Lab	All Exercises	4052540 Python Programming Lab	Studying in V semester	Studying in V semester As per DOTE syllabus
24		CRG573 Entrepreneurship and startups	All Exercises	4052570 Entrepreneurship and startups	DOTE syllabus	As per DOTE syllabus
25		CRG601 Web Technology	All V Units	4052420 Web Design and Programming	DOTE syllabus	As per DOTE syllabus

S. NO	SEM	DDGPCWG-SCHEME/ SUBJECT	UNIT	DOTEN-SCHEME / SUBJECT	DOTE SYLLABUS CONTENT	NEW CONTENT INCLUDED IN ADDITION TO DOTE SYLLABUS
26		CRG602 Computer Hardware and Servicing	All V Units	4052610 Computer Hardware and Servicing	Studying in VI semester	DOTE syllabus
27		CRG681 Open Source Software	All V Units	-	DOTE syllabus	As per DOTE syllabus
28	VI	CRG682 .Net Programming	All V Units	-	DOTE syllabus	As per DOTE syllabus
29		CRG683 Mobile Computing	All V Units	-	No such subject	New subject Introduced
30		CRG671Web Technology Lab	All Exercises	-	DOTE syllabus	As per DOTE syllabus
31		CRG672 Computer Hardware and Networking Lab	All Exercises	4052640 Computer Hardware and Networking Lab	Studying in V semester	
32		CRG684 Open Source Software Lab	All Exercises	-	Dote syllabus	As per Dote syllabus
33		CRG685 .Net Programming Lab	All Exercises	-	Dote syllabus	As per Dote syllabus
34		CRG686 Mobile Computing Lab	All Exercises	-	Dote syllabus	As per Dote syllabus
35		CRG673Project Work and Entrepreneurship.	All Exercises	4052660 project work	Entrepreneurship is in IV sem	As per Dote syllabus