PERIYAR CENTENARY POLYTECHNIC COLLEGE

PERIYAR NAGAR – VALLAM – 613 403, THANJAVUR

(AUTONOMOUS INSTITUTION)

DIPLOMA IN COMPUTER ENGINEERING

SYLLABUS
CTC/16/00

SEMESTER SYSTEM
C - SCHEME

CONTENTS

PERIYAR CENTENARY POLYTECHNIC COLLEGE

Periyar Nagar – Vallam – 613 403, Thanjavur

AUTONOMOUS INSTITUTION

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY

(Implemented from 2015-2016)

C SCHEME

RULES AND REGULATIONS

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.

b) Sandwich (3 $^{1}/_{2}$ years)

The course for the Diploma in Engineering (sandwich) shall extend over a period of three and half academic years consisting of 7 semesters *and the First year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience.

During 4th and 7th semester the students undergo industrial training for six months. Industrial training examination will be conducted after completion of every 6 months of industrial training.

* Each semester will have 15 weeks duration of studies with 35 hours per week for all diploma courses.

2. Conditions for Admission

Condition for admission to the diploma course 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)] course 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.

Sl.No	Course	H.Sc Academic	H.Sc Vocational	
			Subjects studied	
		Subjects studied	Related subjects	Vocational subjects
1	All the Regular and Sandwich Diploma Courses	Maths, Physics & Chemistry	Maths/Physics/ Chemistry	Related vocational subjects Theory & Practical
2	Diploma in Modern Office 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 Secretaryship.

- 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 counselling by the respective Principal as per communal reservation.
- For Admission to the Modern Office 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 Course.

4. Readmission of Candidates

A student who had discontinued his/her studies in the middle of a semester or who had not appeared for Autonomous Examination of current semester of study, can apply and get readmission in the same semester in the following subsequent academic years if he/she desires to complete the course and satisfies the following conditions:

The candidate should not have exhausted the total period of study (given below) permitted to complete the course.

Full time(Regular) - 6 years

Full time (Sandwich) - 6 ½ years

Full time(Lateral Entry) - 5 years

He/She, on readmission, should be able to complete his/her full course of study within the above stipulated total period. A candidate who had discontinued his/her studies continuously or in spells for more than 3 years shall not be recommended for readmission.

Readmissions are not permissible in first year (I semester) for regular students and in third semester for lateral entry students, who have not written any Autonomous Examinations, before their discontinuance of study. They have to forego their candidature and seek admission again fresh.

5. Age Limit

No Age Limit

6. Procedure for completing the Diploma Course

A candidate will be permitted to appear for the Examination only if, he/she secures 80% of attendance.

- A student having shortage of attendance in a semester should repeat the same semester in the next academic year. Similarly, a student who had not attended at least a single paper(theory or practical) of a particular semester examination, cannot continue his/her studies in the next semester, even if he / she had enough attendance in that semester with usual conditions.

- The candidate on completion of studies in each semester should necessarily register himself / herself for the examinations of all the subjects of the semester as well as

for all arrear subjects of all the previous semester and shall appear for the Autonomous Examinations.

7. **Reasons for disqualifying a student from appearing Autonomous Examinations**

- A student who had failed to acquire the minimum required percentage of attendance during a semester of study or discontinued his/her studies in the middle of a semester and who had not paid the examination fee in time shall not be permitted to appear for the Autonomous Examination
- A Student who had paid the examination fee in time, but do not have enough attendance in the course of study, shall not be permitted to appear for the Autonomous Examination however, will be permitted to write the supplementary examinations of previous semesters.

8. Eligibility for the Award of Diploma

No candidate shall be eligible for the 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 Course are as given below

Diploma Course	Minimum period	Maximum Period
Full time	3 years	6 years
Full time (lateral Entry)	2 years	5 years
Sandwich	3 $^{1}/_{2}$ years	6 ½ years

9. 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. The Curriculum outline is given in Annexure – I

10. 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 Marks and 75 marks are allotted for Autonomous Examination.

11. Continuous Internal Assessment

A. Theory Subjects - For II & III year

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

i)	Attendance	-	5 Marks
ii)	Test	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**
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i) Subject Attendance **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) Test **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Out of which the best one will be taken and the marks to be reduced to: **5 Marks**

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

Total **10 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 – Compulsory** Covering all the 5 units (Autonomous Examination – question paper pattern)	End of 15th Week	75	3 hrs

Question paper pattern for the periodical Test (Test – I & Test – II)

With no Choice:

Part A	4 Questions x 2 Marks	:	08 marks
Part B	4 Questions x 3 marks	:	12 marks
Part C	3 Questions x 10 marks	:	30 marks

		Total :	**50 marks**
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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.

Assignment 1: Written notes in relevant topics from the subjects.

Assignment 2: Science/Technical projects – To acquire practical knowledge.

Assignment 3: Objective type online test-to understand the principles and thereby gain in-depth knowledge about the subject.

iv) Seminar **5 marks**

For seminar the total seminar 15 hours (15 weeks x 1 hour) should be distributed equally to total theory subject per semester(i.e. 15 hours divided by 3/4 subject). A topic from subject or current scenario is given to students. During the seminar hour students have to present the paper and submit seminar material to the respective staff member, who is handling the subject. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

All Test papers, Assignments and Seminar Materials after getting the signature with date from the students must be kept in the safe custody in the Department for verification and audit. It should be preserved for 2 semesters and produced to the flying squad and the inspection team at the time of inspection/ verification.

For I Year General Engineering

Theory Subjects

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

i)	Attendance	-	5 Marks
ii)	Test	-	10 Marks
iii)	Assignment	-	10 Marks
	Total	**-**	**25 Marks**

i) Subject Attendance **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) Test **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Out of which the best one will be taken and the marks to be reduced to: **5 Marks**

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

Total **10 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 – Compulsory** Covering all the 5 units (Autonomous Examination – question paper pattern)	End of 15th Week	75	3 hrs

Question paper pattern for the periodical Test (Test – I & Test – II)

With no Choice:

Part A	5 Questions x 1 Mark	:	05 marks
Part B	10 Questions x 2 marks	:	20 marks
Part C	5 Questions x 5 marks	:	25 marks
		Total :	**50 marks**

iii) Assignment **10 marks**

For each subject, three assignments are to be given each for 20 marks and the average marks scored should be reduced for 10 marks.

Assignment 1: Written notes in relevant topics from the subjects.

Assignment 2: Science/Technical projects – To acquire practical knowledge.

Assignment 3: Objective type online test-to understand the principles and thereby gain in-depth knowledge about the subject.

All Test papers and Assignments after getting the signature with date from the students must be kept in the safe custody in the Department for verification and audit. It should be preserved for 2 semesters and produced to the flying squad and the inspection team at the time of inspection/ verification.

B. Practicals Subjects

I, II and III year

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 the same to be given for final Autonomous Examinations.
- The Record for every completed exercise should be submitted in the subsequent Practical classes and marks should be awarded for 20 for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercise should be calculated for 20 marks and the marks awarded for attendance is to be added to arrive at the Internal Assessment Mark for Practical.(20+5=25 Marks)
- The students have to submit the duly signed bonafide record note book/file during the Practical Autonomous Examinations.
- All the marks awarded for Assignments, Tests, Seminars and Attendance should be entered in the Personal Log Book of the staff, who is handling the subject. This is applicable to both Theory and Practical Subjects.

12. Life and Employability skills Practical

The Life and Employability skills Practical with more emphasis is being introduced in IV Semester for Circuit Branches and in III Semester for other branches of Engineering. Much Stress is given to increase the employability of students.

Internal Assessment Marks **- 25 Marks**

13. Project Work

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.**

a) Internal Assessment Mark for Project Work & Viva Voce

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 to be maintained for the two project reviews, and it should be preserved for 2 semesters and produced to the flying squad and the inspection team at the time of inspection/ verification.

b) Allocation of Marks for project work & Viva Voce in Autonomous Examination

i)	Viva Voce	:	30 marks
ii)	Report Preparation & Demonstration of Project	:	35 marks
	Total	**:**	**65 marks**

iii) Written Test Mark (from 2 topics for 30 minutes duration) #

a) Environment Management 2 questions x 2 ½ marks = 5 marks
b) Disaster Management 2 questions x 2 ½ marks = 5 marks

10 marks

(# Selection of questions should be from Question Bank, by the External Examiner, No Choice need be given to the candidates

Viva Voce - 30 Marks

Report Preparation & Demonstration of Project	- 35 Marks
Written Test Mark	- 10 Marks
Total	**75 marks**

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the project Work & Viva voce Autonomous Examination.

14. Practical Training and Project Work for Architectural Assistantship (SW)

i. Practical Training

In IV and VII semesters, students should undergo the practical training under the registered architects without fail. During this period, they should have 80% of attendance. Candidates not fulfilling the above are not eligible to appear for the practical examinations. The candidates should redo the practical training in the next academic year.

The internal Assessment is based on the Monthly Report, Weekly Report, Attendance and Feedback given by the architects.

Work diary (internal Assessment) - 25 marks

Allocation of Marks

i) Monthly Report	- 10 Marks
ii) Weekly Report	- 5 Marks
iii) Attendance	- 5 Marks
iv) Feedback given by the architects	- 5 Marks
Total	**- 25 Marks**

Architect office and studio practice – I &II (IV & VII Sem)

Report writing	- 50 marks
Viva- voce	- 25 marks
Total	**- 75 marks**

ii. Project work

For the project work, to allocate internal assessment for the project work two reviews to be conducted and the average of two should be taken for the final assessment.

Average of two review marks (internal Assessment) – 25 marks

Project work & Viva Voce – Autonomous Examination

Record	-	20 marks
Drawing and presentation	-	30 marks
Model	-	15 marks
Viva-Voce	-	10 marks
Total	-	**75 marks**

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the project Work & Viva Voce Autonomous Examination.

15. Scheme of Examinations:

The Scheme of examination for subjects is 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 subject out of the total prescribed maximum marks including both the internal assessment and the Autonomous Examination 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 Theory Examinations and a minimum of 35 marks out of 75 marks in the Autonomous Practical Examinations.

17. Classification of successful candidates

Classification of candidates who will pass out the final examinations from April - 2018 onwards (joined in first year in 2015-2016) 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 3/ 3 ½ years (Full time/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 3/3 ½ years (Full time/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 3 / 3 ½ years (Full time/Sandwich) without any break in study.

Second Class

All other successful candidates will be declared to have passed in **Second Class.**

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)

19. Issue of mark sheets / Diploma Certificates – Regarding with –held results

The final semester mark sheets of candidates who pass in the final semester examination, but do have arrears in the lower semester examinations will be **with-held** till they clear all the arrears.

20. Revaluation of Examination papers

- Any candidates can apply for revaluation of his / her answer script of any theory paper he/she had appeared.
- The candidates has to fill in the prescribed application form and remit fee (Rs.100/- per paper) for getting the Xerox copy of answer script within 15 days from the date of publication of results.

- The Xerox copy of the semester script will be sent to the candidate's address directly within 15 days from the date of receipt of application.
- If the candidate desires for revaluation of his/her answer script, he/she has to fill the application form enclosed with Xerox copy, pay the revaluation fee (Rs. 400/- per paper) within one week from the date of sending Xerox copy.
- The script will be revalued and the revised marks will be intimated to the candidates.
- The revaluation system is applicable for the practical subjects and project work.
- Applications received after the prescribed due dates will not be entertained.

Conclusion

The above rules and regulations can be amended, revised and altered as per the DOTE norms and Academic Board.

ANNEXURE - I

CURRICULUM OUTLINE

THIRD SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Seminar & Library	Practical hours	Total Hours
CTC310	Basics of Electrical & Electronics Engineering	5	-	-	5
CTC320	Operating Systems	5	-	-	5
CTC330	C Programming	5	-	-	5
CTC340	Electrical and Electronics Engineering Practical	-	-	4	4
CTC350	Linux Practical	-	-	4	4
CTC360	C Programming Practical	-	-	6	6
CTC370	Computer Applications Practical	-	-	4	4
	Library	-	1	-	1
	Seminar	-	1	-	1
TOTAL		15	2	18	35

FOURTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Seminar & Library	Practical hours	Total Hours
CTC410	Computer Architecture	4	-	-	4
CTC420	Computer Networks and Security	4	-	-	4
CTC430	Object Oriented Programming with Java	6	-	-	6
CTC440	Data Structures using C	5	-	-	5
CTC450	Java Programming Practical	-	-	4	4
CTC460	Data Structures using C Practical	-	-	6	6
CTC470	Life and Employability Skills Practical	-	-	4	4
	Library	-	1	-	1
	Seminar	-	1	-	1
TOTAL		19	2	14	35

FIFTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Seminar & Library	Practical hours	Total Hours
CTC510	Web Programming	4	-	-	4
CTC520	Relational Database and Management Systems	5	-	-	5
CTC530	Component Based Technology	4	-	-	4
	ELECTIVE - I - THEORY	4		-	4
CTC541	a. Cloud Computing				
CTC542	b. Software Engineering				
CTC550	Web Programming Practical	-	-	4	4
CTC560	Relational Database and Management Systems Practical	-	-	6	6
CTC570	Component Based Technology Practical	-	-	6	6
	Library	-	1	-	1
	Seminar	-	1	-	1
TOTAL		17	2	16	35

SIXTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Seminar & Library	Practical hours	Total Hours
CTC610	Computer Hardware and Servicing	6	-	-	6
CTC620	Mobile Computing	4	-	-	4
	ELECTIVE –II THEORY	5	-	-	5
CTC631	a. Multimedia Systems				
CTC632	b. Open Source Software				
CTC640	Computer Servicing and Network Practical	-	-	6	6
CTC650	Mobile Computing Practical	-	-	4	4
	ELECTIVE – II -PRACTICAL	-	-	4	4
CTC661	a. Multimedia Systems Practical				
CTC662	b. Open Source Software Practical				
CTC670	Project work	-	-	4	4
	Library	-	1	-	1
	Seminar	-	1	-	1
TOTAL		15	2	18	35

ANNEXURE - II

SCHEME OF EXAMINATIONS

THIRD SEMSTER

Subject Code	Subject	Marks			Minimum for Pass	Duration of Exam hours
		Internal Assessment Marks	Autonomous Exam Marks	Total Marks		
CTC310	Basics of Electrical & Electronics Engineering	25	75	100	40	3
CTC320	Operating Systems	25	75	100	40	3
CTC330	C Programming	25	75	100	40	3
CTC340	Electrical and Electronics Engineering Practical	25	75	100	50	3
CTC350	Linux Practical	25	75	100	50	3
CTC360	C Programming Practical	25	75	100	50	3
CTC370	Computer Applications Practical	25	75	100	50	3

FOURTH SEMSTER

Subject Code	Subject	Marks			Minimum for Pass	Duration of Exam hours
		Internal Assessment Marks	Autonomous Exam Marks	Total Marks		
CTC410	Computer Architecture	25	75	100	40	3
CTC420	Computer Networks and Security	25	75	100	40	3
CTC430	Object Oriented Programming with Java	25	75	100	40	3
CTC440	Data Structures using C	25	75	100	40	3
CTC450	Java Programming Practical	25	75	100	50	3
CTC460	Data Structures using C Practical	25	75	100	50	3
CTC470	Life and Employability Skills Practical	25	75	100	50	3

FIFTH SEMSTER

Subject Code	Subject	Marks			Minimum for Pass	Duration of Exam hours
		Internal Assessment Marks	Autonomous Exam Marks	Total Marks		
CTC510	Web Programming	25	75	100	40	3
CTC520	Relational Database and Management Systems	25	75	100	40	3
CTC530	Component Based Technology	25	75	100	40	3
	ELECTIVE - I -THEORY					
CTC541	a. Cloud Computing	25	75	100	40	3
CTC542	b. Software Engineering	25	75	100	40	3
CTC550	Web Programming Practical	25	75	100	50	3
CTC560	Relational Database and Management Systems Practical	25	75	100	50	3
CTC570	Component Based Technology Practical	25	75	100	50	3

SIXTH SEMSTER

Subject Code	Subject	Marks			Minimum for Pass	Duration of Exam hours
		Internal Assessment Marks	Autonomous Exam Marks	Total Marks		
CTC610	Computer Hardware and Servicing	25	75	100	40	3
CTC620	Mobile Computing	25	75	100	40	3
	ELECTIVE –II THEORY					
CTC631	a. Multimedia Systems	25	75	100	40	3
CTC632	b. Open Source Software	25	75	100	40	3
CTC640	Computer Servicing and Network Practical	25	75	100	50	3
CTC650	Mobile Computing Practical	25	75	100	50	3
	ELECTIVE – II -PRACTICAL					
CTC661	a. Multimedia Systems Practical	25	75	100	50	3
CTC662	b. Open Source Software Practical	25	75	100	50	3
CTC670	Project work	25	75	100	50	3

CTC 310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

TEACHING AND SCHEME OF EXAMINATION:

No. Of Weeks / Semester: 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Semester End Examination	Total	Duration
Basics Of Electrical And Electronics Engineering	5	75	25	75	100	3hrs

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPIC	TIME(HRS)
I	Ac Fundamentals ,Batteries And Ups	12
II	Transformer And Specialmotors	12
III	Semiconductor Devices	14
IV	Boolean Algebra ,Logic Gates And Combinational Systems	13
V	Sequential Logicsystem	12
	Revision and Test	12
	Total	**75**

COURSE DESCRIPTION

Diploma Engineers From All Branches Of Engineering Are Expected To Have Some Basic Knowledge Of Electrical And Electronics Engineering. Also The Technicians Working In Different Engineering Fields Have To Deal With Various Types Of Electrical Equipments. Various Types Of Electronic Circuits Are Used In Different Electrical Equipments. Hence It Is Necessary To Study Electric Circuits, Different Types Of Electrical Machines And Electronic Devices Their Principles And Working Characteristics. The Basic Concepts Studied In This Subject Will Be Very Useful For Understanding Of Higher Level Subjects In Further Study.

OBJECTIVES:

On Completion Of The Following Units Of Syllabus Contents, The Students Must Be Able To

- Understand The Ac Fundamentals
- Understand The Working Principle Of Ups
- Know About Stepper Motors And Servo Motors
- Familiarize With Semiconductor Devices, Rectifier Circuits, Transistors And Its Applications
- Use Binary, Octal And Hexadecimal Numbers Define Logic Gates
- Significance Of Boolean Algebra In Digital Circuits
- Understand The Working Principles Of Sequential And Combinational Logic Circuits
- Define Flip- Flops And Describe Behavior Of Various Flip Flops
- Know About Synchronous And Asynchronous Counters Know About The Function Of Shift Registers

COURSE OUTCOMES

Course	**Statement**
After successful completion of this course, the students should be able to	
C310.1	Understand and Analyze the AC fundamentals, Batteries and UPS
C310.2	Understand the working, features and classification of Transformer, special motors, Electrical safety and Transducers
C310.3	Understand the basic passive components, features, specifications, classification and applications
C310.4	Apply the basic knowledge of digital electronics to construct and design simple Combinational digital circuits.
C310.5	Construct flip-flop circuits and analyze their functioning

CTC 310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT –I AC FUNDAMENTALS ,BATTERIES AND UPS **12**

1.1	**AC Fundamentals**: Difference between AC and DC – Advantages of AC over DC – Waveform of sinusoidal A.C. Cycle – Generation of single phase	2 Hrs
	Definition of cycle, frequency, time period, amplitude, peak value, average value and rms value – Define peak factor and form factor –	2 Hrs
	Concept of phase, phase difference and phase angle – Single phase and 3 phase (Definition) - Meaning of lagging and leading sine wave – Advantages of three phase over single phase	2 Hrs
1.2	**Batteries**: Classification of cells - Construction of Lead acid cell – Methods of charging –	1 Hr
	Care and Maintenance of Lead acid battery – Indications of a fully charge battery- Maintenance free batteries	2 Hrs
1.3	**UPS :** Need for UPS - Online and Offline UPS – Definition – Block Diagram– **Explanation** of each block -	1 Hr
	Merits and demerits of on line and off line UPS – Need of heat sink	1 Hr
	Specification and ratings –Maintenance of UPS including batteries.	1 Hr

UNIT-II TRANSFORMER AND SPECIAL MOTORS **12 Hr**

2.1	**Single Phase transformer:** Working Principle and Construction of transformer – Brief description of each part– Function and materials used –	2 Hrs
	emf equation of transformer (No derivation) – Voltage and current ratio of a transformer – Efficiency - Losses in a transformer - Auto transformer -	2 Hrs
	Comparison with two winding transformer – Applications – Step up and Step down transformer (Definition only)	1 Hr
2.2	**Special Motors**: Stepper Motor: Definition - Working principle - Types and applications –	1 Hr
	Servo motors: Definition - Working principle - Types and applications –	1Hr
	Factors to be considered for selecting a motor for a particular application.	1 Hr
2.3	**Electrical Safety:** Electric shock-need for earthing-types of earthing, fuses need- types of fuses	2 Hrs
2.4	Transducers-Instrumentation–general aspects, classification of transducers, basic requirements of transducers, passive transducers-strain gauge, thermistor, Hall-Effect transducer, LVDT, and active transducers.	2 Hrs

UNIT- III SEMICONDUCTOR DEVICES **14 Hrs**

3.1	**Diodes:** PN Junction diode – Barrier Voltage, Depletion Region – Forward biased and Reverse biased Junction –	1 Hr

	Working principle – forward /Reverse characteristics of P-N Junction diode - Applications of diode – Zener Diode: Construction-	2 Hrs
	Characteristics (Forward and Reverse) – Avalanche and Zener break down - Applications of Zener diode. Light Emitting Diodes operation, construction and characteristics.	2 Hrs
	LDR – Principle of operation and Characteristics .Photo Diode – Principle of operation(concept only).	1 Hr
3.2	**Rectifiers:** Definition – Need of Rectification – Circuit diagram, Operation,i/p and o/p Waveforms of Half wave –	2 Hrs
	Full wave- Bridge rectifiers (without filters) - Uses of filters in rectifier circuit	1 Hr
	Ripple factor, Efficiency and PIV (No derivation) – Comparison	1 Hr
3.3	**Bipolar Junction Transistor:** Definition - Principle of NPN and PNP transistor - Symbol - Transistor terminals - Operating principle(NPN transistor only) –	2 Hrs
	Configurations of transistor – Comparison between CB,CE and CC - Input and Output characteristics of CE configuration – Transistor application as switch.	2 Hrs

UNIT-IV BOOLEAN ALGEBRA,LOGIC GATES COMBINATIONAL SYSTEM 13 Hrs

4.1	**Number representation:** Decimal, Binary, Octal and Hexa decimal number systems-- Conversion of number from one number system to another(without decimal point) - BCD CODE –	2 Hrs
	ASCII Codes - Parity bit – Use of a parity bit – Odd parity and Even parity	1 Hr
4.2	**Logic gates:** Positive and Negative logic System - Definition, Truth table,Symbol and Logical equations of AND –	1 Hr
	OR - NOT – EXOR – EXNOR (Only 2-inputs) gates – Universal gates - NAND - NOR – Symbol and truth table .	1 Hrs
4.3	**Boolean Algebra :** Basic laws of Boolean algebra – Demorgan's Theorem and proofs – Duality theorem - Simplification of logical equations using Boolean laws –	2 Hrs
	De-Morgan's theorem – Two and three variable Karnaugh map	1 Hr
4.4	**Arithmetic Circuits:** Half Adder and full adder- Truth table, Circuit diagram-	2 Hrs
	Half subtractor and Full subtractor - Truth table, Circuit diagram..	1 Hr
4.5	**Combinational logic circuits**: Parity generator and checker - Multiplexer -De multiplexer –	1Hr
	Encoder - Decoder (Definition and Basic Circuits only) – Comparator Circuit for two bit words	1 Hr

UNIT V SEQUENTIAL LOGIC SYSTEM 12 Hrs

5.1	**Flip flops:** Basic principle of operation - S-R, D flip-flop – Operation and truth table – Race Condition –	2Hrs

JK flip flop – T flip flop -Toggling – Edge Triggered Flip-flop – Level Triggered flip flop- 2Hrs

Need for a Master-slave flip flop - J-K Master Slave flip flop. 1 Hr

5.2 **Counters:** Need- Types of counters- 4 bit Asynchronous counter-Mod N counter-Decade Counter- 2Hrs

4 bit Synchronous counter-Distinguish between Synchronous and Asynchronous counter-Application of counters 1Hr

5.3 **Registers:** Shift register - Block diagram representation and waveform of serial 2Hrs

in Serial out, Serial – in Parallel – out, Parallel in -parallel out 2 Hrs
Applications of Shift Registers.

Revision and Test **12 Hrs**

TEXT BOOKS:

S.No	Title	Author	Publisher&YearOfPublishing/ Edition	
1	Electrical Technology VolIand Ii	B.L.Theraja	S.Chand& Co , New Delhi	MutipleColour Revised First Edition,2012
2	Modern Digital Electronics	R.P. Jain	Tatamc-Grawhill, New	Third Reprint 2010
3	Principles Of Digital Electronics	K.Meena	Phi Learning Private Ltd	2009

REFERENCE BOOKS:

S.No	Title	Author	Publisher&YearOfPublishing/Edition	
1	Digital Electronics And Logic Design	JaydeepChakravarthy	University Press,Hyderabad	First Edition2012
2	Basic Electrical Engineering	V.N.Mittle	Tata Mc-Graw Hill, Newdelhi	First Edition
3	Basic Electrical And Electronics Engineering	R,Muthusubramanian R.Salivajanan	Tata Mc-Graw Hill, Newdelhi	Seventh Reprint 2011
4	Principles Of Electronics	V.K.Mehta	S.Chand& Co, Newdelhi	Second Edition
5	Digital Electronics	G.K.Kharate	Oxford University Press	2010

LEARNING WEB SITES

1.http://electrical4u.com/
2.www.electronics-tutorials.ws

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO-POS & POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C310.1	3	3	3	-	-	-	3	-	-	3
C310.2	3	3	3	-	-	-	3	-	-	3
C310.3	3	3	3	-	-	-	3	-	-	3
C310.4	3	3	3	-	-	-	3	-	-	3
C310.5	3	3	3	-	-	-	3	-	-	3
Total	15	15	15	-	-	-	15	-	-	15
Correlation level	3	3	3	-	-	-	3	-	-	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTC320 OPERATING SYSTEMS

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Sem.	Continuous Assessment	Semester End Examination	Total	Duration
Operating Systems	5	75	25	75	100	3 Hrs

TOPICS AND ALLOCATION OF PERIODS

Unit	Topic	No Of. Periods
I	Introduction To Operating Systems	14
II	Process Management	16
III	Memory Management	12
IV	I/O And File Management , Security And Protection	12
V	Linux – A Case Study	09
	Revision and Test	12
	Total	**75**

COURSE DESCRIPTION

The Heart Of A Computer Is Based Around Its Operating System. The Processor Deals With Request Coming From All Directions Asynchronously. The Operating System Has To Deal With The Problems Of Contention, Resource Management And Both Program And User Data Management, And Provide A Useful No-Wait User Interface. The Concept Of Operating System Is Discussed Through Case Studies Of Linux. The Course Provides Clear Vision, Understanding And Working Of Operating Systems.

OBJECTIVES:

- Understand The Purpose, Goals, Functions And Evolution Of Operating Systems.
- Understand The Concept Of Process, Various States In The Process And Their Scheduling.
- Classify Different Types Of Schedulers And Scheduling Algorithms.
- Identify The Significance Of Inter-Process Communication And Synchronization.

- Discuss The Usage Of Semaphore In Inter-Process Communication.
- Understand The Conditions For A Deadlock.
- Describe The Ways To 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 The Page Replacement Policies Like Optimal, Fifo And Lru.
- Discuss The Disk Scheduling Techniques.
- Mention The Role Of Security Policies.
- Discuss About Significance Of Authentication.
- 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

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C320.1	Understand the Generation, Types,Components,services and structuresof Operating Systems
C320.2	Able To Know Concept Of Process, Various States In The Process And Their Scheduling.
C320.3	Understand basic Memory management and its protection.
C320.4	Know I/O and File management, Security and protection.
C320.5	Learn Linux architecture.

CTC320 OPERATING SYSTEMS

1.1	**Basics of Operating Systems:** Definition – Generations of Operating systems - Types of Operating Systems: Mainframe, Desktop,	2 Hrs
	Multiprocessor, Distributed, Clustered, Multiprogramming, Real time, Embedded and Time sharing.	2 Hrs
1.2	Operating System Components: Process Management component – Memory Management component - I/O Management component –	2 Hrs
	File Management component - Protection System – Networking management component – Command interpreter	2 Hrs
1.3	Operating System Services: Process Execution – I/O operations – File manipulations – Communications – Error detection and recovery –	2 Hrs
	Resource allocation – Accounting – System Protection - System Calls – System call Execution	2 Hrs
1.4	Operating System Structures: Simple structure, Layered, Monolithic, Microkernel Operating Systems –	1 Hr
	Concept of Virtual Machine – Booting - System Design and Implementation	1 Hr

UNIT – II PROCESS MANAGEMENT **16 Hrs**

2.1	Processes: Definition – Process Relationship - Process states – Process State transitions -	2 Hrs
	Process Control Block – Context switching – Threads – Concept of multithreads – Benefits of threads – Types of threads	2 Hrs
2.2	Process Scheduling: Definition – Scheduling objectives – Types of Schedulers– Scheduling criteria –	1 Hr
	CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time (Definition only) – Scheduling algorithms – Pre emptive and Non –pre emptive -	2 Hrs
	FCFS – SJF – RR - Multiprocessor scheduling –Types - Performance evaluation of the scheduling.	2 Hrs
2.3	Inter-process Communication and Synchronization: Definition – Shared Memory System –	2 Hrs
	Message passing – Critical section – Mutual Exclusion -Semaphores	2 Hrs
2.4	Deadlocks: Definition – Deadlock characteristics – Deadlock Prevention –	1 Hr
	Deadlock Avoidance – Deadlock detection and Recovery - Atomic Transactions	2 Hrs

UNIT – III MEMORY MANAGEMENT **12 Hrs**

3.1	Basic Memory Management : Definition – Logical and Physical address map – Memory allocation – Contiguous Memory allocation – Fixed and variable partition –	2 Hrs
	Internal and External fragmentation and Compaction – Paging –Principle of operation – Page allocation –	2 Hrs

	Hardware support for paging –Protection and sharing – Disadvantages of paging.	1 Hr
3.2	Virtual Memory : Basics of Virtual Memory – Hardware and control structures-	2 Hrs
	Locality of reference, Page fault , Working Set , Dirty page/Dirty bit –	1 Hr
	Demand paging (Concepts only) – Page Replacement policies –	2 Hrs
	Optimal (OPT) , First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU)	2 Hrs

UNIT – IV I/O AND FILE MANAGEMENT, SECURITY&PROTECTION 12Hrs

4.1	Disk Management: Disk Structure, Disk Scheduling and its algorithms,	2 Hrs
	RAID TECHNOLOGY.	1 Hr
4.2	File Management: File concept – File attributes – Name, Identifier, Type, Location, Size, Time, Date, user identification – File Operations -	2 Hrs
	Directory Structure – Single level, Two level, Tree Structure – Disk space allocation methods– Contiguous, Linked, Indexed.	2 Hrs
	Access Methods – Sequential, Random access – File system structure – Byte sequence, Record sequence and Tree-based – Disk formatting	2 Hrs
4.3	Security and Protection: Security threats – Security Policies and mechanisms–	2 Hrs
	Authentications	1 Hr

UNIT – V LINUX – A CASE STUDY 9Hrs

5.1	Introduction – History of Linux – Features of Linux-	2 Hrs
	Linux Architecture -popular Flavors of Linux - FSF/GNU -	2 Hrs
	Linux Desktop: GNOME-KDE.	2 Hrs
5.2	File System – ext2 – Virtual File System - Different types of files – File Management – File Security –	2 Hrs
	3 levels – Mounting file system – Un-mounting	1 Hr

TEXT BOOKS

Sl.No.	Title	Author	Publisher&Edition	
1	Operating System Concepts	Abraham Siberschatz Galvin, Gagne	Wiley	9th Edition
2	Operating System Internal And Design Principles	William Stallings	Pearson Education	7th Edition

REFERENCES

Sl.No	Title	Author	Publisher&YearOfPublishing/Edition	
1	Operating System, Principals &Design	Pal Chaudhury	Phi Learning	First Edition
2	Operating System	William Stalling	Pearson Education, New Delhi.	2003
3	Operating Systems	Deitel And Deitel	Pearson Education, New Delhi.	Third Edition, 2007
4	Operating System	RohitKhurana Itlese	Vikas Publishing Ltd	First Edition 2011

WEBSITES

1.https://books.google.co.in/books/about/Operating_Systems_Principles_And_Design.html?id=fDZxNHyVcqIC&redir_esc=y

2. https://books.google.co.in/books?id=gS8-xUE2rI4C&printsec=frontcover & dq=Operating +System%09William+ Stalling&hl=en&sa=X&ved= 0ahUKEwjw8uWP0JrjAhWFfSsKHapoBvsQ6AEILzAB#v=onepage&q=Operating%20System%09William%20Stalling&f=false

3.https://books.google.co.in/books?id=Ad9qKEaVzQIC&printsec=frontcover&dq=Operating+Systems%09Deitel+And+Deitel&hl=en&sa=X&ved=0ahUKEwiP84Gi0JrjAhWHbn0KHWJmBrcQ6AEIKDAA#v=onepage&q=Operating%20Systems%09Deitel%20And%20Deitel&f=false

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS & POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C320.1	3	3	3	3	-	-	3	-	3	3
C320.2	3	3	3	3	-	-	-	-	3	3
C320.3	3	3	3	3	-	-	-	-	3	3
C320.4	3	3	3	3	-	-	-	-	3	3
C320.5	3	3	3	3	-	-	-	-	3	3
Total	15	15	15	15	-	-	-	-	15	15
Correlation level	3	3	3	3	-	-	3	-	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTC 330 C PROGRAMMING

TEACHING AND SCHEME OF EXAMINATION:

No. Of Weeks / Semester: 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/Semester	Internal Assessment	Semester End Examination	Total	Duration
C Programming	5	75	25	75	100	3 Hrs

TOPICS AND ALLOCATION OF HOURS:

Unit	Topic	TIME(HRS)
I	Program Development And Introduction To C	12
II	Decision Making, Arrays And Strings	13
III	Functions, Structures And Unions	13
IV	Pointers	13
V	File Management & Preprocessors	12
	Revision And Test	12
	Total	**75**

COURSE DESCRIPTION

'C' Is The Most Widely Used Computer Language, Which Is Being Taught As A Core Course. C Is General Purpose Structural Language That Is Powerful, Efficient And Compact, Which Combines Features Of High Level Language And Low-Level Language. It Is Closer To Both Man And Machine. Due To This Inherent Flexibility And Tolerance It Is Suitable For Different Development Environments. Due To These Powerful Features, C Has Not Lost Its Importance And Popularity In Recently Developed And Advanced Software Industry. C Can Also Be Used For System Level Programming And It Is Still Considered As First Priority Programming Language. This Course Covers The Basic Concepts Of C. This Course Will Act As "Programming Concept Developer" For Students. It Will Also Act As "Backbone" For Subjects Like Oops, Visual Basic, Windows Programming, Java Etc

OBJECTIVES

At The End Of The Course, The Students Will Be 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.
- To Understand The Dynamic Data Structure And Memory Management.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C330.1	Able to know the concept of Programming language, algorithm, flowchart
C330.2	Understand the branching statement and looping statements and array concept
C330.3	Execute concept of functions, structures and unions
C330.4	Able to know pointers concepts
C330.5	Understand the file management and preprocessors

CTC 330 C PROGRAMMING

	UNIT - I Program Development & Introduction to C	**12 Hrs**
1.1	Program Algorithm & flow chart:- Program development cycle-Programming language levels & features.	1 Hr
	Algorithm – Properties & classification of Algorithm, flow chart – symbols, importance & advantage of flow chart.	1 Hrs
1.2	Introduction C: - History of C – features of C structure of C program – Compiling, link & run a program. Diagrammatic representation of program execution process.	1 Hrs
1.3	Variables, Constants & Data types: C character set-Tokens- Constants-Key words – identifiers and Variables –	1 Hr
	Data types and storage – Data type Qualifiers – Declaration of Variables – Assigning values to variables-	1 Hrs
	Declaring variables as constants-Declaration – Variables as volatile-Overflow & under flow of data	1 Hr
1.4	C operators:-Arithmetic, Logical, Assignment .Relational, Increment and Decrement, Conditional, Bitwise, Special Operator precedence and Associativity.	2 Hrs
	C expressions – Arithmetic expressions – Evaluation of expressions-Type cast operator	2 Hrs
1.5	.I/O statements: Formatted input, formatted output, Unformatted I/O statements	2 Hrs
	UNIT – II DECISION MAKING,ARRAYS and STRINGS	**13 Hrs**
2.1	Branching:- Introduction – Simple if statement – if –else – else-if ladder ,	1 Hrs
	nested if-else-Switch statement – go statement – Simple programs.	2 Hrs
2.2	Looping statements:- While, do-while statements, for loop,	2 Hrs
	break & continue statement – Simple programs	2 Hrs
2.3	Arrays:- Declaration and initialization of One dimensional, Two dimensional and Character arrays –	1 Hrs
	Accessing array elements – Programs using arrays	1 Hrs
2.4	Strings :- Declaration and initialization of string variables, Reading String, Writing Strings –	2 Hrs
	String handling functions (strlen(),strcat(),strcmp()) – String manipulation programs	2 Hrs
	UNIT – III FUNCTIONS, STRUCTURES AND UNIONS	**13 Hrs**
3.1	Built –in functions: -Math functions – Console I/O functions – Standard I/O functions –	1 Hrs
	Character Oriented functions – Simple programs.	1 Hrs
3.2	User defined functions:- Defining functions & Needs-, Scope and Lifetime of Variables, ,	2 Hrs
	Function call, return values, Storage classes	1 Hrs
	Category of function – Recursion – Simple programs	2 Hrs
3.3	Structures and Unions:- Structure – Definition, initialization, arrays of structures,	2 Hrs

	Arrays with in structures, structures within structures, Structures and functions –	2 Hrs
	Unions – Structure of Union – Difference between Union and structure – Simple programs.- Enumerated data type, Parameter passing mechanisms	2 Hrs
	UNIT - IV POINTERS	**13 Hrs**
4.1	Pointers:- Definition – advantages of pointers –	1 Hrs
	accessing the address of a variable through pointers -	1 Hrs
	declaring and initializing pointers- pointers expressions,	1 Hrs
	increment and scale factor- array of pointers- pointers and array -	2 Hrs
	pointer and character strings –function arguments – pointers to functions –	2 Hrs
	pointers and structures –programs using pointer.	1 Hr
4.2	Dynamic Memory Management: introduction – dynamic memory allocation –	1 Hr
	allocating a block memory (MALLOC) – allocating multiple blocks of memory (CALLOC) –	2 Hrs
	releasing the used space: free – altering the size of a block (REALLOC) – simple programs	2 Hrs
	UNIT –V FILE MANAGEMENT AND PREPROCESSORS	**12 Hrs**
5.1	File Management: Introduction- Defining and opening a file -	2 Hrs
	closing a file - Input/ Output operations on files -	1 Hr
	Error handling during I/O operations –	1 Hrs
	Random Access to files—	1 Hrs
	Programs using files	1 Hr
5.2	Command line arguments: Introduction – argv and argc arguments –	2 Hrs
	Programs using command Line Arguments –Programs	1 Hr
5.3	The preprocessor: Introduction – Macro Substitution,	1 Hrs
	File inclusion, Compiler control directives.	2 Hrs

TEXT BOOK

1. Programming InAnsi C 4e By Prof. E. Balagurusamy, The Tata Mcgraw – Hill Publications.

REFERNCES

S.No	Title	Author	Publisher&YearOfPublishing/Edition	
1	Programming And Problem Solving Using C	Isrd Group, Lucknow	Tata Mc-Grawhill, Newdelhi	Sixth Reprint 2010
2	Let Us C	YeswanthKanetkar	Bpb Publications	Fourth Revised
3	A Textbook On C	E.Karthikeyan	Phi Private Limited, New Delhi	2008
4	Programming In C	D.Ravichandran	New Age International Publishers,Chennai	Firstedition1996 Reprint2011
5	Computer Concepts And	Dr.S.S.Khandare	S.Chand& Company	Firstedition2010

			Ltd. New Delhi	
6	Complete Knowledge In C	SukhenduDey, Debobrata Dutta	Narosa Publishing House, New Delhi	Reprint2010
7	Programming In C	ReemaTheraja	Oxford University Press	Firstedition2011
8	Practical C Programming	Steve Oualline	O'reilly, Shroff	Eleventh Indian Reprintoct2010

WEBSITES

1.https://www.google.co.in/search?tbm=bks&hl=en&q=Programming+And+Problem+Solving+Using+C%09Isrd+Group%2C+Lucknow%09Tata+Mc-Grawhill%2C+Newdelhi

2.https://books.google.co.in/books?id=csZNj03v3uoC&printsec=frontcover&dq=A+Textbook+On+C%09E.Karthikeyan&hl=en&sa=X&ved=0ahUKEwjAq9eG0ZrjAhXKeisKHdNIAS4Q6AEIKDAA#v=onepage&q=A%20Textbook%20On%20C%09E.Karthikeyan&f=false

3.https://books.google.co.in/books?id=Q6DePAAACAAJ&dq=Complete+Knowledge+In+C%09Sukhendu+Dey,+Debobrata+Dutta&hl=en&sa=X&ved=0ahUKEwjuysaW0ZrjAhXBT30KHQJFAh8Q6AEIKjAA

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS & POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
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C330.2	3	3	3	3	-	-	3	3	3	3
C330.3	3	3	3	3	-	-	3	3	3	3
C330.4	3	3	3	3	-	-	3	3	3	3
C330.5	3	3	3	3	-	-	3	3	3	3
Total	15	15	15	15	-	-	15	15	15	15
Correlation level	3	3	3	3	-	-	3	3	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
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QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

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Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTC 340 ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL

Teaching and SchemeOfExamination

No. Of Weeks / Semester: 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/Week	Hours/Semester	Continuous Assessment	Semester End Examination	Total	Duration
Electrical And Electronics Engineering Practical	4	60	25	75	100	3 Hrs

Scheme Of Valuation

Writing Any One Experiment (Circuit Daigram,Tabular Column,Truthtable/Equation/Formula)	30 Marks
Construction	30 Marks
Result	10 Marks
Viva – Voce	05 Marks
Total	75 Marks

OBJECTIVES

On Completion Of The Following Practical Contents The Students Must Be Able To

- Verify Power Supply Of Smps
- Find The Efficiency And Voltage Regulation Of A Single Phase Transformer
- Study The Characteristics Of Pn Junction Diode And Zener Diode
- Function Of Rectifier Circuit
- Test The Performance Of Light Devices
- Know About The Function Of A Transistor
- How To Construct Different Logic Functions Using Universal Gates
- Realize The Combinational Circuits And Sequential Circuits

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C340.1	Verify Power Supply Of SMPS
C340.2	Find The Efficiency And Voltage Regulation Of A Single Phase Transformer
C340.3	Construct PN Junction Diode ,Zener Diode and diode's
C340.4	Function Of Rectifier Circuit Construct Different Logic Functions Using Universal Gates.
C340.5	Construct and test IC'S.

Equipments/Components Required

Equipments

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	0-15 V	2
7	Signal Generator	1 Mhz	2
8	Cro Dual Trace	30 Mhz	6
9	Single Phase Transformer		

Components

S.No	Name Of The Components	
1	Resistors	1150ω,1kω,2.2kω,10kω,2 20ω
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,Ic 74153,Ic 7476,Ic 7474	
8	Ic 7490,Ic 7493,Ic 7495	

CTC 340 ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL

S.NO	NAME OF THE EXPERIMENT		COURSE OUTCOME
1.	A	Checking Of Power Supply In Smps	**340.1**
	B	To Determine Efficiency And Voltage Regulation Of Single Phase Transformer Using Direct Loading Method	**340.2**
2.	A	Construct The Circuit And Draw The Forward Characteristics Of PN Junction Diode And Find Input Resistance.1	**340.3**
	B	Construct The Circuit And Draw The Reverse Characteristics Of Zener Diode And Find Breakdown Voltage.	**340.3**
3.		Construct The Circuit And Draw The Graph For Different Stages Of Bridge Rectifier With Filter	**340.3**
4.	A	Construct The Circuit And Draw The Characteristics Of Led	**340.3**
	B	Construct The Circuit And Draw The Vi Characteristics Of Led	**340.3**
5.	A	Construct Ce Configuration Circuit And Draw The Input Characteristics And Also Find Input Resistance	**340.3**
	B	Construct Ce Configuration Circuit And Draw The Output Characteristics And Also Find Output Resistance	**340.3**
6.	A	Verify The Truth Tables Of Nand,And,Nor,Or,Not,Xor Using Ic's	**340.4**
	B	Realization Of Basic Gates Using Either Nand Or Nor Gate.	**340.4**
7.		Construct And Verify Half Adder And Half Subtractor	**340.5**
8.		Construct And Verify The Truth Table Of Full Adder	**340.5**
9.		Construct And Verify The Truth Table Of Full Subtractor	**340.5**
10.		Verify The Truth Tables Of Rs, D, T And Jkff	**340.5**
11.		Construct And Test The Parity Generator And Checker Function Using Ic 74180	**340.5**
12.		Construct And Test Encoder And Decoder Circuit(Ic 74138)	**340.5**
13.		Construct And Test The Function Of Multiplexer And De-Multiplexer (Ic 74151)	**340.5**
14.		Construct And Test The 4 Bit Ripple Counter (Ic7493)	**340.5**
15.		Construct And Test Decade Counter (Ic 7490)	**340.5**
16.		Verify Ohm's Law And Kirchoff's Laws	**340.1**
17.		To Observe Waveforms Of A.C. Voltage And Current On Cro .Determine Amplitude And Phase And Understand The Concept's Of Lagging And Leading.	**340.2**

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.http://www.wbut.ac.in/syllabus/Electrical_&_Electronics_Engineering_Full_Syllabus.pdf
2.http://www.nitttrchd.ac.in/sitenew1/elect/electrbrou.pdf

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C340.1	3	3	-	3	3	2	-	2	-	2
C340.2	3	3	-	3	3	2	-	2	-	2
C340.3	3	3	-	3	3	2	-	2	-	2
C340.4	3	3	-	3	3	2	-	2	-	2
C340.5	3	3	-	3	3	2	-	2	-	2
Total	15	15	15	15	15	10	-	10	-	10
Correlation level	3	3	3	3	3	2	-	2	-	2

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 350 LINUX PRACTICAL

Teaching and Scheme Of Examination

No Of Weeks /Semester : 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/Week	Hours/Sem.	Continuous Assessment	Semester End Examination	Total	Duration
Linux Practical	4	60	25	75	100	3 Hrs

Scheme of Valuation

Commands In Part-A	10 Marks
Execution Of Commands In Part-A	15 Marks
Program In Part-B	15 Marks
Execution Of Program In Part-B	20 Marks
Printed Output (Part –A)	5 Marks
Printed Output (Part –B)	5 Marks
Viva – Voce	5 Marks
Total	**75 Marks**

OBJECTIVES

On Completion Of The Following Exercises, The Students Must Be Able To

- Login And Logoff Procedures
- Use Of General Purpose Commands
- Explain The Use Of Simple Filters And Advanced Filters.
- Know The Details Of Process Status
- Use Various Communication Commands
- Search Patterns
- Use Of Shell Scripts
- Define The Elements Of The Shell Script
- Write Shell Script For Various Problems.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C350.1	Login And Logoff Procedures
C350.2	Use Of General Purpose Commands
C350.3	Use Various Communication Commands
C350.4	Write The Elements Of The Shell Script
C350.5	Write Shell Script For Various Algorithm

CTC 350 Linux Practical

Part – A Linux Commands

Write Down The Syntax And Usage Of The Following Exercise With All Options. Check The Commands With The System

S.NO	NAME OF THEEXPERIMENT	COURSE OUTCOME
1.	(a) Logon to LINUX and logoff. (b) Usage of directory management commands: ls, cd, pwd, mkdir, rmdir (c) Usage of File Management commands: cat, chmod, cp, mv, rm, more, file commands	**350.1**
2	Use the general purpose commnds: wc, od, lp, cal , date, who , tty ,ln	**350.2**
3	Using the simple filters: pr, head, tail, cut, paste, nl, sort	**350.2**
4	Advanced filters : Search for a pattern using grep, egrep&fgrep	**350.2**
5	To know the details of process status- pscommand , Process management commands:&,nohup, kill, nice	**350.2**
6	Communication Commands: news, write, mail, wall, calendar	**350.3**
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 at somewhere.	**350.3**
	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.	**350.4**
2	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.	**350.4**
3	Write a Shell script to print contents of file from given line number to next given number of lines.	**350.4**
4	a)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 Thu 4 Feb 2016	**350.4**
5	Write a shell-script that tells you its name and PID	**350.4**
6	Develop a Basic math Calculator using case statement	**350.4**
7	Write a shell-script that presents a multiple-choice question, gets the user's answer and report back whether the answer is right, wrong or not one of the choices	**350.4**

8	a) Write script to determine whether given file exist or not, file name is supplied as command line argument, also check for sufficient number of command line argument b) Write a shell-script that takes a command line argument and reports on whether it is a directory, a file or something else.	**350.4**
9	Implement deadlock avoidance algorithm.	**350.5**
10	Implement Round Robin Scheduling algorithm.	**350.5**

CONTINUOUS INTERNAL ASSESSMENT

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

LEARNING WEBSITES

1. http://www.tutorialspoint.com/unix_terminal_online.php
2. http://www.nitttrchd.ac.in/sitenew1/nctel/comp_sc.php

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C340.1	3	-	3	3	-	3	3	3	3	2
C340.2	3	-	3	3	-	3	3	3	3	2
C340.3	3	-	3	3	-	3	3	3	3	2
C340.4	3	-	3	3	-	3	3	3	3	2
C340.5	3	-	3	3	-	3	3	3	3	2
Total	15	-	15	15	-	15	15	15	15	10
Correlation level	3	-	3	3	-	3	3	3	3	2

Correlation level 1 – Slight(low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

CTC 360 C PROGRAMMING PRACTICAL

Scheme Of Instruction And Examination

No. Of Weeks / Semester: 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/Week	Hours/Semester	Continuous Assessment	Semester End Examination	Total	Duration
CProgramming Practical	6	90	25	75	100	3 Hrs

SchemeOfValuation

WritingAnyOneProgramFromPartA	10Marks
WritingAnyOneProgramFromPart B	15Marks
ExecutingProgram(Part–A)	15Marks
ExecutingProgram(Part–B)	20Marks
ResultWithPrintout(Part–A)	5Marks
ResultWithPrintout(Part–B)	5Marks
Viva-Voce	5Marks
Total	75Marks

Note: Student: Computer Ratio In Lab Should Be Strictly 1:1

COURSE DESCRIPTION

The Diploma in C Programming introduces the important concepts such as working with data, What program flow is, and using functions, methods and routines.This course will be of great interest to IT,software and computer professionals who would like a greater knowledge of understanding of the c programming language and key concepts and features.

OBJECTIVES

At The End Of The Course, The Students Will Be 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.

Course	Statement

After successful completion of this course, the students should be able to	
C360.1	Analyze The Given Problem
C360.2	Think The Logic To Solve The Given Problem
C360.3	Write Programs Using Command Constants, Variables, Data Types And Operators
C360.4	Write Programs Using Different Looping And Branching Statements.
C360.5	Write Programs Based On Arrays, String Handling Functions, Structures And Union and pointers

CTC 360 C PROGRAMMING PRACTICAL

Part – A

S.NO	NAME OF THEEXPERIMENT	COURSE OUTCOME
1.	Write a simple C program. a. Print your name and address. b. Find simple and compound interest	**360.1**
2	Write a C program to swap two variable's using(i)third variable and(ii) without using a third variable.	**360.1**
3	Write a program to convert a given number of days into months and days using integer arithmetic operators.	**360.3**
4	Write a program the use of variables in expression and their evaluation.	**360.3**
5	Write a program converts the given temperature in Fahrenheit to Celsius using preprocessor	**360.3**
6	Write a program to find the largest number between given three numbers	**360.3**
7	Write a program to perform following tasks a. Find factorial of a number b. Print prime numbers up N times.	**360.4**
8	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.	**360.4**
9	Write a program using the function power (a,b) to calculate the value of a raised to b.	**360.4**
10	Write a program to find the length of the given string using pointers.	**360.5**
	PART – B	
1	Read an integer number, find the number of digit and sum of all individual digits and also print the above number in reverse order.	**360.2**
`2	Write a program to perform following tasks a. Print Fibonacci series up to N terms and its sum. b. Print whether a given year is leap or not.	**360.2**
3	Read a sentence through command line argument. Write a program to write out the string arguments to main in reverse order.	**360.2**
4	Write a program to arrange the given N names in alphabetical order.	**360.2**
5	Write a program to count the numbers and chars in the string.	**360.5**
6	Write a program that uses a function to sort an array of integers.	**360.5**
7	Write a program to calculate the subject wise and student wise totals and store them as a part of the structure.	**360.5**
8	Write a program to read 10 values to an array variable. Use pointers to locate and display each value.	**360.5**
9	Write a program that uses a table of integers whose size will be specified interactively at run time.	**360.5**
10	Write a program to store a character string in a block of memory space created by MALLOC and then modify the same to store a larger string	**360.5**
11	Write a program to find if a number is even or odd.	**360.2**
12	Write a program to find if a student's result is "pass" or "Fail" based on marks.	**360.2**

Hardware Requirement

- Desktop Computers – 36 Nos
- Laser Printer – 4 Nos

Software Requiremntc – Compiler With Editor

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1. http://www.nitttrchd.ac.in/sitenew1/nctel/comp_sc.php
2. https://www.w3resource.com/c-programming-exercises/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C340.1	3	3	-	-	-	3	3	3	3	2
C340.2	3	3	-	-	-	3	3	3	3	2
C340.3	3	3	-	-	-	3	3	3	3	2
C340.4	3	3	-	-	-	3	3	3	3	2
C340.5	3	3	-		-	3	3	3	3	2
Total	15	15	-	-	-	15	15	15	15	10
Correlation level	3	3	-	-	-	3	3	3	3	2

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 370 COMPUTER APPLICATIONSPRACTICAL

Scheme Of Instruction And Examination

No. Of Weeks Per Semester: 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/Week	Hours/Semester	Continuous Assessment	Semester End Examination	Total	Duration
Computer Applications Practical	4	60	25	75	100	3 Hrs

Scheme Of Valuation

1. Semesterendexamination–75 Marks

Content	Max.Marks
Writing Procedure – One Question From Section A	15
Demonstration	15
Results With Printout	5
Writing Procedure – One Question From Section B	15
Demonstration	15
Results With Printout	5
Viva Voce	5
Total	**75 Mark**

COURSE DESCRIPTION

The Application Of Computer Knowledge Is Essential The Students Of All Disciplines Of Engineering In Addition To Their Respective Branch Of Study. The Computer Application Practical Course Facilitates The Necessary Knowledge And Skills Regarding Creating, Working And Maintaining The Documents And Presentation Of Documents With Audio Visual Effects In A Computer And Produces Necessary Skills In E- Learning And Chatting Tools.

OBJECTIVES:

On Completion Of The Following Exercises, The Students Will Be Able To

- Use The Gui Operating Systems
- Familiarize And Customize The Desktop
- Use The Different Facilities Available In The Word Processor
- Prepare Power Point Presentation With Different Formats
- Expose E-Learning Tools And Chatting Tools
- Analyze The Datasheet
- Create And Manipulate The Database
- Create Different Types Of Charts
- Prepare Powerpoint Presentation
- Understand Internet Concepts And Usage Of E-Mail

Guidelines:

- All The Experiments Given In The List Of Experiments Should Be Completed And All The Experiments Should Include For The End Semester Practical Examination.
- The Computer Systems Should Be 1:1ratio For Practical Classes.

Course	Statement
After successful completion of this course, the students should be able to	
C370.1	Understand Use The Gui Operating Systems
C370.2	Use The Different Facilities Available In The Word Processor Prepare Power point Presentation
C370.3	Analyze The Datasheet
C370.4	Create And Manipulate The Database
C370.5	Understand Internet Concepts And Usage Of E-Mail

CTC 370 COMPUTER APPLICATIONSPRACTICAL

Syllabus
Lab Exercises
Section – I

Graphical Opearting System

Introduction To GuiOs; Features And Various Versions Of GuiOs& Its Use; Working With GuiOs; My Computer & Recycle Bin ; Desktop, Icons And Explorer; Screen Description & Working Styles Of GuiOs; Dialog Boxes & Toolbars; Working With Files & Folders; Simple Operations Like Copy, Delete, Moving Of Files And Folders From One Drive To Another, Shortcuts &Auto Start; Accessories And Windows Settings Using Control Panel- Setting Common Devices Using Control Panel, Modem, Printers, Audio, Network, Fonts, Creating Users, Internet Settings, Start Button & Program Lists; Installing And Uninstalling New Hard Ware & Software Program On Your Computer -Copying In Cd/Dvd Settings – Recording Audio Files.

Exercises

<table>
<tr><th>S.NO</th><th>NAME OF THEEXPERIMENT</th><th>COURSE OUTCOME</th></tr>
<tr><td>1.</td><td>1. a. Installing screen saver and change the monitor resolution by 1280X960
b. Setting wall papers
c. Creating, moving, deleting and renaming a folder
d. Copy, paste and cut a folder/file
e. Displaying the properties for a file or folder</td><td>370.1</td></tr>
<tr><td>2.</td><td>2. a. Restoring files and folders from Recycle bin
b. Creating short cuts for folder/file
c. Finding a file or folder by name
d. Selecting and moving two or more files/folders using mouse
e. Sorting folders/files.</td><td>370.1</td></tr>
<tr><td>3.</td><td>3. Create the following table and perform the operations given below
<table>
<tr><th>DAYS</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th></tr>
<tr><td>MON</td><td></td><td>TEST</td><td></td><td>A: JPP
B:RDBMS</td><td></td><td>CA</td><td>RDBMS</td></tr>
<tr><td>TUE</td><td>CA</td><td>OOP</td><td>CN</td><td>RDBMS</td><td></td><td>A: RDBMS
B: JPP</td><td></td></tr>
</table></td><td>370.2</td></tr>
</table>

	WED	CN RDBMS OOPS COMMUNICATION CN CA	
	THU	OOP **A**: JPP **B**: RDBMS COMMUNICATI ON CA RDBMS CN OOP	
	FRI	OOP CN RDBMS CA	
	SAT	OOPS RDBMS CN CA	
4.	4. Create a standard covering letter and use mail merge to generate the customized letters for applying to a job in various organizations. Also, create a database and generate labels for the applying organizations.		**370.2**
5.	5. Create a news letter of three pages with two columns text. The first page contains some formatting bullets and numbers. Set the document background colour and add 'confidential' as the watermark. Give the document a title which should be displayed in the header. The header/ footer of the first page should be different from other two pages. Also, add author name and date/ time in the header. The footer should have the page number.		**370.2**
6.	**Exercises** 6. Create a result sheet containing Candidate's Register No., Name,Marks for six subjects. Calculate the total and result. The result must be calculated as below and failed candidates should be turned to red. Result is Distinction if Total >= 70 % First Class if Total > = 60 % and < 70 % Second Class if Total >= 50 % and < 60 % Pass if Total >= 35 % and < 50 % Fail otherwise Create a separate table based on class by using auto filter feature		**370.3**
7.	7. Create a table of records with columns as Name and Donation Amount. Donation amount should be formatted with two decimal places. There should be at least twenty records in the table. Create a conditional format to highlight the highest donation with blue color and lowest donation with red colour. The table should have a heading.		**370.3**

8	8. Create line and bar chart to highlight the sales of the company for three different periods for the following data. **SALES BAR CHART** **Period** / **Product1** / **Product 2** / **Product 3** / **Total** JAN / 35 / 40 / 50 / 125 FEB / 46 / 56 / 40 / 142 MAR / 70 / 50 / 40 / 160	**370.3**

SECTION – II

DATABASE

Introduction – Menus – Tool bar – Create – Edit – Save – Data types – Insert – Delete – Update – View – Sorting and filtering – Queries – Report – Page setup – Print.

S.NO	NAME OF THEEXPERIMENT	COURSE OUTCOME
9	Create Database to maintain at least 10 addresses of your class mates with the following constraints • Roll no. should be the primary key. • Name should be not null	**370.4**
10	Create a student's table with the following fields: Sr.No,Reg.No,Name,Marks in 5 subjects. Calculate total and percentage of 10 students. Perform the following queries. i. To find the details of distinction student ii. To find the details of first class students iii. To find the details of second class students	**370.4**
11	Design a report for the above exercise to print the consolidated result sheet and mark card for the student.	**370.4**
12	Make a marketing presentation of any consumer product with at least 10 slides. Use different customized animation effects on pictures and clip art on any four of the ten slides.	**370.2**
13	Create a Presentation about our institution or any subject with different slide transition with sound effect.	**370.2**
14	**Exercises** Create an e-mail id and perform the following ▪ Write an e-mail inviting your friends to your Birthday Party. ▪ Make your own signature and add it to the e-mail message.	**370.5**

	▪ Add a word attachment of the venue route ▪ Send the e-mail to at least 5 of your friends.	
15	Create a presentation on Google docs. Ask your friend to review it and comment on it. Use "Discussion" option for your discussions on the presentation.	**370.5**
16	Create a photo album in PowerPoint.	**370.5**
17	Find out the direction and distance about road travel from Delhi to Agra using google maps. Also make a report of the Map and other details like places of interest / Hotels to stay. Write your experience and create this as a blog	**370.5**

Hardware and Software Requirements

Hardware Requirements:

- Computers – 36Nos
  Intel Core i3 Processor
  500 GB Hard Disk, 2 MB RAM
  14" Monitor
- Projector – 1 Nos
- Laser Printer – 1 No
- Internet Connection – Minimum of 512 KB

Software Requirement

- Any GUI Operating System
- Open Source Software / MS- Office

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1. http://www.nitttrchd.ac.in/sitenew1/nctel/comp_sc.php
2. https://www.w3resource.com/c-programming-exercises/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C340.1	3	3	-	-	-	-	3	3	3	3
C340.2	3	3	-	-	-	-	3	3	3	3
C340.3	3	3	-	-	-	-	3	3	3	3
C340.4	3	3	-	-	-	-	3	3	3	3
C340.5	3	3	-	-	-	-	3	3	3	3
Total	15	15	-	-	-	-	15	15	15	15
Correlation level	3	3	-	-	-	-	3	3	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 Hrs **Max.Marks :75**

PART-A (5x2=10Marks)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	Define Current?	II	R
2	What Is Transformer?	III	R
3	Define-N Type Semi Conductor?	IV	R
4	Define-P Type Semi Conductor?	I	U
5	Define -Ascii Code.	III	R
6	Define – Bcd Code.	IV	R
7	Define flip – flop.	V	R
8	Define register	V	R

PART – B (5X3=15 MARKS)			
Note : (i) Answer any Five Questions out of which question (ii) All questions carry equal marks		Unit	Blooms Level
9	Define RMS value?	I	R
10	State any two advantages of ac over dc?	I	R
11	State the need for UPS?	II	R
12	State the need for earthing?	II	U
13	Define diode?	III	AP
14	What is combinational logic circuit.?	IV	R
15	Define – multiplexer.	V	R
16	Define modulo counters	V	R

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question			Unit	Blooms Level	Max Marks
17	A	i)Briefly explain the care and maintenance of lead acid battery? (ii) Explain the term (i) Form factor (ii) Peak factor	I	AP	10
		[OR]			
	B	i) Define the following terms (i) Voltage (ii) current (iii) Power (iv) resistance (ii)Explain the specification and ratings of UPS	I	AN	10
18	A	Explain the construction and working of stepper motor?	II	AN	10
		[OR]			
	B	i) Explain the plate and pipe earthing? (ii)With a diagram explain transistor as a switch	II	AN	10
19	A	Explain the working principle of semiconductor diode.	III	AP	10
		[OR]			

	B	Explain the working of a decoder circutes with suitable sketches	III	AP	10
20	A	With the logic diagram explain the operation of 4 bit ripple counter	IV	AP	10
		[OR]			
	B	(i) Explain ASCII codes. (ii) Explain duality theorem..	IV	AP	10
21	A	Draw the logic diagram of 4 bit synchronous counter & explain its operation.	V	R	10
		[OR]			
	B	(i) Explain mod n counter. (ii)Explain race condition in flip- flops..	V	R	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 320 OPERATING SYSTEMS

Time : 3 Hrs Max.Marks :75

PART-A(5x2=10Marks)				
Answer any Five Questions				
S.NO			Unit	Blooms Level
1		Define system call.	I	R
2		What is booting?	I	R
3		Draw the structure of PCB.	II	R
4		Define threads.	II	R
5		Define memory management.	III	R
6		List the security threads.	III	R
7		Who developed linux ?	IV	R
8		What are the three levels of file security?	V	R
PART – B (5X3=15 MARKS)				
Answer any Five Questions out of which question			Unit	Blooms Level
9		What are the operating system components.?	II	R
10		List the different process states.	II	R
11		Define semaphore.	I	U
12		What is segmentation.?	II	R
13		What is paging .?	III	U
14		Expand the terms FCFS and SSTF.	III	R
15		What is meant by authentication.?	III	R
16		Define mounting and unmounting.	IV	R
PART –C (5X 10 =50 MARKS)				
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max Marks
17	A	Briefly explains the generation of operating system	I	R	10
		[OR]			
	B	(i) Explain the concept of virtual machine. (ii) Explain any four operating system services	I	AP	10
18	A	(i) Explain the benefits of threads. (ii)Explain (a) circuital section (b) mutual exclution	II	R	10
		[OR]			
	B	(i) Give the dead lock characteristics. (ii)Explain round robin scheduling with example	II	R	10
19	A	Discuss internal and external fragmentation.	III	U	10
		[OR]			
	B	(i) Explain the basic concept of virtual memory. (ii) List the disadvantages of paging.	III	U	10
20	A	Explain the concept of RAID.	IV	U	10
		[OR]			
	B	(i) Describe tree structure directory (ii)Discuss any two authentication methods	IV	U	10

21	A	With diagram explain the linux architecture	V	R	10
		[OR]			
	B	(i) Explain the three levels of security in linux. (ii)List the different process scheduling information	V	R	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 330 C PROGRAMMING

Time : 3 Hrs Max.Marks :75

PART – A (5X2=10 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	Define algorithm?	I	U
2	Define keyword?	I	U
3	Define array?	II	U
4	How to declare a string?	II	U
5	What is meant by lifetime of variable?	III	U
6	What is meant by scope of variable?	III	U
7	Syntax or General form of malloc.	IV	U
8	Define fseek() function?	V	U
PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	What is the use of printf function?	I	R
10	What is the use of break statement?	II	R
11	Write some string manipulation function.	II	U
12	What is the use of return statement?	III	U
13	What is meant by void function?	III	U
14	How to assign the address to variable?	IV	U
15	Give the general form of opening a file?	V	U
16	Give the general form of #if def...#end if?	V	U

PART –C (5X 10 =50 MARKS)

Answer all the question choosing sub- division (A) or Sub division (B) of each question.

			Unit	Blooms Level	Max Marks
17	A	(i) List the features of good programming languages? (ii) Write any three features of C-language	I	R	10
		[OR]			
	B	(i) Explain type casting and its types. (ii)Difference between exit control loop and entry control loop with example?	I	R	10
18	A	Explain switch ... case with example.	II	R	10
		[OR]			
	B	(i) Explain one-D array. (ii)Explain string handling functions.	II	R	10
19	A	(i) Explain any three functions in stdio.h with example. (ii)Give the difference between array and structure	III	U	10
		[OR]			
	B	Explain structure definition with example.	III	U	10

20	A	Define pointer and give its advantages	IV	U	10
		[OR]			
	B	Explain increment and scale factor in pointers.	IV	R	10
21	A	(i) Explain file inclusion? (ii)Define a file. How a file in opened and closed?	V	U	10
		[OR]			
	B	Explain the use of command line arguments?	V	U	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 410 COMPUTERARCHITECTURE

Teaching And Scheme Of Examination

No. of weeks per Semester 15 Weeks

Course	Instruction		Examination			
	Hours / Week	Hours /Semester	Continuous Assessment	Semester End Examination	Total	Duration
Computer Architecture	4	60	25	75	100	3Hrs

Topics And Allocation of Periods

UNIT	TOPIC	HOURS
I	Register Transfer Logic And CPU	12
II	Input – Output Module	10
III	Memory Module	8
IV	Arithmetic Algorithm	09
V	Introduction To Microprocessor And Advanced Processors	09
	Revision and Test	12
	TOTAL	60

COURSE DESCRIPTION

Diploma in Computer Engineering have to be conversant with computer, its terminology and functioning. Computer Architecture is concerned with the structure and behavior of the various functional modules of the computer and their interaction, the course provides the necessary understanding of the hardware operation of digital computers.

OBJECTIVES

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

- Know the fundamental blocks of computer
- Realize the function of I/O in different operation modes
- Use of I/O processor
- Know about different memory types and their operations
- Study about the fundamental blocks of CPU
- Know about the computer arithmetic
- Study the different processors.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C410.1	Understand register transfer logic and CPU components ,control unit functions
C410.2	Understand the Input Output module functioning
C410.3	Able to know the memory types
C410.4	Understand the microprocessor.
C410.5	Learn the different microprocessor architecture

CTC 410 COMPUTER ARCHITECTURE

UNIT I REGISTER TRANSFER LOGIC AND CPU		**12 Hrs**
1.1	**Register transfer:** Register Transfer Language-	1 Hr
	Inter Register transfer –control function-Bus transfer-memory transfer	2 Hrs
1.2	**Micro operations and ALU:** Arithmetic micro operations-Binary adder-subtractor,incrementer,4 bit arithmetic circuit, Logic micro operations-	2 Hrs
	One stage of logic circuit-applications, shift micro operations- 4 bit combinational circuit shifter-one stage of ALU	2 Hrs
1.3	**Central processing unit:** components of CPU- General register organization, bus system-	1 Hr
	register set with common ALU-memory stack - stack limits,Instruction format(3,2,1,0 address instructions)	2 Hrs
1.4	**Control unit:** structure of control unit-fetch cycle, indirect cycle, Execute cycle, interrupt cycle, instruction cycle.	1 Hr
1.5	Assembly language, Addressing modes	1 Hr
UNIT II INPUT – OUTPUT MODULE		**10Hrs**
2.1	**Input output Interface** : Need for I/O interface, I/O bus and interface, I/O commands, Example of I/O interface	2 Hrs
2.2	**Asynchronous data transfer**-strobe control, handshaking,	1 Hr
	Asynchronous serial transfer, Asynchronous communication interface	2 Hrs
2.3	**Modes of transfer**- Programmed I/O,Interrupt initiated I/O-vectored interrupt ,	2 Hrs
	non-vectored interrupt, Priority interrupt, Interrupt controller	1 Hr
	DMA–DMA controller, DMA transfer	1 Hr
2.4	**I/O Processor**: CPU-IOP communication. Serial communication	1 Hr
UNIT III MEMORY MODULE		**08 Hrs**
3.1	**Memory types:** CPU registers, Main memory, Secondary memory, Cache	1 Hr
3.2	**Main Memory:** ROM, RAM, Memory address map, memory connection to CPU	2 Hrs
3.3	**Secondary Memory:** Magnetic tape , Magnetic Disk	1 Hr
3.4	**Cache:** Need for cache memory, operational principle, Cache initialization, Different mapping techniques, Writing into cache.	2 Hrs
3.5	**Memory Management : Virtual memory concept-virtual address, physical address, memory table for mapping a virtual address,**	**1 Hr**
	address mapping using pages, Associative memory page table, Page replacement technique	**1 Hr**
UNIT IV MICROPROCESSORS AND PARALLEL PROCESS		**09Hrs**
4.1	**Microprocessor**: Block diagram of 8086-registers: segment registers,	2 Hrs
	address: effective address, flag registers and application of microprocessor	1 Hr

4.2	**Parallel processing:** types of parallel processing systems.	2 Hrs
	Parallel organizations	1 Hr
4.3	**Pipe Lining**: instruction pipeline, arithmetic pipeline,	2 Hrs
	pipelining in super scalar processors	1 Hrs
UNIT V ARCHITECTURE AND CONCEPTS OF ADVANCED PROCESSORS		**09 Hrs**
5.1	**Symmetric Multiprocessors:** Organizations, a mainframe	2 Hrs
5.2	**Multithreading and clusters:** Implicit and explicit multi threading, cluster configuration	2 Hrs
5.3	**NUMA and vector**: NUMA organizations and	1 Hr
	approaches to vector computation	1 Hr
5.4	**Multi Core :** Multicore organization	2 Hrs
5.5	Data Hazards, Instruction Hazards	1 Hr

TEXT BOOK

Sl.No.	TITLE	AUTHOR	PUBLISHER&EDITION	
1	COMPUTER SYSTEM ARCHITECTURE	M.MORRIS MANO	Prentice –Hall of India Pvt Limited	THIRD EDITION
2	COMPUTER ORGANIZATION AND ARCHITECTURE designing for performance	William Stallings	Pearson Publications.	Eighth Edition

REFERENCE BOOKS

Sl.No	TITLE	AUTHOR	PUBLISHER&EDITION	
1	Computer Organization	V.carlHamacher, ZvonkoG.Vransic, SafgatG.Zaky	McGraw-Hill International Editions-Computer science series	Fifth Edition
2	Computer Organization and Design	David A. Patterson and John L. Hennessey	Morgan Kauffman / Elsevier	Fifth edition
3	Computer Architecture and Organization	John P. Hayes	Tata McGraw Hill	Third Edition

LEARNING WEB SITES

1.https://trove.nla.gov.au/work/5496832
2.https://www.amazon.in/Computer-Organization-Design-Patterson/dp/8131222748

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

Total		-	**25 Marks**

Co-Pos&Pos Mapping Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C410.1	3	3	3	-	-	-	-	3	3	3
C410.2	3	3	3	-	-	-	-	3	3	3
C410.3	3	3	3	-	-	-	-	3	3	3
C410.4	3	3	3	-	-	-	-	3	3	3
C410.5	3	3	3	-	-	-	-	3	3	3
Total	15	15	15	-	-	-	-	15	15	15
Correlation level	3	3	3	-	-	-	-	3	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)	
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create	
% to be included	90%	10%	

CTC 420 COMPUTER NETWORKS AND SECURITY

Teaching and Scheme Of Examination

No. of weeks / Semester 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
ComputerNetworks and Security	4	60	25	75	100	3Hrs

Topics And Allocation of Hours

UNIT	TOPIC	HOURS
I	DATA COMMUNICATIONS	10
II	OSI MODEL AND LAN PROTOCOLS	10
III	TCP/IP SUIT	10
IV	NETWORK SECURITY	09
V	APPLICATIONS OF NETWORK SECURITY	09
	REVISION AND TEST	12
	TOTAL	60

COURSE DESCRIPTION

The exponential growth of Engineering and Technology particularly information and communications engineering has benefited the day-today life of entire mankind in all respects. The research and developments are continually happening in this field to fine tune and improve
the field particularly also in Computer Networks and Security which directly or indirectly has impact on every man's daily life. As such the introduction of current and future trends and technology of computer networks and security would strengthen the knowledge and skills of engineering community in taking one-step further the prosperity of mankind.

OBJECTIVES

- Understand the concept of data communication.
- Discuss the advantages and disadvantages of different network topologies.
- Know different network classification based on different category.
- Study about different networking devices and their practical usages.
- Understand the different layers of OSI and their functions.
- Compare different LAN protocols.
- Study about ISDN and FDDI concepts and its applications.
- Identify the protocols used in TCP /IP and compare with OSI model.
- Know the IP addressing and TCP/ IP protocols briefly.

- 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.
- Discuss about Network Security Applications.
- Know the applications of Network Security.
- Discuss about VPN and Firewalls.
- Identify the Wireless Security Issues.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C420.1	Understand the fundamentals of data communication
C420.2	Know about different protocols and OSI layers
C420.3	Understand TCP/IP protocol connections and IP addressing
C420.4	Know about the basics of Networks security
C420.5	Able to know the applications of Network Security Techniques.

	UNIT I - DATA COMMUNICATIONS	**10 Hrs**
1.1	**Data Communication:** Fundamentals of communication - Components of a data communication – Data flow: Simplex – Half duplex – Full duplex; Networks – Network criteria–	1 Hr
	Types of Connections: Point to point – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages and Disadvantages of each topology.	1 Hr
1.2	**Types of Networks:** Need for computer Networks - LAN – MAN – WAN –CAN – HAN –Internet –	1 Hr
	Intranet – Extranet , Client-Server, Peer to Peer Networks.	1 Hr
1.3	**Transmission Media** : Characteristics of Transmission Media – Classification of transmission media - Guided – Twisted pair – Coaxial – Fiber optics –	2 Hrs
	Unguided – Radio waves – Infrared – Low Orbit satellite (LOS) – VSAT –Cabling and Standards	1 Hr
1.4	**Network devices:** Features and Concepts of Switches –	1 Hr
	Routers (Wired and Wireless) –Gateways.	1 Hr
1.5	Congestion Control Data Traffic, Traffic descriptor, Traffic Portion, open – loop congestion Control Closed loop congestion Control	1 Hr

	UNIT II OSI MODEL AND LAN PROTOCOLS	**10 Hrs**
2.1	**Network Models:** Protocol definition - Standards - OSI Model – Layered architecture–Functions of all layers.	2 Hrs
	802.X Protocols : Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) –Token ring (802.5) –	2 Hrs
	Ethernet – Types of Ethernet (Fast Ethernet, gigabit Ethernet) –	1 Hr

	Comparison between 802.3, 802.4 and 802.5	
2.3	**FDDI:** Frame format – Advantages and disadvantages of FDDI.	2 Hrs
2.4	**Switching:** Definition **–** Circuit switching –	1 Hr
	Packet switching – Message switching	1 Hr
2.5	**I S D N** : Concepts– Services – Broad Band ISDN	1 Hr

UNIT III TCP/IP SUIT **10 Hrs**

3.1	**Overview of TCP / IP:** OSI & TCP/IP – Transport Layer Protocol– Connection Oriented and Connectionless Services –	2 Hrs
	Sockets - TCP & UDP	1 Hr
3.2	**Network Layers Protocol:** IP – Interior Gateway Protocols (IGMP, ICMP,ARP, RARP Concept only).	2 Hrs
3.3	**IP Addressing :** Dotted Decimal Notation –Subnetting&Supernetting –	2 Hrs
	VLSM Technique-IPv6 (concepts only)	1 Hr
3.4	**Application Layer Protocols:** FTP– Telnet – SMTP– HTTP – DNS – POP.	2 Hrs

UNIT IV NETWORK SECURITY **09Hrs**

4.1	Introduction to Network security: Definition – Need for security – Principles of Security – Attacks – Types of Attacks –	1 Hr
	Criminal attacks – Legal Attacks –Passive and Active attacks – Security Services – Security Mechanisms.	1 Hr
4.2	Cryptography: Definition – Symmetric Encryption principles – Symmetric Block Encryption Algorithms – DES, AES – Stream ciphers – RC4 – Digest function –	2 Hrs
	Public key Cryptography Principles—RSA-Diffe-Hellman algorithm– Digital Signature(Definition only)	1 Hr
4.3	Network Security Application: Authentication applications – Kerberos (concepts only) - Overview- Motivation –Encryption Techniques	2 Hrs
4.4	Internet Security: Email security – PGP - S/MIME - IP security – Overview – IP Security Architecture	1 Hr
	Web security - SSL, TLS ,SET (Concepts only)	1 Hr

UNIT – V APPLICATIONS OF NETWORK SECURITY **09 Hrs**

5.1	Introduction to network security : Definition and Basic concepts-Basic concepts of RAID levels(0,1,2,3,4,5).	2 Hrs
5.2	Hackers Techniques: Historical hacking techniques & open sharing-Bad	1 Hr
	Passwords-	
	Advanced Techniques- Viruses-worms-Trojan horses-SPAM	1 Hr
5.3	Security Mechanism : Introduction – Types of Firewalls – Packet filters –	2 Hrs
	Application gate ways – Limitations of firewalls.	
5.4	Intrusion: Intruders– Intruder detection – Classification of Intruder Detection systems –Honey pots.	1 Hr
5.5	Wireless Security Issues: Definition and Types -Transmission Security,	1 Hr
	Authentication ,WLAN Detection,	

Eaves Dropping, Active Attacks, WEP Definition and Features. 1 Hr

Revision and Test 12Hrs

TEXT BOOK

Sl.No.	TITLE	AUTHOR	PUBLISHER&EDITION	
1	Data Communication and networking	Behrouz A.Forouzen	TataMcGraw-Hill,New Delhi	Fifth Edition
2	Network Security Essentials	William Stallings	Pearson Publications.	Fifth Edition
3	CRYPTOGRAPHY AND NETWORK SECURITY	William Stallings	Pearson Publications.	Sixth Edition

REFERENCE BOOKS

Sl.No.	TITLE	AUTHOR	PUBLISHER&EDITION	
1	Computer Communication Networks	AchyutS.Godbole	TataMcGraw-Hill,New Delhi	
2	Computer Networks	Andrew S.Tanenbaum	Pearson Publications.	Fifth edition
3	CRYPTOGRAPHY AND NETWORK SECURITY	BehrouzA.Forouzen	TataMcGraw-Hill,New Delhi.	ThirdEdition

LEARNING WEB SITES

- **https://books.google.co.in/books/about/Computer_Communication_Networks.html?id=UQFHAAAAYAAJ**
- **https://dl.acm.org/citation.cfm?id=1209579**

CONTINUOUS INTERNAL MARKS

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C420.1	3	3	3	3	-	3	3	3	3	3
C420.2	3	3	3	3	-	3	3	3	3	3
C420.3	3	3	3	3	-	3	3	3	3	3
C420.4	3	3	3	3	-	3	3	3	3	3
C420.5	3	3	3	3	-	3	3	3	3	3
Total	15	15	15	15	-	15	15	15	15	15
Correlation level	3	3	3	3	-	3	3	3	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills	
Taxonomy		(HOTs)	
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create	
% to be included	90%	10%	

CTC 430 OBJECT ORIENTED PROGRAMMING WITH JAVA

Teaching and Scheme Of Examination

No. of weeks / Semester 15 Weeks

Subject	Instruction		Examination			
	Hours/Week	Hours/Semester	Continuous Assessment	Semester End Examination	Total	Duration
Object Oriented Programming with Java	6	90	25	75	100	3Hrs

Topics And Allocation of Hours

UNIT	TOPIC	TIME(HRS)
I	INTRODUCTION TO OOPS AND JAVA	15
II	CONTROL STRUCTURES, ARRAYS, AND VECTORS	13
III	STRINGS, CLASSES AND INTERFACES	18
IV	PACKAGES, APPLETS AND AWT CONTROLS	15
V	EXCEPTION HANDLING, MULTITHREADS AND I/O STREAMS	17
	TEST & REVISION	12
	TOTAL	90

COURSE DESCRIPTION

Today almost every branch of computer science is feeling presence of object - orientation. Object oriented technology is successfully incorporated in various fields of computer science. Since its arrival on the scene in 1995, the Java has been accepted as one of the primary programming language. This subject is designed to give you exposure to basic concepts of object – oriented technology. This subject will help in learning to write programs in Java using object – oriented paradigm. Approach in this subject is to take Java as a language that is used as a primary tool in many different areas of programming work.

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.
- Handle the errors using exceptions.
- Understand the concepts of multithreading.
- Develop multithreaded programs in Java.
- Define stream and list the types of streams.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C430.1	Understand the concepts of object oriented programming and its applications
C430.2	Able to know the control structures ,array and vectors
C430.3	Understand the string class and methods
C430.4	Create packages, applets using object oriented programming language.
C430.5	Understand the concepts of multithreading

CTC 430 OBJECT ORIENTED PROGRAMMING WITH JAVA

	UNIT I INTRODUCTION TO OOPS AND JAVA	**15 Hrs**
1.1	**Introduction to OOPS**: Paradigms of Programming Languages - Basic concepts of Object Oriented Programming –	2 Hrs
	Differences between Procedure Oriented Programming and Object Oriented programming - Objects and Classes –	2 Hrs
	Data abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic binding, Message communication –	2 Hrs
	Benefits of OOP – Application of OOPs.	2 Hrs
1.2	**Java :**History – Java features – Java Environment – JDK – API.	2 Hrs
1.3	**Introduction to Java :** Types of java program – Creating and Executing a Java program –	2 Hrs
	Java Tokens: Keywords, Character set, Identifiers, Literals,Separator –	2 Hrs
	Java Virtual Machine (JVM) – Command Line Arguments – Comments in Java program	1 Hr
	UNIT II CONTROL STRUCTURES, ARRAYS, AND VECTORS	**13Hrs**
2.1	Elements: Constants – Variables – Data types - Scope of variables –	2 Hrs
	Type casting –Operators: Special operators –	1 Hr
	Expressions – Evaluation of Expressions	1 Hr
2.2	Decision making and Branching: Simple if statement – if – else statement –Nesting if – else –	2 Hrs
	else if Ladder – switch statement –Decision making and Looping: While loop – do – While loop - for loop –	2 Hrs
	break – labeled loop –continue Statement.	1Hr
2.3	Arrays: One Dimensional Array – Creating an array – Array processing – Multidimensional Array-	2 Hrs
	Vectors – Array List – Advantages of Array List over Array Wrapper classes	2Hrs
	UNIT III STRINGS, CLASSES AND INTERFACES	**18Hrs**
3.1	Strings: String Array – String Methods –	2 Hrs
	String Buffer Class	1 Hr
3.2	Class and objects: Defining a class – Methods – Creating objects –	2 Hrs
	Accessing class members –Constructors –	2Hrs
	Method overloading –Static members —	1 Hr
	Nesting of Methods - this keyword – Command line input	2 Hrs
3.3	Inheritance: Defining a subclass – Deriving a sub class – Single Inheritance –Multilevel Inheritance – Hierarchical Inheritance-	2Hrs
	Overriding methods – Final variables and methods – Final classes – Final methods -	2Hrs
	Abstract methods and classes – Visibility Control: Public access, Private access, friend, protected. protected. I	2 Hrs

	Interfaces: Multiple Inheritance - - Defining interface – Extending interface - Implementing Interface - Accessing interface variables	2 Hrs
	UNIT IV PACKAGES, APPLETS AND AWT CONTROLS	**15Hrs**
4.1	**Packages:** Java API Packages – System Packages – Naming Conventions –	2 Hrs
	Creating & Accessing a Package – Adding Class to a Package – Hiding Classes	2 Hrs
4.2	**Applets:** Introduction – Applet Life cycle – Creating & Executing an Applet –	2 Hrs
	Applet tags in HTML – Parameter tag – Aligning the display -	2Hrs
	Graphics Class: Drawing and filling lines – Rectangles – Polygon	2 Hrs
	Circles–Arcs – Line Graphs – Drawing Bar charts	2Hrs
4.3	**AWT Components and Even Handlers:** Abstract window tool kit – Event	1Hr
	Handlers – Event Listeners – AWT Controls and Event Handling: Labels –	
	Text Component – Action Event – Buttons – Check Boxes – Item Event – Choice – Scrollbars – Layout Managers- Input Events – Menus - Database Handling In Java:JDBC	2Hrs
	UNIT–V EXCEPTION HANDLING, MULTITHREADS AND I/O STREAMS	**17 Hrs**
5.1	**Exception Handling:** Limitations of Error handling – Advantages ofException Handling -	2 Hrs
	Types of Errors – Basics of Exception Handling –	2Hrs
	try blocks – throwing an exception – catching an exception – finally statement	2 Hrs
5.2	**Multithreading:** Creating Threads – Life of a Thread – Defining & Running Thread –	2 Hrs
	Thread Methods – Thread Priority –	1 Hr
	Synchronization –	1Hr
	Implementing Runnable interface – Thread Scheduling.	2 Hrs
5.3	**I/O Streams:** File – Streams – Advantages -	2 Hrs
	The stream classes – Byte streams –Character streams -	2 Hrs
	Overview and use of standard template library(STL).	1 Hr

TEXT BOOKS

Sl.No.	TITLE	AUTHOR	PUBLISHER&EDITION	
1	Programming with Java	E. Balagurusamy	TataMc-Graw Hill,New Delhi	5th Edition
2	Java, A Beginner's Guide	Herbert Schildt	Oracle Press	6th Edition

LEARNING WEB SITES

- **www.dcpehvpm.org/E-Content/BCA/BCA-II/JAVA/E51_Programming_With_Java_A_primer_3e_by_balagurusamy.pdf**

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C430.1	3	3	3	3	-	3	3	3	3	3
C430.2	3	3	3	3	-	3	3	3	3	3
C430.3	3	3	3	3	-	3	3	3	3	3
C430.4	3	3	3	3	-	3	3	3	3	3
C430.5	3	3	3	3	-	3	3	3	3	3
Total	15	15	15	15	-	15	15	15	15	15
Correlation level	3	3	3	3	-	3	3	3	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's	Lower Order Thinking Skills	Higher Order Thinking Skills	

Taxonomy	(LOTs)	(HOTs)	
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create	
% to be included	90%	10%	

CTC 440 DATA STRUCTURES USING C

Teaching and Scheme Of Examination

No. of weeks / Semester 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
DATA STRUCTURES USING C	5	75	25	75	100	3Hrs

TOPICS AND ALLOCATION OF HOURS

Unit No	Topic	Time(Hrs)
I	INTRODUCTION TO DATA STRUCTURES , ARRAYS AND STRINGSAND ARRAYS	13
II	STACKS , RECURSION AND QUEUES	13
III	LINKED LISTS	13
IV	TREES AND GRAPHS	13
V	SEARCHING , SORTING AND HASHING	11
	TEST AND REVISION	12
	TOTAL	75

COURSE DESCRIPTION

Data structures are the techniques of designing the basic algorithms for real-life projects. In the present era, it is very essential to develop programs and organize data in such a way that it solves a complex problem efficiently. Understanding of data structures is essential and this facilitates to acquire sound knowledge of the insight of hardware requirement to any problem base. The practice and assimilation of data structure techniques is essential for programming.

OBJECTIVES

- Define Linear and non-linear data structures.
- List and discuss the different types of linear data structures.
- Differentiate Stack and Queue
- Understand the Operations of Stack
- Explain the applications of stack
- Explain Linked lists and its implementation
- Define a tree and the different terms related with trees.
- Describe the different ways of traversing a binary tree.
- Discuss the various operations on Binary Search tree.
- Define graph terminologies and describe the different ways of traversing a graph.
- Write the algorithm for different types of sorting.
- Write the algorithm for different types of searching.
- Describe hash table and hash function.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C440.1	Apply to the concepts of data Structures
C440.2	Know the stacks and its operations, recursive function.
C440.3	Understand the Linked lists and its implementation
C440.4	Apply the different types of tree traversal.
C440.5	Execute the sorting techniques and describe the hash function.

CTC 440 DATA STRUCTURES USING C

13Hrs

UNIT – I. INTRODUCUTION TO DATA STRUCTURES , ARRAYS AND STRINGS

1.1	Introduction to Data Structures : Introduction - Data and Information – Elementary data structure organization - Types of data structures - Primitive and Non Primitive data structures –	1Hr
	Operations on data structures : Traversing, Inserting, Deleting, Searching, Sorting, Merging -	1Hr
	Different Approaches to designing an algorithm : Top-Down approach , Bottom-up approach -	1 Hr
	Complexity : Time complexity , Space complexity - Big 'O' Notation	1 Hr
1.2	ARRAYS: Introduction - Characteristics of Array - One Dimensional Array – Two Dimensional Arrays -	2 Hrs
	Multi Dimensional Arrays – Advantages and Disadvantages of linear arrays -	1 Hr
	Row Major order - Column Major order - Operations on arrays with Algorithms (searching, traversing, inserting, deleting -	2Hrs
	Pointer and Arrays – Pointers and Two Dimensional Arrays - Array of Pointers - Pointers and Strings – Implementation of arrays -	1Hr
1.3	Strings : Strings and their representations - String Conversion-	2Hrs
	String manipulation, String arrays - Recursion vs Iteration	1 Hr

UNIT – II STACKS , RECURSION AND QUEUES **13Hrs**

2.1	Definition of a Stack - Operations on Stack (PUSH & POP)- Implementing Push and Pop Operations -	2 Hrs
	Implementation of stack through arrays – Applications of Stack :Reversing a list - Polish notations -	2Hrs
	Conversion of infix to postfix expression - Evaluation of postfix expression - Algorithm for evaluating Infix to prefix expression.	2 Hrs
2.2	Recursion - Recursive definition – Algorithm and C function for : Multiplication of Natural numbers - Factorial Function -	2 Hrs
	GCD function - Properties of Recursive algorithms/functions – Advantages and Disadvantages of Recursion	1Hr
2.3	Queues: The queue and its sequential representation - implementation of Queues and their operations -	2 Hrs
	implementation of Circular queues and their operations -	1Hr
	Dequeue and Priority queues(Concepts only)	1Hr

UNIT – III LINKED LISTS **13Hrs**

3.1	Terminologies: Node, Address, Pointer, Information, Null Pointer, Empty list -	2 Hrs
	Type of lists : Singly linked list , Doubly linked list,	1Hr
	Circular list - Representation of singly linked lists in Memory-	1Hr
	Difference between Linked & sequential List – Advantages and Disadvantages of Linked list-,	2Hrs
	Operations on a singly linked list (only algorithm) : Traversing a singly linked list , Searching a singly linked list ,	2 Hrs

	Inserting a new node in a singly linked list (front, middle, end),	1Hr
	Deleting a node from a singly linked list (front, middle, rear) -	2 Hrs
	Doubly linked list, Circular linked lists (Concepts only, no implementations)	2 Hrs

	UNIT – IV TREES AND GRAPHS	**13 Hrs**
4.1	Trees: Terminologies: Degree of a node, degree of a tree, level of a node, leaf	1Hr
	node, Depth / Height of a tree,	
	In-degree & out-Degree, Path, Ancestor & descendant nodes-, siblings -	1Hr
	Type of Trees : Binary tree - List representation of Tree -	1Hr
	Binary tree traversal (only algorithm) : In order traversal , Preorder traversal , Post order traversal -	2 Hrs
	Expression tree – Binary Search Tree – Creation of a Binary Search tree without duplicate node-Red Black Trees	2 Hrs
4.2	Graphs : Introduction - Terminologies: graph, node (Vertices), arcs (edge),	1 Hr
	directed graph, in-degree, out-degree, adjacent, successor, predecessor, relation, weight, path, length -	2 Hrs
	Representations of a graph - Adjacency Matrix Representation - Adjacency List Representation -	2Hrs
	Traversal of graphs : Depth-first search (DFS) , Breadth-first search (BFS) - Applications of Graph	1Hr

	UNIT – V SORTING ,SEARCHING AND HASHING	**11Hrs**
5.1	Sorting Techniques : Introduction –	1Hr
	Algorithms and " C" programs for : Selection sort , Insertion sort, Bubble sort–	1Hr
	Algorithms only : Merge Sort ,Radix sort, Shell sort , Quick sort	1Hr
5.2	Searching : Introduction -	2 Hrs
	Algorithms and " C" programs for Linear search and Binary search	2 Hrs
5.3	Hashing : Hash tables –	1 Hr
	methods-Hash function -	2 Hrs
	Collision resolution techniques	1 Hr

TEXT BOOKS

S.no	Title	Author	Publisher & year ofPublishing/edition	
1	Data Structures	SeyMour Lipschutz	Schaum;s outlines, TMH Private Limited,New Delhi	Indian Adapted Edition 2006. 20th Reprint 2011
2	Data Structures With C	SeyMour Lipschutz	Schaum;s outlines, TMH Private Limited,	First Reprint 2011

3	Data Structures A Programming approach with C	Dharmender Singh Kushwaha and Arun Kumar Misra	Prentice Hall of India, New Delhi	2012

REFERENCE BOOKS

S.no	Title	Author	Publisher & year ofPublishing/edition	
1	Data Structures and Algorithms	G.A.Vijayalakshmi Pai	TMGH, New Delhi	6th Reprint 2011
2	Data Structures Using C - -1000 Problems and Solutions	Sudipta Mukherjee	TMGH, New Delhi	Second Reprint 2010
3	Introduction to Data structures Using C	Venkatesh N.Baitipuli	University Science Press, Chennai	First Edition, 2009
4	Classic Data Structures	Debasis Samanta	Prentice Hall of India, New Delhi	2009 / Second Edition
5	Principles of Data structures using C and C++	VinuV.Das	New Age International Publishers, New Delhi	Reprint 2008
6	Data structures Using C	ISRD Group	Narosa Publishing House, New Delhi	Reprint2010
7	Fundamentals of Data structures in C	Horowitz , sahni Anderson- freed	University Press, Hyderabad	Second Edition
8	Data and file structures	RohitKhurana	Vikas Publishing Ltd	First Edition 2010

LEARNING WEB SITES

- **https://www.amazon.in/Principles-Data-Structures-Using-Vinu/dp/8122418589**
- **https://books.google.co.in/books/about/Principles_of_Data_Structures_Using_C_an.html?id=GPQ4PW1JGbQC**

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO - PO Mapping Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C440.1	3	3	3	3	-	3	3	3	3	-
C440.2	3	3	3	3	-	3	3	3	3	-
C440.3	3	3	3	3	-	3	3	3	3	-
C440.4	3	3	3	3	-	3	3	3	3	-
C440.5	3	3	3	3	-	3	3	3	3	-
Total	15	15	15	15	-	15	15	15	15	-
Correlation level	3	3	3	3	-	3	3	3	3	-

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)	
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create	
% to be included	90%	10%	

CTC 450 JAVA PROGRAMMING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No. of weeks /semester: 15 weeks

Course	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Sem.	Internal Assessment	Semester End Examination	Total	Duration
JAVA PROGRAMMING PRACTICAL	4	60	25	75	100	3Hrs

SCHEME OF VALUATION		
1.	**Any one program from PART- A**	20
2.	**Execution and Result**	10
3.	**Print out**	5
4.	**Any one program from PART - B**	20
5.	**Execution and Result**	10
6.	**Print out**	5
7.	**Viva voce**	5
	Total	75

Objectives:

- Analyze the given problem
- Develop the logic to solve the given problem
- Develop Java application
- Develop programs using different operators and expressions.
- Develop programs using sequential, conditional and Iterative statements.
- Handle arrays of fixed and variable size.
- Develop applications using Vectors.
- Create classes and objects
- Implement constructors and constructor overloading.
- Solve problems using inheritance and Polymorphism.
- Create own package and interface.
- Create Applet programs.
- Handle exception arising in programs.
- Use GUI components to develop GUI applications
- Use multithreading in programs.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C450.1	To create console applications
C450.2	To Write a program to implement stack using class or array list
C450.3	To create GUI application
C450.4	To create applets
C450.5	Develop an applet to display a simple message “helo”

CTC 450 JAVA PROGRAMMING PRACTICAL

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
1.	Write a Java program to display the count of all commands line arguments and list each in a line	**450.1**
2.	Write a program to find out sum of digits of given number	**450.1**
3.	Write a program to display multiplication table in row , column format	**450.1**
4.	Write a program to • To find whether the given number is prime or not • To display all prime numbers in a given range of numbers	**450.1**
5.	Write a program to create an array of integers and accept a number. Check whether it exits in the array. Create your own exception with appropriate error message and raise the exception when the element is not found in the array.	**450.1**
6.	Write a program to implement stack using Vector class or Array List	**450.2**
7.	Write a program to execute any given windows application and report the exit status of the application	**450.2**
8.	Write a program to get a file name at run time and check for its existence check whether it is a directory or normal file. If it is a normal file display its size and other attributes of the file.	**450.2**
9.	Write a program to copy a file to another file using java.io package Classes.	**450.2**
10.	Write a program to get a file at runtime and display the number of lines, words and characters in that file.	**450.2**
	PART-B GUI APPLICATIONS	
11.	Create a Frame with two labels. At runtime display x and y co-ordinates of mouse pointer in the Labels	**450.3**
12.	Create a Frame and Checkbox group with five Checkboxes with labels as Red, Green, Blue, Yellow and White. At run time change the background color of Frame using Checkboxes.	**450.3**
13.	Create a Frame with 3 Scrollbars representing the three basic colors RED, GREEN and BLUE.Change the background color of the Frame using the values of Scrollbars.	**450.3**

APPLETS		
14.	Create an Applet to calculate Simple and Compound interest by passing parameters through <PARAM> tags of HTML file.	**450.4**
15.	Draw a bar chart for the MARKS scored in 5 subjects by a student using Graphics object	**450.4**
16.	Write a program that prints the first 20 Fibonacci numbers.	**450.4**
17.	Develop an applet to display a simple message "hello".	**450.5**

HARDWARE REQUIREMENT

Desktop Computers – 36 Nos

Printer – 1 No

Student : Computer = 1 : 1

SOFTWARE REQUIREMNT

1.Any Text Editor((OR) Net beans

2.JDK 1.7 or above

3.Java enabled Browser

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

- https://www.tutorialspoint.com/compile_java_online.php
- https://www.techbeamers.com/java-programming-practice-test/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C340.1	3	3	3	3	-	3	3	3	3	2
C340.2	3	3	3	3	-	3	3	3	3	2
C340.3	3	3	3	3	-	3	3	3	3	2
C340.4	3	3	3	3	-	3	3	3	3	2
C340.5	3	3	3	3	-	3	3	3	3	2
Total	15	15	15	15	-	15	15	15	15	10
Correlation level	3	3	3	3	-	3	3	3	3	2

Correlation level 1 – Slight(low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

CTC 460 DATA STRUCTURES USING C PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No. of weeks / semester: 15 weeks

Course	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Semester End Examination	Total	Duration
DATA STRUCTURES USING C PRACTICAL	6	90	25	75	100	3Hrs

SCHEME OF VALUATION			
Write any Two programs (20+20)			**40 Marks**
Execute any One program			**20 Marks**
Result with printout			**10 Marks**
VIVA - VOCE			**5 Marks**
TOTAL			**75 Marks**

COURSE DESCRIPTION

To provide the hands on experience on implementation of linear and non-linear data structure this course will be introduced . The knowledge of 'C' language and data structures will be reinforced by practical exercises during the course of study. The course will help students to develop the capability of selecting a particular data structure.

OBJECTIVES

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

- Understand the use of arrays.
- Use of arrays and pointers.
- 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.

Course	Statement
After successful completion of this course, the students should be able to	
C460.1	Understand the use of arrays and pointers
C460.2	Implement of stack and queue
C460.3	Implement linear and non - linear data structure algorithms using C language.
C460.4	Write programs for traversing a binary tree.
C460.5	Write programs for searching and sorting

CTC 460 DATA STRUCTURES USING C PRACTICAL

S.NO	LAB EXERCISES	COURSE OUTCOME
1.	Write a program in 'C' to insert, delete an element from an array of elements. Also print the position of a particular element	**460.1**
2.	Implement array using row major order and column major order.	**460.1**
3.	Write a program in 'C' to create a two dimensional array with at least ten elements. Search for a particular element and print its position and address of the element.	**460.1**
4.	Write a program in 'C' to perform PUSH and POP operations in stack by using array.	**460.2**
5.	Write a program in 'C' to display the reverse of a string using a stack.	**460.2**
6.	Write a program in 'C' to evaluate a postfix expression.	**460.2**
7.	Write a program in 'C' to create a queue containing ten elements and perform delete and insert operations using array.	**460.2**
8.	Write a program in 'C' to implement recursive function.	**460.2**
9.	Write a program in 'C' to create a singly linked list containing at least five elements. Make necessary assumptions.	**460.3**
10.	Write a program in 'C' to delete the first node that contains an integer data item of a single linked list.	**460.3**
11.	Write a program in 'C' to create a binary tree.	**460.4**
12.	Write a program in 'C' for pre-order traversal of a binary tree.	**460.4**
13.	Write a program in 'C' for binary searching	**460.4**
14.	Write a program in 'C' to sort 'N' Numbers using Insertion sort	**460.5**

15.	Write a program in 'C' to sort 'N' Numbers using bubble sort.	**460.5**
16.	Write a program in 'C' to sort 'N' Numbers using selection sort.	**460.5**
17.	Write Program in C Create And Display The Contents Of A Doubly Linked List.	**460.5**
18.	Write a C Program To That Sort 5 Numbers Using Merge Sorting.	**460.5**

HARDWARE REQUIREMENT:1.Desktop Computers – 36 Nos 2. Laser Printer – 4 Nos

SOFTWARE REQUIREMNT :C – Compiler with Editor

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.https://www.tutorialspoint.com/compile_java_online.php

2.https://www.techbeamers.com/java-programming-practice-test/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C340.1	3	-	3	3	-	3	3	3	3	3
C340.2	3	-	3	3	-	3	3	3	3	3
C340.3	3	-	3	3	-	3	3	3	3	3
C340.4	3	-	3	3	-	3	3	3	3	3
C340.5	3	-	3	3	-	3	3	3	3	3
Total	15	-	15	15	-	15	15	15	15	15
Correlation level	3	-	3	3	-	3	3	3	3	3

Correlation level 1 – Slight(low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC470 LIFE AND EMPLOYABILITY SKILLS PRACTICAL

Teaching and Scheme of Examination:

No. of Weeks / Semester: 15 Weeks

Course	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Semester End Examination	Total	Duration
Life and Employability Skills	4	60	25	75	100	3Hrs

Topics and Allocation of Hours:

Sl. No.	Section	No. of Hours
1	**Part – A** Communication	30
2	**Part – B** Entrepreneurship, Project Preparation, Productivity, Occupational Safety, Health, Hazard, Quality Tools&Labour Welfare	20
3	**Part – C** Environment, Global Warming, Pollution	10
	TOTAL	60

COURSE DESCRIPTION

Against the backdrop of the needs of the Industries, as wells as based on fulfilling the expectations of the Industries, the Diploma Level students have to be trained directly and indirectly in toning up their competency levels. Proficiency in Communication only, equips them with confidence and capacity to cope with the employment. Hence, there is a necessity to focus on these in the curriculum. At the end of the Course, the student is better equipped to express himself in oral and written communication effectively.

OBJECTIVES

- Emphasize and Enhance Speaking Skills
- Increase Ability to Express Views & Opinions
- Develop and Enhance Employability Skills
- Induce Entrepreneurship and Plan for the Future
- Expose & Induce Life Skills for Effective Managerial Ability

Course	Statement
After successful completion of this course, the students should be able to	
C470.1	Emphasize and Enhance Speaking Skills
C470.2	Increase Ability to Express Views & Opinions
C470.3	Develop and Enhance Employability Skills
C470.4	Induce Entrepreneurship and Plan for the Future
C470.5	Expose & Induce Life Skills for Effective Managerial Ability

LIFE AND EMPLOYABILITY SKILLS PRACTICAL

SYLLABUS

Unit	Topics	Activity	Hours
I	Communication, Listening, Training, Facing Interviews, Behavioural Skills	-- instant sentence making – say expressions/phrases-- self-introduction/another higher official in company – describe/explain product – frame questions based on patterns – make sentences based on patterns	30
II	Entrepreneurship, Project Preparation, Marketing Analysis, Support & Procurement	-- prepare an outline of a project to obtain loan from bank in becoming an entrepreneur – prepare a resume	10
III	Productivity – comparison with developed countries, Quality Tools, Circles, Consciousness, Management, House Keeping	-- search in the website -- prepare a presentation – discuss & interact	05
IV	Occupational Safety, Health Hazard, Accident & Safety, First-Aid,Labour Welfare Legislation, Welfare Acts	-- search in the website -- prepare a presentation – discuss &interact	05
V	Environment, Global Warming, Pollution	-- taking down notes / hints – answering questions -- fill in blanks the exact words heard	10

LEARNING STRUCTURE **100 Marks**

-- Focus more on Speaking & Listening Skills
-- Attention less on Reading & Writing Skills
-- Apply the skills in fulfilling the Objectives on Focused Topics.

a) Listening **25 Marks**
1. Deductive Reasoning Skills (taking down notes/hints) **10**

2. Cognitive Skills (answering questions)	**10**
3. Retention Skills (filling in blanks with exact words heard)	**05**
b) Speaking Extempore/ Prepared	**30 Marks**
1. Personality/Psychological Skills (instant sentence making)	**05**
2. Pleasing & Amiable Skills (say in phrases/expressions)	**05**
3. Assertive Skills (introducing oneself/others)	**05**
4. Expressive Skills (describe/explain things)	**05**
5. Fluency/Compatibility Skills (dialogue)	**05**
6. Leadership/Team Spirit Skills (group discussion)	**05**
c) Writing & Reading	**20 Marks**
1. Creative & Reasoning Skills (frame questions on patterns)	**05**
2. Creative & Composing Skills (make sentences on patterns)	**05**
3. Attitude & Aim Skills (prepare resume)	**05**
4. Entrepreneurship Skills (prepare outline of a project)	**05**
d) Continuous Assessment (Internal Marks)	**25 Marks**
(search, read, write down, speak, listen, interact & discuss)	
1. Cognitive Skills (Google search on focused topics)	
2. Presentation Skills& Interactive Skills (after listening, discuss)	
Note down and present in the Record Note on any 5 topics	**10 Marks**
Other activities recorded in the Record note	**10 Marks**
Attendance	**05 Marks**
INTERNAL MARKS	**25 MARKS**
EXTERNAL MARKS AT END EXAMINATION	**75 MARKS**

CTC 410 COMPUTERARCHITECTURE

Time : 3 Hrs Max.Marks :75

PART – A (5X3=15 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	Define Register Transfer Language	I	R
2	What is Inter Register transfer?	I	R
3	Draw the Bus transfer.	I	R
4	Define I/O bus and interface	II	R
5	Define strobe control	II	R
6	Need for cache memory	III	R
7	Define Virtual memory concept	III	R
8	Types of parallel processing systems	IV	U
PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	Expand incrementer,4 bit arithmetic circuit	I	R
10	Expand structure of control unit-fetch cycle.	I	U
11	Define Serial communication	II	R
12	What is Memory types?	III	R
13	What Memory Management?	III	R
14	Expand the Block diagram of 8086-registers	IV	R
15	What is Organizations, a mainframe.	V	R
16	Define , Associative memory page table.	V	U

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max Marks
17	A	Briefly explain the Central processing unit.	I	R	10
		[OR]			
	B	Explain the Assembly language, Addressing modes. Explain DMA–DMA controller, DMA transfer	I	R	10
18	A	Explain the Main Memory. Explain (a) Different mapping techniques (b) Writing into cache.	II	U	10
		[OR]			
	B	Explain Secondary Memory with example.	II	R	10
19	A	Discuss: instruction pipeline, arithmetic pipeline.	III	U	10
		[OR]			

	B	Explain the Symmetric Multiprocessors. Explain Data Hazards, Instruction Hazards	III	R	10
20	A	.Explain the NUMA organizations	IV	U	10
		[OR]			
	B	Decribe tree strcture directory. Explain Multi Core	IV	R	10
21	A	Explain the Implicit and explicit multi threading.	V	R	10
		[OR]			
	B	Explain the approaches to vector computation.	V	R	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C-Create
% to be included	90%	10%

CTC420 COMPUTER NETWORKS AND SECURITY

Time : 3 Hrs Max.Marks :75

PART – A (5X2=10 MARKS)				
Answer any Five Questions				
S.NO			Unit	Blooms Level
1		What is data flow?	I	R
2		Define router..	I	R
3		What is OSI layer?	I	U
4		What is ISDN?	I	R
5		Define socket.	II	R
6		What is digital signature?	II	R
7		Define worms..	II	R
8		What is Eavesdropping?	II	U
PART – B (5X3=15 MARKS)				
Answer any Five Questions			Unit	Blooms Level
9		What is hub and switch?	I	R
10		Define internet and extranet	III	U
11		What is CSMA/CD?	III	U
12		Difference between TCP and UDP.	III	R
13		Define Subnetting&Supernetting ?	IV	R
14		Define cryptography.	IV	R
15		Define firewall	IV	U
16		What is a spam?	IV	R
PART –C (5X 10 =50 MARKS)				
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level
17	A	(i) Explain various topologies.	I	R
		(ii) Explain any two network devices.		
	B	Write briefly about the types of networks with its needs.	I	U
18	A	(i)Explain token bus and token ring.	II	U
		(ii)Define FDDI		
	B	(i) Explain switching techniques.	II	U
		(ii)Define ISDN.		
19	A	Describe IGMP and ICMP in detail.	III	U
		[OR]		
	B	(i) Define VLSM technique.	III	U
		(ii) Explain FTP, HTTP and POP.		
20	A	Describe DES algorithm is details.	IV	U
		[OR]		
	B	(i) Explain RSA algorithm.	IV	U
		(ii) Explain SSL, TLS.		

21	A	(i) Explain firewall with its types.	V	U
		(ii)Define Intruders.		
	B	Discuss WLAN detection and eavesdropping concept.	V	R

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C-Create
% to be included	90%	10%

CTC440 DATA STRUCTURES USING C

Time : 3 Hrs Max.Marks :75

PART – A (5X2=10 MARKS)				
Answer any Five Questions				
S.NO			Unit	Blooms Level
1		Define Object Oriented Programming.	I	AP
2		Define type casting.	II	R
3		Define inheritance.	II	R
4		Define layout manager.	I	R
5		Define exception handling.	II	R
6		List the different stages in the life cycle of a thread.	III	R
7		Define hiding classes.	III	R
8		List the different visibility controls.	V	R
PART – B (5X3=15 MARKS)				
Answer any Five Questions			Unit	Blooms Level
9		Define Dynamic Binding and Message passing	I	U
10		Give the different types of decision making statements.	II	R
11		What is the use break statement inside switch statement?	II	R
12		What is the use of wrapper class?	III	R
13		Define layout manager.	III	R
14		What are static members?	IV	R
15		Give the advantages of streams.	IV	R
16		Give the thread class constructors.	V	R
PART –C (5X 10 =50 MARKS)				
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level
17	A	i) Explain the paradigm of programming languages ii) Explain the steps involved in creating and executing a java program	I	AN
		[OR]		
	B	(i) Java compiled and interpreted explain. (ii) Explain JVM and java comments.	I	R
18	A	(i) Explain how expressions are evaluated. (ii) Explain labelled loop with example.	II	U

		[OR]		
	B	Define vector and give the statements to create a vector and add one double element into it	II	R
19	A	Define string buffer class and give the difference between string and string buffer class..	III	R
		[OR]		
	B	(i) Define and explain constructors with example (ii) Write a program to explain interface	III	R
20	A	(i) Explain the naming convention in packages. (ii) Explain applet tag in html	IV	R
		[OR]		
	B	Explain event handlers and event listeners	IV	R
21	A	Explain i) Try block ii) Throwing an exception iii) Catching an exception	V	R
		[OR]		
	B	(i) With neat diagram explain thread states. (ii) Explain stream.	V	R

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C-Create
% to be included	90%	10%

CTC 510 WEB PROGRAMMING

TEACHING & SCHEME OF EXAMINATION:

No. of weeks Semester 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Semester End Examination	Total	Duration
WEB PROGRAMMING	4	60	25	75	100	3Hrs

TOPICS AND ALLOCATION OF HOURS

Unit No	Topic	TIME(Hrs)
I	INTERNET AND HTML	10
II	HTML5 AND CSS3	12
III	CLIENT SIDE SCRIPTING (JAVASCRIPT)	09
IV	SERVER SIDE SCRIPTING (JSP)	09
V	JSP PROGRAMMING – DATABASE ACCESS	08
	REVISION AND TEST	12
	TOTAL	60

COURSE DESCRIPTION

The main aim of this subject is to introduce the building blocks of Internet and web i.e. HTML,CSS, Java Script, JSP. Through various examples the course will describe how to design webpages , dynamic and interactive web pages client-side and server-side scripting.

OBJECTIVES

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

- Create local HTML pages and move them to a remote web server.
- Design and develop basic web pages using HTML5 and CSS.
- Using SVG in HTML5
- Use graphics and tables in Web pages.
- Link pages so that they create a Web site.
- 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.
- Understand how to construct input and output boxes using Java Script .
- Discuss about events and Event Handlers in JavaScript.
- 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.

CTC 510 WEB PROGRAMMING

	UNIT I INTERNET & HTML5	**10 Hrs**
1.1	**Introduction to Internet:** Definition of Internet – History of Internet - Packet Switching Different types of Connections : Dial-up connection – ISDN – Advantages and Disadvantages -	1 Hr
	ASDL Connection – Advantages and Disadvantages – DSL – Leased Line –	1 Hr
	Satellite Connections - Modem - Cable Modem – Internet tools - Web server – Domain name - Search Engines –- Web browser –	1 Hr
	IP address – Versions (concepts only) - Internet Protocols – TCP/IP – FTP – HTTP – TelNet –WAIS.-	1 Hr
	GPRS – Definition. EDGE – 2.75 G – 3 G – 4G Concepts only	1 Hr
1.2	**Introduction to HTML:** Introduction - Basic Tags of HTML - HTML Tag - TITLE Tag – BODY Tag ; Formatting of Text : Headers -	2 Hrs
	Formatting Tags: BOLD,ITALICS,UNDERLINE,PARAGRAPH,TT, STRIKETHROUGH, EM, BR and HR tags -	2 Hrs
	PRE Tag -FONT Tag – Special Characters - Working with Images - META Tag	1 Hr
	UNIT II HTML 5 & CSS3	**12 Hrs**
2.1	**HTML5:** What is HTML5?-Difference between HTML&HTML5-New elements in HTML5 - canvas elements - Media elements – Form elements- Semantic and structural element - New **graphic** elements: <svg> and <canvas>.	1 Hr
	Advanced HTML: Links - Anchor tag – Lists - Unordered Lists - Ordered Lists –Definition Lists; Tables - TABLE, TR and TD Tags - Colspan and Rowspan; Frames: Frameset – FRAME Tag – Frame inside other frames – NOFRAMES Tag ;	2 Hrs
	Forms :FORM and INPUT Tag – Textbox - Radio Button – Checkbox – SELECT Tag and PullDown Lists : Hidden - Submit and Reset ;	1 Hr
	Some Special Tags: COLGROUP - THREAD,TBODY, TFOOT - _blank, _self, _parent, _top – IFRAME –LABEL - Attribute for <SELECT> - TEXTAREA	1 Hr

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	2 Hrs
	What is CSS3? Animation – Borders – Backgrounds – Fonts –Multiple columns – Text effects.	1 Hr
2.3	**Formatting Text and Fonts**: Font Families Font Size Kerning, Leading, and Indenting -	1 Hr
	Formatting Colors and Backgrounds: The Color Attribute The Background Attribute - Background Colors and Images	1 Hr
2.4	**Exploring CSS Class and ID Attributes**: Defining the CSS Class Attribute – Defining the CSS ID Attribute - Dynamic effects with CSS -	1 Hr
	Lists- Tables – Forms – simple Examples using above properties.	1 Hr
	UNIT III CLIENT SIDE SCRIPTING (JAVASCRIPT)	**09 Hrs**
3.1	**JavaScript Basics :** Need of scripting languages – Variables and Data Types : Declaring Variables – Life span of variables - Data Types -	1 Hr
	Operators :Assignment , comparison, computational and logical operators -	1 Hr
	Control Structures : Conditional Statements – Loop Statements : for, while, for in, break and continue statements	1 Hr
3.2	**Object-Based Programming and Message boxes:** Functions - Executing Deferred Scripts -	1 Hr
	objects : Document object Model , Predefined objects, Array object, History object , Location object - Dialog Boxes - Alert Boxes - Confirm Boxes - Prompt Boxes	1 Hr
3.3	**JavaScript with HTML:** Events - Event Handlers : onLoad and onUnload – onFocus and onBlur – onError -	1 Hr
	Forms : Forms Array – Form element properties – Example	1 Hr
3.4	**Using JavaScript URLs** : Client-side Image maps – Server Side Image Maps – Status bar –Cookies – Live Connect –	1 Hr
	Java Console – Java Script to Java –Java to JavaScript Communication.	1 Hr

	UNIT IV SERVER SIDE SCRIPTING (JSP)	**09 Hrs**
4.1	**Introduction:** Client side scripting versus Server Side scripting – JSP VsJavascript - Advantages and disadvantages of JSP –	2 Hrs
	Client and server responsibilities – Installing and configuring Tomcat server –	1 Hr
	JSP Architecture – Life cycle of a JSP page - JSP vs Servlets –JSP Vs ASP.NET – List of JSP servers	2 Hrs
4.2	**JSP Elements**: Comments – Directives: Page, Include and taglib directives –	1 Hr
	Scripting elements: Declarations - Scriplets – expressions – Simple JSP page	1 Hr
4.3	**Implicit objects**: Request, response, pagecontext, application, out, config, page,session,exception –	1 Hr
	Scope: Application – Session – Request	1 Hr
	UNIT V JSP programs & DATABASE ACCESS	**08 Hrs**
5.1	**Writing Simple JSP programs:** Convert entered text into uppercase – Find the maximum of three numbers – Add two numbers.	2 Hrs
5.2	MySQL – create table – create records <sql:setDataSource>var, driver, url attributes.	1 Hr
	JdbcOdbcDriver. Creating connection, Creating statement -	1 Hr
	Statement – executeUpdate(),executeQuery() methods -	1 Hr
	Select, insert, update, delete opertions	1 Hr
5.3	Develop a mini project using HTML5, CSS, JSP to manipulate data in MySQL database	1 Hr
5.4	Introduction To Ajax	1 Hr
Revision and Test		**12Hrs**

TEXT BOOKS

S.No	Title	Author	Publisher &Year of Publishing/Edition	
1	Web Development and Design Foundations with HTML5	Terry Felke-Morris	Pearson	8th Edition
2	JavaScript the Complete Reference	Powell, Thomas	MC Grawhill	3rd Edition
3	HTML & CSS: The Complete Reference	Thomas Powell	MC Grawhill	Fifth Edition
4	JSP: The Complete Reference	Phil Hanna	MC Grawhill	
5	The Internet	Douglas E.Comer	*Prentice Hall*	

REFERENCE BOOK

S.No	Title	Author	Publisher & Year of Publishing/Edition	
1	Pro HTML5 and CSS3 Design Patterns	DionysiosSynodinos, Michael Bowers, Victor Sumner	Springer India Private Limited (2012)	

LEARNING WEBSITES

1.https://www.pearsonhighered.com/assets/preface/0/1/3/4/0134801148.pdf

2.https://www.bookdepository.com/JavaScript-Complete-Reference-Thomas-Powell/9780071741200

3.https://link.springer.com/chapter/10.1007/978-1-4302-3781-5_1

CONTINUOUS INTERNAL MARKS

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C510.1	3	3	3	3	3	-	3	3	3	3
C510.2	3	3	3	3	3	-	3	3	3	3
C510.3	3	3	3	3	3	-	3	3	3	3
C510.4	3	3	3	3	3	-	3	3	3	3
C510.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTC 520 RELATIONAL DATABASE MANAGEMENT SYSTEMS

TEACHING & SCHEME OF EXAMINATION:

No. of weeks / Semester 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
RELATIONAL DATABASE MANAGEMENT SYSTEM	5	75	25	75	100	3Hrs

TOPICS AND ALLOCATION OF HOURS

Unit No	Topic	TIME(Hrs)
I	DATABASE SYSTEMS AND DATA MODELING	14
II	MYSQL ADMINISTRATION & DATABASE DESIGN	15
III	MYSQL PERFORMANCE TUNING	11
IV	STORAGE ENGINES, STORED PROGRAM CONCEPT , OPTIMIZATION & API'S	13
V	DATA WAREHOUSING & INTRODUCTION TO BIG DATA	10
	TEST AND REVISION	12
	TOTAL	75

COURSE DESCRIPTION

The Database Management system is a collection of programs that enables to store, modify and extract information from a database. The primary resource that fuels knowledge power is the database. Organizations are employing mechanisms to effectively manage and utilize the data stored in the database. Relational Database management System has been developed to harness the information stored in the database.

The major objectives of this subject is to provide a strong formal foundation in Database Concepts, technology and practice to the students to enhance them into well informedapplication developers. After learning this subject, the students will be able to understand the designing of RDBMS and can use any RDBMS package as a backend for developing databaseapplications.

OBJECTIVES:

On completion subject, the students must be able to

- Define data, database, database Management systems and data base models.
- Compare file processing and database system.
- Study about architecture of DBMS.
- Understand the concept of Data warehousing , Big Data and client/Server Technology
- State CODD's Rules.
- Explain normalization and explain different types of Normal Forms.
- Create Normalized Database structure files .
- Perform all database DDL, DML, DCL, and all related commands.
- Write Logical and Conditional statement for Database Query.
- Write procedures and functions .
- Create and use Triggers.
- Understanding Data warehousing, Big data and NoSQL

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C520.1	Understand Database Systems and Data modeling
C520.2	know the MySQL Administration & Database Design
C520.3	Able to understand MySQL Performance Tuning
C520.4	Understand the Storage Engines, Stored Program concept, Optimization & API's
C520.5	Apply the Data warehousing, Big data and NoSQL

CTC 520 RELATIONAL DATABASE MANAGEMENT SYSTEMS

UNIT – I Database Systems and Data modeling **14 Hrs**

1.1 **Database systems:** Database Management System – Characteristics of Database Components of Database - Functions of Database – Understanding database model- 2 Hrs

Evolution – Types of database models: Hierarchical Database Model, Network Database Model, Relational Database Model. 1 Hr

1.2 **Types of Databases:** Transactional Databases, Decision Support Databases and Hybrid Databases – Open Source databases . 2 Hrs

1.3 **Relational data model:** CODD's rules – Components of RDBMS – Table structure - Records ,rows, tuples , attributes. - Keys : Primary, Foreign , Composite, unique keys – 2 Hrs

Meta Data – Data Dictionary. - Data Integrity - Data Constraints and validation : Types of Constraints Difference between SQL and MYSQL 2 Hrs

1.4 **ER Diagram and Normalization:** Methodologies of Designing Database- Entities- Relationships (1:1, 1 : many and many : many) - ER Diagram – Samples . 1 Hr

Normalization : Benefits – Normal Forms - 1st Normal Form, 2nd Normal Form ,3rd Normal Form 2 Hrs

1.5 **Database Administration: Server/client And Distributed concept:** DBA Tasks – DBA Tools/utilities – Data Base Maintenance – Backup and Recovery - Master Data Management And Tools 2 Hrs

UNIT-II MySQL Administration & Database Design **15 Hrs**

2.1 **Installation of MySQL:** Features of MySQL- Download, Installing, Starting & Stopping connections to the MySQL server – 1 Hr

Accessing MySQL – Command Line,Web Interface (PHP Myadmin) and Desktop Tools (MySQL workbench). 1 Hr

2.2 **Working with MySQL Databases :** Creating (CREATE cmd), selecting (USE cmd) And describing database (DESC cmd) - 2 Hrs

SHOW cmd - backing up databases. 1 Hr

2.3	**Introduction to MySQL :** MySQL data types –Data Definition Commands: creating, altering, renaming, copying and deleting tables - temporary tables –	1 Hr
	Data manipulation commands : Insert, update & deleting rows. Data retrieval commands.	1 Hr
	MySQL Operators and Expressions : Types of operators –Arithmetic,	2Hrs
	comparison & logical operators - Pattern matching - Import and Export of data	
2.4	**Built-in Functions:** Single row functions - Aggregate functions – Conversion functions	2 Hrs
2.5	**Querying the table:** Selecting rows using Where , Order by , group by & Having clauses.	2 Hrs
	Sub-queries – operators used in sub-queries - correlated sub-queries.	1 Hr
2.6	**Flow control :** IF(),IFNULL(),CASE,LOOP, LEAVE,ITERATE,	1 Hr
	REPEAT,WHILE	

	UNIT- III MySQL Performance Tuning	**11 Hrs**
3.1	**Indexes and sequences:** Creating index– primary key (single & multiple field) & foreign key, unique key, composite keys, full text indexing, leftmost indexing –dropping index	2 Hrs
	Sequences: creating, altering and deleting sequences.	1 Hr
3.2	**Performing multiple table retrieval using Joins & Unions:** Joins – definition –aliasing – Types of Joins: natural join, inner join, self-join, left join, right join.	2 Hrs
	Unions: Definition – Types – Union, Union ALL, Union Distinct – order by and LIMIT handling.	1 Hr
3.3	**Views:** Introduction – Advantages of Views- creating Views, Updating the Views, Deleting the Views.	2 Hrs
3.4	**User & Transaction management:** creating users, deleting users, renaming users, grant & revoke commands - Transactions –	2 Hrs
	committing & rollback transactions – save points- Express SQL	1 Hr

	UNIT- IV Storage Engines, Stored Program concept , Optimization & API's	**13 Hrs**
4.1	**Storage Engines:** MySQL Storage engines-Choosing the right engine - Types of storage engines -	2 Hrs
	MyISAM, InnoDB& Memory – Features – Advantages and disadvantages of storage engines	2 Hrs
4.2	**Stored Procedures & Functions:** Definition - Creating stored Procedures – Invoking - Dropping procedures -	2 Hrs
	Creating and calling stored functions – Deleting stored functions - Advantages.	1 Hr
4.3	**MySQL trigger & Cursor :** Use of trigger - Creating triggers - Types of trigger –	2 Hrs
	Deleting triggers – Cursor – creation – deletion.	1 Hr
4.4	**MySQL Optimizations:** Query optimization using EXPLAIN command.	1 Hr
4.5	**MySQL and web:** Need for own MySQL programs – MySQL's Application Programming Interfaces.	2 Hrs
	UNIT - V Data warehousing & Introduction to Big data	**10 Hrs**
5.1	**Data warehousing :** Functions of Warehouse – Architecture - Applications–	2 Hrs
	Data mining concepts- Advantages.	1 Hr
5.2	**Big Data :** Definition – Characteristics – Various Technologies used - Applications -	2 Hrs
	Overview of NoSQL: Difference between RDBMS and NoSQL – Tools used in Big Data, Scalability, Understanding storage architecture.	2 Hrs
5.3	**Types of Data stores in NoSQL:** Column oriented data store, Document Store, Key value Store & Graph store -	1 Hr
	Create access, update and delete data - Querying NoSQL Stores. Using NoSQL in the cloud - Amazon Simple DB	2 Hrs

TEXT BOOK

S.No	Title	Author	Publisher
1	MySQL	Paul DuBios	Addison Wesley (Fourth Edition)
2	Database System Concepts	Silber Schatz A. and Korth H	McGraw Hill Education (India) Pvt Limited, Sixth Edition
3	Murach's MySQL	Joel Murach	Shroff / Murach(2012)
4	NO SQL Distilled	PRAMOD J. SADALAGE MARTIN FOWLER	Addison Wesley (First Edition)

REFERENCE BOOKS

(1) An introduction to Database System – Bipin Desai, Galgotia Publications

(2) Database System: concept, Design & Application by S.K.Singh (Pearson Education

(3) Database management system by leon &leon (Vikas publishing House).
(4) Fundamentals of Database Management System – Gillenson, Wiley India

LEARNING WEBSITE

1.https://nptel.ac.in/courses/IIT-MADRAS/Intro_to_Database_Systems_Design/pdf/1_Introduction.pdf

2.https://www.e-reading.club/bookreader.php/142091/MySQL._4Ed.pdf

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C520.1	3	3	3	3	3	-	3	3	3	3
C520.2	3	3	3	3	3	-	3	3	3	3
C520.3	3	3	3	3	3	-	3	3	3	3
C520.4	3	3	3	3	3	-	3	3	3	3
C520.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTC 530 COMPONENT BASED TECHNOLOGY

TEACHING & SCHEME OF EXAMINATION:

No. of weeks / Semester 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
COMPONENT BASED TECHNOLOGY	4	60	25	75	100	3Hrs

TOPICS AND ALLOCATION OF HOURS

Unit No	Topic	Time(Hrs)
I	INTRODUCTION TO .NETFRAMEWORK	10
II	INTRODUCTION TO C#	10
III	WINDOW APPLICATION USING WINDOW FORMS	10
IV	APPLICATION DEVELOPMENT USING ADO.NET	09
V	XML	09
	REVISION AND TEST	12
	TOTAL	60

COURSE DESCRIPTION

.NET Framework is changing the way developers write applications. .NET Framework provides a number of components to create many types of applications including those for consoles, Windows, mobile units and the web. Using .NET framework the data can be made available anytime, anywhere and on any device.

This subject introduces the basics of .NET Framework. Writing applications on C#.Net is covered in this course. Concepts of developing Window applications using C#.NET are discussed. This course helps to use ADO.NET to write the applications to connect with the back end database. The subject also enables the users to know the concepts of XML and the XML web services.

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 C#.
- Describe the basic structure of a C#.NET project and use the main features of the integrated development environment (IDE).
- Use the new language features and syntax in C# .NET.
- Explain the basic concepts and terminology of object-oriented design specifically for C#.NET.
- Explain and use the basic concepts and terminology of object-oriented programming in
  C# .NET.
- Create applications by using Microsoft Windows Forms.
- Create applications that use ADO.NET.
- Create components in C# .NET.
- Set up and deploy various types of C# .NET-based applications.
- Develop Window applications using XML as back end database

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C530.1	Understand the Introduction To .Net Framework
C530.2	know the Introduction To C#
C530.3	Able to Window Application Using Window Forms
C530.4	Understand the Application Development Using Ado.Net
C530.5	Apply XML

CTC 530 COMPONENT BASED TECHNOLOGY

	UNIT–I INTRODUCTION TO .NET FRAMEWORK	**10 Hrs**
1.1	**Introduction to .NET framework:** Dot Net Architecture – Managed Code and the CLR –	1 Hr
	Intermediate Language, Metadata and JIT Compilation–Automatic	2 Hrs
	Memory Management.	
1.2	**Introduction to.NET framework:** Common Type System(CTS) – Common Language Specification (CLS) –	2 Hrs
	Assembly –Namespace	1 Hr
1.3	**Visual Studio .NET**– Using the .NET Framework. Exploring the Visual Studio Integrated Development Environment –	1 Hr
	System requirement – Versions	1 Hr
1.4	**The Framework Class Library**-.NET objects – ASP.NET-.NET web services–Windows Forms	2 Hrs
	UNIT–II INTRODUCTION TO C#	**10 Hrs**
2.1	**Elements:** Variables and constants–data types– declaration. Operators–types–precedence – Expressions – Program flow –	2 Hrs
	Decision statements – if ..then, if..then..else, select..case	1 Hr
2.2	**Loop statements**– while..end while, do..loop, for..next, for..each..next.	2 Hrs
2.3	**Types:** Value data types – Structures, Enumerations. Reference data types – Single dimensional–	1 Hr
	Multi-dimensional arrays–Jagged arrays– Dynamic arrays	1 Hr
2.4	**Classes & objects** –Abstract & override methods – Creating and using your own classes – Data members and member methods –	2 Hrs
	instantiate an object –This keyword	1 Hr

	UNIT–III WINDOW APPLICATION USING WINDOW FORMS	**10 Hrs**
3.1	**Windows programming**–Creating windows Forms–Working with Toolbox Controls–	1 Hr
	Button, Check Box, Combo Box, Label, List Box, Radio Button, Text Box, Group Boxes, Picture Box	2 Hrs
3.2	**Advanced Controls & Events** : Timer , Progress Bar, Month Calendar , ToolTips,Tab Controls, Panels -	1 Hr
	Events–Click,Close,Deactivate,Load,MouseMove,MouseDown, MouseUp, Keypress ,KeyDown, KeyUp	1 Hr
3.3	**Multiple Document Interface (MDI) Forms** – Creating MDI Applications – Creating MDI Child Windows –Arranging MDI Child Windows	2 Hrs
3.4	**Menus and Dialog Boxes** – Creating menus – Menu items – Creating Submenus , Menu Shortcuts, Context menu –	2 Hrs
	Using dialog boxes – show Dialog() method.	1 Hr
	UNIT–IV APPLICATIONDEVELOPMENTUSING ADO.NET	**9 Hrs**
4.1	**FeaturesofADO.NET.** Architecture of ADO.NET– ADO.NET providers–	2 Hrs
	connection –	
	Command–Data Adapter–Dataset	1 Hr
4.2	**AccessingDatawithADO.NET: c**onnecting to Data Source, Accessing Data with Data set and Data Reader– Modifying Table data using Command Objects –	2 Hrs
	Understanding Data Set and working with Data Column and Data Row – Data Tables - Working with Data Grid View	2 Hrs
4.3	**Create an ADO.NET application**– Using Stored Procedures-Inbuilt functions using ADO.net.	2 Hrs

UNIT–V XML **9 Hrs**

5.1 **Introduction:** Advantages –HTML Vs XML–Browsing and parsing XML–Creating a XML file–Details and–Well formed XML document – XML components- 2 Hrs

elements– Entities–Comments–Processing instructions–Attributes 1 Hr

5.2 **DTD:** Declarations in DTD: Element, Attribute, Entity and Notation– Construction of an XML document – XML Namespaces –Declaring name 2 Hrs

spaces –Default namespaces –

XML schema–Need and use of Schema– Building blocks–Simple elements–Defining attributes–Complex elements 2 Hrs

5.3 **XMLwith.NET:**XMLSerializationinthe.NETFramework– 1 Hr

SOAP Fundamentals–Using SOAP with the .NET Framework-web services description Language(WSDL) 1 Hr

TEXTBOOKS

S.No	Title	Author	Publisher & Year of Publishing/Edition	
1	Programming In C#, 3E	E. Balagurusamy	Tata McGraw-Hill Education,	2010
2	Applications of .NET Technology	ISRD Group	TMGH Education PvtLtd.,New Delhi	2011

REFERENCES BOOKS

S.No	Title	Author	Publisher & Year of Publishing/Edition	
1	IntroducingMicrosoft.NET	David S.Platt	Microsoft Press	SaarcEdition,2001

LEARNING WEBSITE

1.https://books.google.co.in/books/about/PROGRAMMING_IN_C_3E.html?id=VPndyZ0HGz0C

2.https://books.google.co.in/books/about/APPLICATION_OF_NET_TECHNOLOGY.html?id=9Scm2nb0OxYC

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

Co-Pos&Pos Mapping Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C530.1	3	3	3	3	3	-	3	3	3	-
C530.2	3	3	3	3	3	-	3	3	3	-
C530.3	3	3	3	3	3	-	3	3	3	-
C530.4	3	3	3	3	3	-	3	3	3	-
C530.5	3	3	3	3	3	-	3	3	3	-
Total	15	15	15	15	15	-	15	15	15	-
Correlation level	3	3	3	3	3	-	3	3	3	-

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTC 541 CLOUD COMPUTING

TEACHING & SCHEME OF EXAMINATION:

No. of weeks /Semester 15 Weeks\

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
CLOUD COMPUTING	4	60	25	75	100	3Hrs

TOPICS AND ALLOCATION OF HOURS

Unit No	Topic	No of Hours
I	CLOUD COMPUTING BASICS	7
II	CLOUD COMPUTING ARCHITECTURE & SERVICES, APPLICATIONS	12
III	VIRTUALIZATION	11
IV	STORAGE MANAGEMENT	10
V	SECURITY IN THE CLOUD	8
	TEST AND REVISION	12
	TOTAL	60

COURSE DESCRIPTION

The course aims to groom the students to enable them to work on current technology scenarios as well as prepare them to keep pace with the changing face of technology and the requirements of the growing IT industry. The course curriculum has been designed keeping in view the emerging trends in advanced computing as well as contemporary and futuristic humanresource requirements of the IT industry.

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 Understanding the concepts of Virtualization
- To Understanding Virtualization Tools
- Analyze the role technology plays in the design of a storage solution in a cloud architecture
- Investigate how a global storage solution can be optimized so that it can be delivered successfully from the cloud
- Analyze how best to provide reliable access to information both locally and remotely using storage technologies.

COURSE OUTCOMES

Course	**Statement**
After successful completion of this course, the students should be able to	
C541.1	know about the Cloud Computing Basics
C541.2	Understand the Cloud Computing Architecture & Services
C541.3	know about the Virtualization
C541.4	Analyze the Storage Management
C541.5	Understand theSecurity In The Cloud

CTC 541 CLOUD COMPUTING

UNIT I CLOUD COMPUTING BASICS **7 Hrs**

1.1 Cloud computing overview – Origins of Cloud computing – Cloud components -Essential characteristics – 1 Hr

on-demand self-service , Broad network access ,Location independent resource pooling , Rapid elasticity , measured service 2 Hrs

1.2 Architectural influences – High-performance computing , utility and enterprise grid computing , Autonomic computing , 1 Hr

Service consolidation , Horizontal scaling Web services ,High scalability architecture. 1 Hr

1.3 Cloud scenarios– Benefits - scalability , simplicity , vendors,security.Limitations – Sensitive information , Application development – Security concerns - 1 Hr

privacy concern with a third party , security level of third party , security benefits. Regularity issues – Government policies 1 Hr

UNIT II CLOUD COMPUTING ARCHITECTURE & SERVICES **12 Hrs**

2.1 **Cloud architecture:** Cloud delivery model – SPI framework , SPI evolution , SPI vs. traditional IT Model 2 Hrs

2.2 Software as a Service (SaaS): SaaS service providers – Web Services – Web 2.0 – Web Operating system - 1 Hr

Google App Engine, Salesforce.com and googleplatfrom – benefits – Operational benefits, Economic benefits – Evaluating SaaS 1 Hr

2.3 Platform as a Service (PaaS): Cloud Plat form & Management – Computation & Storage - PaaS service providers – Right Scale – 2 Hrs

Salesforce.com – Rackspace – Force.com – services and benefits. 1 Hr

2.4 Infrastructure as a Service (IaaS): IaaS service providers –Amazon EC2,GoGrid- 1 Hr

Microsoft soft implementation and support –Amazon EC service level agreement – recent developments – benefits. 2 Hrs

2.5 **Cloud deployment model** : Public clouds – private clouds – community clouds –hybrid clouds - Advantages of Cloud computing. 2 Hrs

	UNIT III Virtualization	**11 Hrs**
3.1	**Virtualization :** Virtualization and cloud computing - Need of virtualization –	2 Hrs
	cost , administration , fast deployment , reduce infrastructure cost - limitations	2 Hrs
3.2	**Types of hardware virtualization:** Full virtualization -	1 Hr
	partial virtualization –para virtualization	1 Hr
3.3	Desktop virtualization – Software virtualization – Memory virtualization –storage virtualization –	2 hrs
	data virtualization – network virtualization	1 Hr
3.4	Microsoft Implementation – Microsoft Hyper V – VMware features and infrastructure – Virtual Box - Thin client	2 Hrs
	UNIT IV STORAGE MANAGEMENT	**10 Hrs**
4.1	Storage Network: Architecture of storage, analysis and planning.	2 Hrs
	Storage network design considerations;	1 Hr
4.2	NAS and FC SANs, hybrid storage networking technologies(ISCSI,FCIP,FCoE),	2 Hrs
	design for storage virtualization in cloud computing,	1 Hr
4.3	File systems or object storage	4 Hrs
	UNIT V SECURITY IN THE CLOUD	**8 Hrs**
5.1	Understanding Cloud Security - Securing the Cloud -	1 Hr
	Security service boundary: CSA Cloud Reference Model - Securing Data	2 Hrs
	Brokered cloud storage access - Storage location and tenancy – Encryption	2 Hrs
5.2	Cloud Computing Security Challenges - Security Policy Implementation – Policy Types -	1 Hr
	Virtualization Security Management - Virtual Threats	1 Hr
5.3	Policy Types - Virtualization Security Management - Virtual Threats Virtualization System – Specific Attacks: Guest hopping, attacks on the VM (deleted VM, attack on the Control of the VM, Code or file injection into the virtualized file structure), VM migration attack, hyphenation	1 Hr

TEXT BOOK

S.No	Title	Author	Publisher
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.

LEARNING WEBSITE

1.https://start.paloaltonetworks.com/prisma-cloud-security-made-simple?gclid=EAIaIQobChMIwKTo3p-d4wIVjSQrCh0qxgZjEAAYAiAAEgL1-fD_BwE&utm_source=google-search&utm_medium=paid-search&utm_term=aws%20cloud%20security&utm_campaign=Public_Cloud-APAC-EN-Search-Lead_Gen&utm_content=357579169898&utm_network=&ef_id=WznV0wAAAKwqdQIT:20190705072428:s

2.http://gvpce.ac.in/syllabi/Cloud%20Computing.pdf

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C541.1	3	3	3	3	3	-	3	3	3	3
C541.2	3	3	3	3	3	-	3	3	3	3
C541.3	3	3	3	3	3	-	3	3	3	3
C541.4	3	3	3	3	3	-	3	3	3	3
C541.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTC 542 SOFTWARE ENGINEERING

TEACHING & SCHEME OF EXAMINATION:

No. of weeks / Semester 15 Weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Software Engineering	4	60	25	75	100	3Hrs

UNITS AND ALLOCATION OF HOURS

Unit No	Topic	No of Hours
I	INTRODUCTION TO SOFTWARE ENGINEERING	10
II	SOFTWARE DESIGN AND PLANNING	10
III	SOFTWARE MAINTENANCE AND RISK MANAGEMENT	10
IV	SOFTWARE TESTING	09
V	SOFTWARE RELIABILTY AND QUALITY ASSURANCE	09
	REVISION AND REVISION	12
	TOTAL	60

COURSE DESCRIPTION

Software Engineering deals with reliability and quality assurance of the software under development. It provides framework for development of quality software product. The course enables the students to write specifications for software system understand the importance of good software, design and develop test plans from design specifications. The course also covers other important aspects of software Engineering such as software lifecycle, requirement analysis and documentation, characteristics of good design, design techniques, testing, software implementation and maintenance etc.

OBJECTIVES

On completion subject, 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.
- Explain about software maintenance.
- 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

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C542.1	know about the Introduction To Software Engineering
C542.2	Understand the Software Design And Planning
C542.3	Able To Understand
C542.4	Apply the Software Testing
C542.5	Understand the Software Reliability And Quality Assurance

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CTC 542 SOFTWARE ENGINEERING

UNIT I INTRODUCTION TO SOFTWARE ENGINEERING **10 Hrs**

1.1 **Basics of Software Engineering :** Need for Software Engineering Definition – Software Characteristics – Software Myths – Program versus Software Products — 2 Hrs

1.2 **Software Development Life Cycle Models:** Introduction –- Waterfall Model – Prototyping model – Spiral Model – Iterative Enhancement model - — 2 Hrs

RAD model – Object Oriented Model - Advantages and Disadvantages of — 2 Hrs

above models – Comparison of various models.

1.3 **Software Requirement Analysis (SRS) :** Value of good SRS – Requirement Process – Requirement Specification – Desirable characteristics of an SRS – — 2 Hrs

Components of an SRS – Structures of a requirements documents - Problems in SRS – Requirements gathering — 2 Hrs

UNIT – II SOFTWARE DESIGN AND PLANNING **10 Hrs**

2.1 **Software Design** : Definition of software design – Objectives of software design – Process of software design – Architectural design – Modular design – — 2 Hrs

Structure chart – Coupling and Cohesion – Different types – Interface design – Design of Human Computer Interface — 1 Hr

2.2 **CODING:** Information Hiding – Programming style – Internal documentation – Monitoring and Control for coding – Structured — 2 Hrs

2.3 **Software Planning:** Software metrics - Definition – Types of metrics - Product and Project metrics – Function point and feature point metrics – — 1 Hr

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 Hrs

2.4 **CASE :** CASE and its scope – Architecture of CASE environment – Building blocks for CASE – CASE support in software Life cycle – Objectives of CASE – — 1 Hr

Characteristics of CASE tools – List of CASE tools – Categories, advantages and advantages of CASE tools - Modeling with UML — 1 Hr

UNIT – III SOFTWARE MAINTENANCE AND RISK MANAGEMENT **10 Hrs**

3.1 **Software Maintenance:** Software as an evolution entity – Software configuration management activities – 2 Hrs

Change control process –Software version control – Software configuration management – Need for maintenance – 2 Hrs

Categories of maintenance –Maintenance cost – Factors affecting the effort 1 Hr

3.2 **Risk management :** Definition of risk – Basics for different types of software risks – Monitoring of risks – Risk management – Risk avoidance – Risk detection – 2 Hrs

Risk control – Risk recovery – Sources of risks – Types of risks 1 Hr

3.3 **Project scheduling** : Introduction – Factors affecting the task set for the project – scheduling methods – Work breakdown structure – Flow graph – Gant chart - PERT 2 Hrs

UNIT – IV SOFTWARE TESTING **09 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 – 1 Hr

Advantages and disadvantages of above testing – Methods for Block box testing strategies – Methods for white box testing strategies – Testing activities – Test plan. 1 Hr

4.2 **Levels of testing:** Unit testing - Integration tests – System testing – Types. 1 Hr

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. 2 Hrs

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 – 1 Hr

Risk Associated with tools – Selecting tools – Introducing the tool in the testing process - Different categories of tools – Examples for commercial software testing tool. 1 Hr

4.5 **Code of Ethics for Software Professionals:** Human Ethics – Professional Ethics – Ethical issues in Software Engineering – Code of Ethics and professional Practice: Software Engineering code of ethics and professional 2 Hrs

Practice – Ethical issues: Right versus Wrong

UNIT – V SOFTWARE RELIABILITY AND QUALITY ASSURANCE 09 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 - 2 Hrs

Importance of software quality – SEI – CMM - Five levels – ISO 9000 – Need for ISO Certification – 1 Hr

Benefits of ISO 9000 certification – Limitation of ISO 9000 certification – Uses of ISO - Salient features of ISO 9000 Requirements – Introduction to ISO 9126 2 Hrs

5.2 **Software Reliability :** Definition – Reliability terminologies – Classification 1 Hr

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 – 2 Hrs

Principle – Re- engineering process – Difference between forward engineering and re-engineering. 1 Hr

REFERENCE BOOK

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
3	Software Engineering	Bharat Bhusan Agarwal, Sumit PrakashTayal	Firewall Media, New Delhi	Second Edition 2008
4	Software Testing	K.Mustafa and R.A.Khan	Narosa Publishing House, New Delhi	Reprint 2009
5	Software Quality	R.A. Khan,	Narosa Publishing	Reprint

		K.Mustafa and SI	House, New Delhi	2008
6	Software Engineering	Stephen Schach	TMGH Education Pvt Ltd, New Delhi	Eight Reprint 2011
7	Software Engineering fundamentals	Ali Behforooz and Fredick J Hudson	Oxford University press,	2005
8	Software Testing Principles and Practices	Srnivasandesikan, Gopalswamy Ramesh	Pearson	First Edition
9	Software Testing Concepts and Tools	NageshwaraRao Pusulri	DreamTeach	First Edition
10	Software Engineering Concepts and Application	SubhasjitDattun	OXFORD University Press	2010
11	Software Engineering	RohitKhurana	Vikas Publishing	Second Edition

Learning website

1.http://softwaretestingfundamentals.com/software-quality-assurance/

2.https://books.google.co.in/books/about/Software_Testing_Concepts_and_Practices.html?id=VzAiAQAAIAAJ&redir_esc=y

CONTINUOUS INTERNAL ASSESSMENT

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C542.1	3	3	3	3	3	-	3	3	3	3
C542.2	3	3	3	3	3	-	3	3	3	3
C542.3	3	3	3	3	3	-	3	3	3	3
C542.4	3	3	3	3	3	-	3	3	3	3
C542.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom'sTaxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs)and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTC 550 WEB PROGRAMMING PRACTICAL

TEACHING & SCHEME OF EXAMINATION:

No. of weeks /Semester 15 Weeks

Subject	Instructions		Examination			
			Marks			
	Hours / Week	Hours / Semester	Internal Assessment	Semester End Examination	Total	Duration
WEB PROGRAMMING PRACTICAL	4	60	25	75	100	3Hrs

SCHEME OF VALUATION

Writing answer for any one program from PART -A	10 Marks
Writing answer for any one program from PART -B	15 Marks
Executing program (PART – A)	10 Marks
Executing program (PART – B)	20 Marks
Result with printout (PART – A)	5 Marks
Result with printout (PART – B)	5 Marks
Demonstration of Mini Project	5 Marks
VIVA - VOCE	5 Marks
TOTAL	75 Marks

OBJECTIVES

- Create web pages using simple HTML tags
- Create web pages using HTML5 and advanced HTML tags.
- Create web pages with CSS3
- Create simple Java script codes.
- Design web pages using JSP and HTML codes.
- Use of CSS to develop rich Web applications

Course	Statement
After successful completion of this course, the students should be able to	
C550.1	Create web pages using simple HTML tags HTML5 and advanced HTML tags
C550.2	Create web pages with CSS3
C550.3	Create simple Java script ,Design web pages using JSP and HTML codes.
C550.4	Write a jquery
C550.5	Develop a ajax

CTC 550 WEB PROGRAMMING PRACTICAL

S.No	NAME OF THE EXPERIMENT	COURSE OUTCOME
	PART-A	
1.	Design a HTML page describing your profile in one paragraph. Design in such a way has 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	**550.1**
2.	Design a HTML page about computer languages. List the language. Each Language's name is a link. Prepare separate HTML documents for each language and call them in the appropriate link.	**550.1**
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 college 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.	**550.1**
4.	Develop a web page using CSS to create a time table for the class using different border style	**550.2**
5.	a)Write a Java script code that converts the entered text to uppercase b)Write a Java script code to validate the username and password. The username and password are stored in variables	**550.3**
6.	Write a Java Script code using frames and Events (When a cursor moves over an object it should display the specification of the object in another frame)	**550.3**
7.	Create a site containing banner advertisement at the top of the page. The ads are changed every 10 or 15 seconds	**550.3**
8.	Write Jquery Program for Count the number of milliseconds between the two click events on a paragraph	**550.4**
9.	Write Jquery Program for Fade in and fade out all division elements	**550.4**
10.	Write Jquery Program for Disable/enable the form submit button&Blink the text.	**550.4**
	PART-B	
11.	Collect the definitions of 5 items in Open Source. These definitions	**550.3**

	are stored in two string arrays name[] and defn[]. Write a JSP which has these two arrays and supplies the definition on request. Write a HTML document which gets the user input of the name of the item and sends the request to the JSP.	
12.	Write a JSP code to manipulate cookies	**550.3**
13.	Write a JSP code to upload data from client side.	**550.3**
14.	Write a program to check how many users have visited a website.	**550.3**
15.	Write a Code in Java Script to count number of times you move over a link or record.	**550.3**
16.	Create a JSP application using image map to give information about the institution	**550.3**
17.	Develop a simple hello world application using AJAX.	**550.5**

HARDWARE REQUIREMENT	**SOFTWARE REQUIREMNT**
Desktop Computers – 36 Nos Printer – 1 No	4. Notepad or any Text Editor 5. HTML5 supporting browsers (Any one) ➢ Internet Explorer 10 ➢ Opera 11.60 ➢ Chrome 19 ➢ Safari 5.1

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.https://www.youtube.com/watch?v=9hDKfBKuXjI

2. http://www.nitttrchd.ac.in/sitenew1/comp_sc/comp.php#page=page-1

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C550.1	3	-	3	3		3	3	3	3	3
C550.2	3	-	3	3		3	3	3	3	3
C550.3	3	-	3	3		3	3	3	3	3
C550.4	3	-	3	3		3	3	3	3	3
C550.5	3	-	3	3		3	3	3	3	3
Total	15	-	15	15		15	15	15	15	15
Correlation Level	3	-	3	3		3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 560 RELATIONALDATABASEAND MANAGEMENT SYSTEMS PRACTICAL

TEACHING & SCHEME OF EXAMINATION:

No. of weeks /Semester 15 Weeks

Course	Instructions		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Relational Database and ManagementSystem Practical	6	75	25	75	100	3Hrs

SCHEME OF VALUATION

Writing answer for any one program from PART - A	10 Marks
Writing answer for any one program from PART - B	20 Marks
Executing program (PART – A)	10 Marks
Executing program (PART – B)	20 Marks
Result with printout (PART – A)	5 Marks
Result with printout (PART – B)	5 Marks
VIVA – VOCE	5 Marks
TOTAL	75 Marks

OBJECTIVES:

On completion subject, the students must be able to

- Define data, database ,database Management systems and data base models.
- Compare file processing and database system.
- Study about architecture of DBMS.
- Understand the concept of Data warehousing, Big Data and client/Server Technology.
- State CODD's Rules.
- Explain normalization and explain different types of Normal Forms.
- Create Normalized Database structure files .

- Perform all database DDL, DML, DCL, and all related commands.
- Write Logical and Conditional statement for Database Query.
- Write procedures and functions

  .
- Create and use Triggers.
- Understanding Data warehousing & Introduction to Big data and NoSQL

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C560.1	Install, configure and connect to **MySQL server and MySQL workbench** in Windows
C560.2	To create simple data base, types, models and tcl mail
C560.3	Perform all database DDL, DML, DCL, and all related commands
C560.4	Write procedures and functions /PL
C560.5	Create and use Triggers

CTC 560 RELATIONAL DATABASE AND MANAGEMENT SYSTEMS PRACTICAL

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
	PART-A	
1.	Install, configure and connect to **MySQL server and MySQL workbench** in Windows. Create a database, backup and restore the database.	**560.1**
2.	Create a simple database for Social Networking Platform with the following entities. **a. users - table** id - auto increment, primary key field username - varchar (60) email - varchar(255) address - varchar(150) dob – timestamp is_active - TINYINT registered_on - timestamp last_logged_on - timestamp **b. friends - table_name** id - auto increment, primary key field user_id - unsigned INT, NOT NULL friend_name - varchar(60) **c. users_profiles** id-user id location	**560.2**
3	Perform the following operations on database created in **Ex.no.2** using **SELECTcommand.** i) Fetch the most recent 5 registered users. ii) Fetch all the friends of user_id user x iii) Fetch all the users who are above 21 years old. iv) Find the count of users who signed-up with gmail Id. (ie. users' email ends with @gmail.com) v) Fetch all the users who registered last month. vi) Fetch all users of 'Chennai' location . vii) Find actively monthly and weekly users count. ie. Count of users who have logged-in in the last 15 days. viii) Find how many users who have not mentioned their gender.	**560.2**

4	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 transaction control statements i) Commit ii) Rollback iii) Save point	**560.2**
5	Create a table **'author'** with the 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	**560.2**
6	Create table, **"mail"** with the following fields t DATETIME, # when message was sent srcuser VARCHAR(8), # sender (source user and host) srchost VARCHAR(20), dstuser VARCHAR(8), # recipient (destination user and host) dsthost VARCHAR(20), size BIGINT, # message size in bytes i) Sort the mail with the largest mail being first. ii)List the mails that is over 25 MB iii)Remove the duplicate rows from result set. iv)Execute a 'SELECT' query and store its result in a user defined variable. Use another 'SELECT' to display the value of the variable.	**560.2**
7.	Create two tables with the following structure. **a) Requests table** request_id - UNSIGNED, INT, AUTO INCREMENT, PRIMARY KEY from_id - INT to_id – INT **b) requests_log table** request_id - FOREIGN KEY refers to request_id field of requests table request_status - enum("PENDING", "APPROVED", "REJECTED") Create a view combining both tables to display all the requests along with their most recent status for the requests.	**560.2**

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;	**560.2**
	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	**560.3**
10.	Create two tables with the following structure. **a) users - table name** 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 INNER JOIN)	**560.3**

	ii) SELECT the users who do not have profiles (Hint: USE LEFT JOIN and exclude 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.	**560.3**
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 titles table. b. Create a **log table** 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 a trigger to accomplish this.	**560.5**
13	Create a table containing phone number, user name, address of the phone user. Write a **function** to search the address using phone number	**560.4**
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.	**560.4**
15	Create a table 'stock' to contains the item code, item name, current stock, date of last purchase. Write a **stored procedure** to seek for an item using item code and delete it, if the date of last purchase is before one year from the current date. If not, update the current stock.	**560.4**
16	Write PL/SQL Block To Create And Handle Any Two User Defined Exception	**560.4**
17	Write PL/SQL Block To Use Procedure And Function And Get The Result.	**560.4**

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.https://www.tcyonline.com/tests/relational-database-management-system

2. https://www.ibm.com/cloud/databases?cm_mmc=Search_Google-_-Hybrid+Cloud_Cloud+Platform+Digital-_-WW_IN-_-%2Brelational%20%2Bdatabase_b&cm_mmca1=000023UA&cm_mmca2=10010610&cm_mmca7=1007815&cm_mmca8=kwd-20762760882&cm_mmca9=_k_Cj0KCQjwwIPrBRCJARIsAFlVT88nO8RI1Mz_3FZPUC1bTOpK-5qB5KafWRs_GwGo7_eEyh4pn-F1gOMaAq74EALw_wcB_k_&cm_mmca10=375450065993&cm_mmca11=b&gclsrc=aw.ds&&gclid=Cj0KCQjwwIPrBRCJARIsAFlVT88nO8RI1Mz_3FZPUC1bTOpK-5qB5KafWRs_GwGo7_eEyh4pn-F1gOMaAq74EALw_wcB

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C560.1	3	-	3	3		3	3	3	3	2
C560.2	3	-	3	3		3	3	3	3	2
C560.3	3	-	3	3		3	3	3	3	2
C560.4	3	-	3	3		3	3	3	3	2
C560.5	3	-	3	3		3	3	3	3	2
Total	15	-	15	15		15	15	15	15	10
Correlation Level	3	-	3	3		3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 570 COMPONENT BASED TECHNOLOGY PRACTICAL

TEACHING & SCHEME OF EXAMINATION:

No. of weeks /Semester: 15 Weeks

Course	Instructions		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Exam.	Total	Duration
Component Based Technology Practical	6	90	25	75	100	3Hrs

SCHEME OF VALUATION

Writing answer for any one program from PART - A	10 Marks
Writing answer for any one program from PART - B	20 Marks
Executing program (PART – A)	10 Marks
Executing program (PART – B)	20 Marks
Result with printout (PART – A)	5 Marks
Result with printout (PART – B)	5 Marks
VIVA – VOCE	5 Marks
TOTAL	75 Marks

OBJECTIVES

- On completion of the following exercises, the students must be able to
- Develop and execute simple programs using C#.NET
- Understand the concepts of event handlers.
- Know the usage of various C#.Net controls
- Create C#.NET applications using menus.
- Access SQL database by using ADO.NET Use Form controls.
- Create Window applications using C#.NET form controls
- Develop XML database handling methodologies
- Accept a character from console and check the case of the character.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C570.1	Develop and execute simple programs using C#.NET Understand the concepts of event handlers.
C570.2	Know the usage of various C#.Net controls Create C#.NET applications using menus
C570.3	Access SQL database by using ADO.NET Use Form controls Create Window applications using C#.NET form controls
C570.4	Develop XML database handling methodologies
C570.5	To create simple ASP.NET

CTC 570 COMPONENT BASED TECHNOLOGY PRACTICAL

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
	PART-A	
1	Accept a character from console and check the case of the character.	**570.1**
2	Write a program to accept any character from keyboard and display whether it is vowel or not.	**570.1**
3	Write a program to accept a string and convert the case of the characters.	**570.1**
4	Develop a menu based application to implement a text editor with cut, copy, paste, save and close operations	**570.2**
5	Write a program to implement a calculator with memory and recall operations.	**570.2**
6	Develop a form in to pick a date from Calendar control and display the day, month,year details in separate text boxes.	**570.2**
7	Develop a application to perform timer based quiz of 10 questions.	**570.3**
8	Develop a application using the File and Directory controls to implement a common dialog box	**570.3**
9	Develop a database application to store the details of	**570.3**
10	Develop a database application using ADO.NET to insert, modify, update and delete operations.	**570.3**
11	Develop a application using Datagrid to display records.	**570.3**
12	Develop a application using Datagrid to add, edit and modify records	**570.3**
	PART-B	
1	Develop a application to read the details of the selected country stored in XML database and display back to the user	**570.4**
2	Develop a Window application to read an XML document containing subject, mark scored, year of passing into a Dataset	**570.4**
3	Develop a Window application to read an XML document containing employee name,code,Basic pay, HRA, DA into a Dataset	**570.4**
4	Develop a Window application to read employee records from Database and generate XML document containing employee records	**570.4**
5	Develop a Window application to read students records from Database using ADO.NET and generate XML document containing students records	**570.4**
6	Create a simple feedback form in ASP.	**570.5**
7	Write ASP program to read the properties of System drive.	**570.5**

HARDWARE REQUIREMENT	SOFTWARE REQUIREMNT
1.Desktop Computers – 36 Nos	1.Visual Studio 2008/2012/2013/2015
2. Printer – 1 No	2.Microsoft SQL Server 2005/2008 or above

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.http://www.informit.com/articles/article.aspx?p=169547&seqNum=2

2.https://link.springer.com/chapter/10.1007/978-3-540-45064-1_1

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C570.1	3	-	3	3	-	3	3	3	3	2
C570.2	3	-	3	3	-	3	3	3	3	2
C570.3	3	-	3	3	-	3	3	3	3	2
C570.4	3	-	3	3	-	3	3	3	3	2
C570.5	3	-	3	3	-	3	3	3	3	2
Total	15	-	15	15	-	15	15	15	15	10
Correlation Level	3	-	3	3	-	3	3	3	3	3

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

CTC 510 WEB PROGRAMMING

Time : 3 Hrs Max.Marks :75

PART – A (5X2=15 MARKS)				
Answer any Five Questions				
S.NO		Unit	Blooms Level	
1	Give the different between ADSL and DSL	I	R	
2	What is html5?	II	R	
3	Give the expansion of CSS3.	II	R	
4	Give the difference between class and Id attribute in CSS.	II	R	
5	Define live connect	IV	R	
6	What are implicit objects?	IV	R	
7	What are directives?	V	R	
8	What are URL attributes?	V	R	
PART – B (5X3=15 MARKS)				
	Answer any Five Questions	Unit	Blooms	
9	Definition and advantages of Internet.	I	R	
10	What is meant by font kerning?	I	R	
11	Give the use of break and continue statement.	II	U	
12	Define client side and server side scripting.	III	U	
13	Define layout manager.	III	R	
14	Give short notes on JSP elements.	IV	R	
15	How to create a statement?	IV	R	
16	What are the queries used for MYSQL?	V	R	
PART –C (5X 10 =50 MARKS)				
Answer all the question choosing sub- division (A) or Sub division (B) of each question.		Unit	Blooms Level	Max. Marks
17	A (i) Explain packet switching.	I	U	10
	(ii) Explain (a) Web server (b)Domain name	I	U	10
	[OR]			
	B List the tags for formatting a text with example.	I	R	10
18	A (i)Difference between HTML & HTML5.	II	U	10
	(ii)What are the new elements in HTML5?	II	U	10
	[OR]			
	B Explain the three types of lists that can be created in html	II	U	10
19	A (i) Give the structure of a javascript program.	III	R	10
	(ii) Explain variables and data types	III	R	10
	B (i) Describe on load and on unload events	III	R	10
	(ii) Explain cookies	III	R	10

20	A	(i) Explain the JSP architecture.	IV	U	10
		(ii) Give the life cycle of a JSP page.	IV	U	10
	B	Explain (a) request (b) session (c) application (d) out.	IV	U	10
21	A	Write a JSP program to convert entered text into uppercase.	V	U	10
		[OR]			
	B	How to create a table and records for MYSQL.	V	U	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 520 RELATIONAL DATABASE MANAGEMENT SYSTEMS

Time : 3 Hrs Max.Marks :75

PART – A (5X2=10 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	Define Database Management System.	I	R
2	What is CODD's rules?	II	R
3	Define : MySQL data types	II	R
4	Define copying and deleting tables.	III	R
5	Define Creating index.	III	R
6	What is Views?	IV	R
7	Define Applications of Graph	IV	R
8	What is creating users?	V	R

PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	What Types of database models?	I	R
10	Define Server/client And Distributed concept	II	R
11	Define Features of MySQL	II	R
12	Define operators used in sub-queries	III	U
13	What is Types of Joins?	III	R
14	Define Advanced SQL	III	R
15	What is Advantages and disadvantages of storage engines?	IV	R
16	Define Characteristics of Big Data	V	R

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max marks
17	A	(i) what is Characteristics of Database Components of Database ii) Explain Functions of Database	I	U	10
		[OR]			
	B	(i)Briefly explain the Hierarchical Database Model. (ii)Explain ER Diagram and Normalization	I	R	10
18	A	Explain the Working with MySQL Databases	II	R	10
		[OR]			
	B	Explain Aggregate functions.	II	U	10
19	A	(i)Explain Indexes. (ii)Explain Joins	III	R	10
		[OR]			

	B	(i)what is Advantages of Views (ii) Explain creating Views,Updating, Deleting	III	U	10
20	A	(i)explain Storage Engines (ii)Explain Stored Procedures	IV	R	10
		[OR]			
	B	Explain MySQL trigger	IV	R	10
21	A	Explain Data warehousing.	V	U	10
		[OR]			
	B	(i)Explain Difference between RDBMS and NoSQL. (ii) Types of Data stores in NoSQL	V	U	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 530 COMPONENT BASED TECHNOLOGY

Time : 3 Hrs Max.Marks :75

PART – A (5X3=15 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	What is Managed Code?	I	R
2	What is Intermediate Language?	II	R
3	List any four data types in VB.NET?	I	U
4	How will declare a constant variable?	I	R
5	What is an event?	II	R
6	Explain the methods of combo box control	I	R
7	Define ADO .Net.	II	R
8	What is XML Name space?	II	U
PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	What is use JIT Compilation?	III	R
10	Explain CLR in detail.	III	U
11	What are the types of array? explain Jagged array.	III	R
12	Differentiate IF…THEN and IF….THEN….ELSE with example.	IV	U
13	When does mouse down mouse up event occur?	IV	R
14	Create a simple window with six different controls.	V	R
15	Explain the features of ADO.NET	V	U
16	Write about HTML controls in ASP.NET.	V	U

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max Marks
17	A	(i)Explain the architecture of .Net frame work.	I	U	5
		(ii)What is managed code explain its advantages.	I	U	5
		[OR]			
	B	(i)Explain .NET frame work class library.	II	R	5
		(ii)How will use Visual studio .NET	II	R	5
18	A	i)Explain the various data type in VB.Net.	II	U	5
		(ii) Differentiate DO Until…LOOP and DO…. LOOP Until with example.	II	U	5
		[OR]			
	B	(i)Explain about structure and Enumerated data types with example	II	R	5
		(ii)Explain Data members and member methods	II		5
19	A	What do you menu dialog box? Explain the uses of show() and show Dialog() with example.	III	R	10
		[OR]			
	B	Explain the steps to create a menu with File, Edit and Quit options. Also assign accessing key and shortcut keys	III	AP	10

20	A	(i) Explain the ADO.NET architecture.	IV	AN	
		(ii) Explain connection and command object with an example program	IV	R	
		[OR]			
	B	What is stored procedure? Write the steps to create a stored procedure	IV	R	
		(ii)Create your own stored procedure with 3 parameters to insert a record in a table.	V	R	
21	A	i) Write about element and entities	V	R	
		(ii) Define schema. List the uses of Schema	V	R	
		[OR]			
	B	(i)Define SOAP. Write the advantage of SOAP	V	R	
		(ii)Explain SOAP building blocks.	V	R	

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 541 CLOUD COMPUTING

Time : 3 Hrs Max.Marks :75

PART – A (5X2=10 MARKS)			
	Answer any Five Questions		
S.NO		Unit	Blooms Level
1	Define cloud computing.	I	R
2	What is meant y SRS?	I	R
3	Define SPI.	II	R
4	Expand Saas,Paas,Iaas.	II	U
5	What are the types of hardware virtualization?	III	R
6	What are the features of Vmware?	III	R
7	Define Storage Network?	IV	R
8	Define Virtual threats.	V	R

PART – B (5X3=15 MARKS)			
Note : (i) Answer any Five Questions		Unit	Blooms Level
9	What are the benefits of an cloud scenarios?	I	R
10	Define public and private clouds.	I	R
11	Define memory and storage virtualization	II	R
12	Write short notes on Virtual Box.	III	R
13	What is meant by object storage?	IV	R
14	Define policy types..	IV	U
15	Define tenancy.	V	R
16	How to securing data in cloud?	V	R

PART –C (5X 10 =50 MARKS)					
Note: (i) Answer all the question choosing sub-division (A) or Sub division (B) of each question. (ii) All questions carry equal marks.			Unit	Blooms Level	Max Marks
17	A	(i)Explain about origins of cloud computing.	I	U	5
		(ii)What are the security concerns?	I	U	5
		[OR]			
	B	(i)Briefly explain about Architectural influences.	I	U	10
18	A	(i) Explain about SPI framework.	II	U	5
		(ii)What are the benefits in Software as a Service?	II	U	5
		[OR]			
	B	(i)How will use Amazon EC2.	II	U	5
		(ii) What are the advantages of cloud computing?	II	U	5

		[OR]			
19	A	Brief explain the types of hardware virtualization	III	U	10
		[OR]			
	B	(i) what are the limitations of virtualization?.	III	U	5
		ii) Explain Microsoft hyper V.	III	U	5
		[OR]			
20	A	(i)Explain the architecture of storage.	IV	R	5
		(ii)Describe file systems.	IV	U	5
		[OR]			
	B	(i) Briefly explain about NAS and FC SANs.	IV	U	10
21	A	(i)What is CSA Cloud Reference Model?	V	U	5
		(ii)what are the security challenges in cloud computing?	V	U	5
	B	.Describe briefly about virtual threats.	V	U	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 542 SOFTWARE ENGINEERING

Time : 3 Hrs Max.Marks :75

PART – A (5X2=10 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	Define sofware engineering.	I	U
2	What is meant by SRS?	I	R
3	Define software metrics	II	R
4	Expand CASE	II	R
5	What is PERT?	III	U
6	Define risk.	III	U
7	What is meant by software testing?	IV	R
8	Define SQA plan.	V	R
PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	What are the components of an SRS?	I	R
10	Define coupling and cohension.	II	R
11	Define product and project metrics	II	R
12	Write short notes on software maintenance.	III	R
13	What is meant by risk avoidance and risk detection?	III	U
14	Define fault,error,failure.	IV	R
15	Define verification and validation.	IV	R
16	Expand the terms:SEI and CMM	V	R

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max Marks
17	A	(i)Explain in detail the software development life cycle .	I	R	5
		(ii)Explain about requirement gathering tools.	I	R	5
		[OR]			
	B	(i) Explain program versus software products.	I	U	5
		(ii) Explain software requirement specification.	I	U	5
		[OR]			
18	A	(i) Explain the types of software metrics	II	U	5
		(ii)What are the objectives of CASE?	II	U	5
		[OR]			

	B	(i) Brief explain the architecture of CASE environment	II	R	10
19	A	Write short notes on risk recovery, risk control and risk avoidance.	III	U	10
		[OR]			
	B	(i) Explain software version control.	III	U	5
		(ii) What are the benefits of PERT?	III	U	5
20	A	(i)Write short notes on software testing principles.	IV	U	5
		ii)Write short notes on testing activities	IV	U	5
	B	(i)What are the characteristics of bugs?	IV	R	5
		(ii)Write about benefits of tools.	IV	R	5
21	A	(i)What is ISO? What is the need for ISO Certification?	V	U	5
		(ii)What are the classifications of failure?	V	U	5
	B	Describe briefly about reverse engineering process.	V	R	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 610 COMPUTER HARDWARE AND SERVICING

Scheme Of Instruction And Examination

No. of weeks/semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Computer hardware and servicing	6	90	25	75	100	3Hrs

Unit no	Topics	TIME(Hrs)
I	MOTHERBOARD AND ITS COMPONENTS	15
II	MEMORY AND STORAGE DEVICES	15
III	DISPLAY, POWER SUPPLY & BIOS	15
IV	MAINTENANCE & TROUBLESHOOTING OF DESKTOP AND LAPTOP COMPUTERS	16
V	MOBILE PHONE SERVICING	17
REVISION AND TEST		12
TOTAL		90

TOPICS AND ALLOCATION OF HOURS

COURSE DESCRIPTION

A Computer Engineer should be able to install and maintains Keyboard, Printer, Mouse, Monitor, etc. along with the computer system. Additionally he should also be able to maintain and service mobile phones. The course provides the necessary knowledge and skills regarding working, construction and interfacing aspects of peripherals. The students will get to know how various peripherals communicate with central processing unit of the computer system and pattern their respective operations. The student will also get to know about how Mobile phones are maintained. This subject provides the required background of installation, maintenance and testing of peripheral with Computers and Laptops. This also provides the background of Installation and troubleshooting of Mobile Phones.

OBJECTIVES

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

- Know the evolution of Personal Computer from PC through Core i and Laptop.
- Know and explain the major components that make up the system unit.
- Know the data process and store them in meaningful information.
- Explain about the principle of operations of Keyboard, Mouse and Displays.
- Understand the components of media system.
- Know the Basics, working principle, specification and modern technology of different types of drives.
- Know the specification of I/O Ports of all I/O devices like serial, parallel, USB – Game port, Blue tooth and IP Connectors
- Know the operation, working principle and troubleshooting of devices like Dot matrix, Inkjet, Laser, Thermal, MFP Printers.
- 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.
- Know and explain the major components of Laptop.
- Trouble shoot the problems in Laptop.
- Understand the basic components and tools used in servicing of Mobile phones.
- Know to install the software required for mobile phones and to maintain it.
- Troubleshoot the problems in Mobile Phones.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C610.1	Understand basic motherboard components
C610.2	Know the memory and I/O devices
C610.3	Understand the basic principles and Operations of Graphic cards and SMPS
C610.4	Able to Know maintenance and upgrading for desktop and Laptop Computers
C610.5	Understand the basic of mobile communication and installation software's

CTC 610 COMPUTER HARDWARE AND SERVICING

UNIT – I MOTHERBOARD COMPONENTS **15 HRS**

1.1	**Motherboard components:** Processor sockets/slots – Memory sockets – Chipsets – Cache– BIOS – Clock generator – RTC – Super I/O Controller –	2 Hrs
	Power connector – Battery –Keyboard/Mouse Connectors – Jumpers – Ports and Headers – Pin Connectors -	2 Hrs
	Motherboard Form factor - Hardware, Software and Firmware.	1 Hr
1.2	**Mother Board:** Architecture and block diagram	2 Hrs
1.3	**Processors:** Introduction –Core2 Duo processor, Quad core processor,	2 Hrs
	Core i3, i5, i7 series, AMD A10 series, Xeon Processor	2 Hrs
1.4	**Chipsets:** Chipset basics - North / South Bridge architecture and Hub architecture.	2 Hrs
1.5	**Bus Standards**: Overview and features of PCI, AGP, USB, & Processor Bus	2 Hrs

UNIT – II MEMORY AND I/O DEVICES **15 HRS**

2.1	**Primary and Secondary Memory**: Introduction - Memory speed – Access time - Wait states. Main Memory – types - Memory errors.	2 Hrs
	Hard Disk: Introduction – Construction – Working Principle - File Systems – Formatting and Troubleshooting.	2 Hrs
2.2	**Removable Storage and Special Devices:** DVD-ROM – Recordable DVD - Rewritable DVD. Blu-ray: Introduction – Blu-ray Disc Parameters –	2 Hrs
	Recording and Playback Principles. Special drives: External drives, Memory stick, USB flash drive, Solid state drive.	2 Hrs
2.3	**Keyboard and Mouse:** Keyboard**:** Interfacing and Signals (USB, Wireless),Types of keys, Keyboard Matrix, Key bouncing,	2 Hrs
	Types of keyboard (Simple, Mechanical). Mouse: Optical mouse operation – Optical mouse cleaning – Troubleshooting flowchart for a mouse.	2 Hrs
2.4	**Printers and Scanners:** Printer: Introduction – Types of printers – Dot Matrix,Inkjet, Laser, Thermal, MFP printer (Multi Function Printer) - Operation and Troubleshooting. Scanner: Introduction, Scanner mechanism, working principle	2 Hrs
	Types of Scanners (Barcode, Handheld, Flatbed) – Preventive maintenance and Troubleshooting.	1 Hr

UNIT– III DISPLAY, POWER SUPPLY AND BIOS **15 Hrs**

3.1	**Displays and Graphic Cards:** Displays: LCD Principles – Plasma Displays – TFT Displays **–**	2 Hrs
	LED Displays. Graphic Cards: Video capture card.	2 Hrs
3.2	**SMPS:** Block diagram – Basic Principles and Operations – O/P Voltage – Cable color code –	2 Hrs

	Connectors and Power Good – Common Failures (No circuit diagram to be discussed)	2 Hrs
3.3	**Bios:** Bios functions – Cold and Warm booting – BIOS error codes –	2 Hrs
	BIOS interrupts – BIOS advanced setup. Upgrading BIOS,	1 Hr
	Flash BIOS-setup. Identification of different BIOS (AMI, AWARD BIOS).	2 Hrs
3.4	**POST:** Error, Beep Codes, Error messages, Post – Faults related to Hardware.	2 Hrs

UNIT – IV MAINTENANCE AND TROUBLESHOOTING OF DESKTOP & LAPTOP COMPUTERS **16 Hrs**

4.1	**Laptop:** Difference between laptop and desktop- Types of laptop – Block diagram –working principles–configuring laptops and power settings -	2 Hrs
	SMD components, ESD and precautions	1 Hr
4.2	**Laptop components:** Adapter – Types, Battery –Types and basic problems, RAM– types, CPU – types, Laptop Mother Board - block diagram, Laptop Keyboard.	2 Hrs
4.3	**Installation and Troubleshooting:** Formatting,	1 Hr
	Partitioning and Installation of OS	2 Hrs
	Trouble Shooting Laptop and Desktop computer problems.	1 Hr
4.4	**Preventive Maintenance and Upgrading:** Preventive Maintenance: Tools required –active and passive maintenance –	2 Hrs
	Types of Diagnostics software –Preventive Maintenance Schedule.	1 Hr
	Upgrading of Systems: Motherboard, Memory, CPU, Graphics Card,	2 Hrs
	BIOS up gradation and Updating of System & Application software.	2 Hrs

UNIT – V MOBILE PHONE SERVICING **17 Hrs**

5.1	**Mobile phone components:** Basics of mobile communication, Components: battery- antenna-ear piece- microphone -speaker-buzzer-	2 Hrs
	LCD- keyboard. Basic circuit board components – Names and functions of different ICs used in mobile phones.	2 Hrs
5.2	**Tools & Instruments used in mobile servicing:** Mobile servicing kit – Soldering and de-soldering components using different soldering tools	2 Hrs
	Use of multi-meter and battery booster.	2 Hrs
5.3	**Installation & Troubleshooting:** Assembling and disassembling of different types of mobile phones –	2 Hrs
	installation of OS - Fault finding & troubleshooting-	2 Hrs
	Jumper techniques and solutions	1 Hr
5.4	**Software**: Flashing- Formatting- Unlocking	1 Hr
	Use of secret codes- Downloading- Routing	1 Hr
5.5	**Diagnostic Software and Viruses:** Mobile Viruses – Precautions – Antivirus Software-Firewalls	2 Hrs

Revision and Test **12Hrs**

REFERENCE BOOKS

S.No	Title	Author	Publisher & Year of Publishing /Edition	
1	Computer Installation and Servicing	D.Balasubramanian	TataMc-Graw Hill, New Delhi	Second Edition 2010
2	PC Repair and Maintenance	Joel Rosenthal	Fire wall Media, New Delhi	First Edition 2007 Reprint : 2008
3	Modern Computer Hardware Course	ManaharLotai, Pradeep Nair, PayalLotia	BPB Publication New Delhi	Second Revised and Updated Edition 2011
4	Troubleshooting,Maintaining and Repairing PCs	Stephen J.Bigelow	TMH, New Delhi	Fifth Edition
5	PC Hardware in a nutshell	Robert Bruce Thompson.	O'Reilly Media	Third Indian Reprint 2008.
6	The Laptop Repair Workbook: An Introduction toTroubleshooting and Repairing Laptop Computers.	Morris Rosenthal	Foner books	First Edition 2008
7	The Cell Phone Handbook	P.J. Stetz and Penelope Stetz	FindTech Ltd	Second Edition
8	Advanced Mobile Repairing	PanditSanjib	BPB Publication, New Delhi	First Edition 2010

Learning websites

1. https://www.suvideals.ooo/eBooks/computer-installation-servicing-balasubramanian-pdf-ebook-download/9780071336284-BEPDF.html
2. http://pdf.textfiles.com/manuals/TELECOM-F-R/Key%20Voice%20Installation%20And%20Maint%204-00.pdf

CONTINUOUS INTERNAL MARKS

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO-POS&POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C610.1	3	3	3	3	3	-	3	3	3	3
C610.2	3	3	3	3	3	-	3	3	3	3
C610.3	3	3	3	3	3	-	3	3	3	3
C610.4	3	3	3	3	3	-	3	3	3	3
C610.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 620 MOBILE COMPUTING

SCHEME OF INSTRUCTION AND EXAMINATION
No. of weeks / semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Mobile Computing	4	60	25	75	100	3Hrs

TOPICS AND ALLOCATION OF HOURS

UNIT	TOPIC	TIME(Hrs)
I	INTRODUCTION TO MOBILE COMPUTING , WIFI , BLUETOOTH	08
II	INTRODUCTION TO GSM , SMS ,GPRS , MOBILE OS	08
III	INTRODUCTION TO ANDROID	12
IV	VIEWS	10
V	LOCATION BASED SERVICE AND SQLITE	10
	TEST AND REVISION	12
	TOTAL	60

Course description

Knowing the details of Mobile and their working principle are need of the every common man. Mobile Application development is the very hot business domain. Majority of the corporate have a separate division for the development of mobile applications. It is imperative that students must know the way to apply advanced data communicating methods and networking protocols for wireless and mobile devices.
Students must utilize and employ application frameworks for developing mobile applications including under disconnected and weakly connected environment They should be in a position to select components and networks for particular application , creatively analyze mobile and wireless networks and critically analyze security issues of mobile and wireless computing systems.

OBJECTIVES

- 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 understand the components of a Mobile App.
- To give practical experience in the area through the development of Mobile app
- To design successful mobile computing applications and service
- 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 database.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C620.1	Understand the basic concepts and systems issues in mobile Computing
C620.2	Understand the network protocols in Mobile computing
C620.3	Able to know Android OS applications and service
C620.4	Understand the components of a Mobile Applications.
C620.5	To know the Mobile apps using database

CTC 620 MOBILE COMPUTING

	UNIT -I Introduction to Mobile Computing , WiFi , Bluetooth	**08 Hrs**
1.1	Introduction : Evolution of Mobile Computing – Important terminologies – Mobile computing functions – Mobile computing Devices – Networks: Wired ,Wireless, Adhoc -	2 Hrs
	Comparison of wired and wireless mechanism - Various types of wireless communication technologies used in Mobiles, Antennas	1 Hr
1.2	Architecture : Architecture of Mobile Computing – 3 Tier Architecture	1 Hr
	Presentation(Tier-1), Application (Tier -2), Data (Tier – 3) –	1 Hr
1.3	Mobile computing through Telephony: Evolution through telephony	1 Hr
1.4	Wireless LAN: Introduction - Applications of WLAN – Infrared versus Radio transmission –	1 Hr
	Features of WI-FI and WI-MAX – Bluetooth :Introduction and application – Multiple Access Procedures	1 Hr
	UNIT- II Introduction to GSM , SMS ,GPRS , Mobile OS	**08 Hrs**
2.1	Global System for Mobile Communication (GSM): Introduction – GSM Architecture – GSM Entities (Basics only) – Introduction to CDMA	2 Hrs
2.2	Short Message Service (SMS):Mobile computing over SMS – Short Message Service –	1 Hr
	Strength of SMS – SMS Architecture – Value added services through SMS – VAS Examples	1 Hr
2.3	General Packet Radio Service (GPRS): Introduction – GPRS Packet data Network :	1 Hr
	Applications for GPRS : Generic Applications, GPRS Specific Applications – Limitations of GPRS – Features of 3G and 4G Data Service	1 Hr
2.4	Mobile Operating Systems : Evaluation of Mobile Operating System-	1 Hr
	Handset Manufactures and their Mobile OS- Mobile OS and their features. Linux Kernel based Mobile OSr.	1 Hr
	UNIT-III Introduction to ANDROID	**12 Hrs**
3.1	ANDROID : Android Versions – Features of Android Architecture of Android –	1 Hr
	Android Market – Android Runtime (Dalvik Virtual Machine)	1 Hr
3.2	ANDROID SDK & ADT : Android SDK – Android Development Tool ADT)	1 Hr
	Installing and configuring Android– Android Virtual Device (AVD)	1 Hr
3.3	ACTIVITIES & INTENTS : Understanding Activities – Linking activities and indents –	2 Hrs
	Calling built-in applications using intents – Fragments Displaying Notifications	2 Hrs
3.4	User Interface : Views and View groups – Layouts –	2 Hrs
	Display Orientation – Action Bar – Listening for UI Notifications	2 Hrs

	UNIT-IV VIEW	10 Hrs
4.1	Basic Views : Textview, Button, Image Button, EditText, CheckBox, ToggleButton,	1 Hr
	RadioButton and RadioGroup Views, ProgressBar View, Auto Complete Text View	1 Hr
4.2	Advanced Views : Time Picker View and Date Picker View – List Views – Image View –	2 Hrs
	Menus – Analog and Digital View – Dialog Boxes	1 Hr
4.3	Displaying Pictures & Menus with Views: Image View – Gallery View – ImageSwitcher –	2 Hrs
	Grid View - Creating the Helper Methods – Options Menu – Context Menu	1 Hr
4.4	SMS, Phone: Sending SMS – Receiving SMS – Making phone call	2 Hrs
UNIT V Location Based Service and SQLite		**10 Hrs**
5.1	Location Based Services:Obtaining the Maps API Key- Displaying the M	1 Hr
	Zoom Control - Navigating to a specific location –	1 Hr
	Adding Marker – Geo Coding and reverse Geo coding	1 Hr
5.2	Content Provider : Sharing data – view contacts – Add contacts –	1 Hr
	Modify contacts – Delete Contacts	1 Hr
5.3	Storage : Store and Retire data's in Internal and External Storage – SQLite - Creating and using databases	2 Hrs
5.4	Android Service : Consuming Web service using HTTP , downloading binary Data -	1 Hr
	Downloading Text Content – Accessing Web Service - Architecture of Location Based services and its examples.	2 Hrs

TEXT BOOK

S.No	Title	Author	Publisher
1	Beginning Android 4 Application Development	Wei-Meng Lee	Wiley India Edition
2	Android Apps for Absolute Beginners	Jackson	Apress
3	Mobile Computing	Computing Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal	TMGH
4	Mobile communications	Jochenschiller	Pearson Education,

REFERENCE BOOKS

1- Mobile Computing: Technology, Applications and Service Creation By: Talukder and Yavagal By: Talukder and Yavagal 2- Mobile Computing Principles
2- 2- Mobile Computing Principles By: Reza BFar By: Reza BFar

LEARNING WEBSITES

1.https://doc.lagout.org/programmation/Android/Android%20Apps%20for%20Absolute%20Beginners%20%5BJackson%202011-03-28%5D.pdf
2. https://lecturenotes.in/subject/122/mobile-computing-mc.

CONTINUOUS INTERNAL MARKS

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

Co-Pos & Pos Mapping Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C620.1	3	3	3	3	3	-	3	3	3	3
C620.2	3	3	3	3	3	-	3	3	3	3
C620.3	3	3	3	3	3	-	3	3	3	3
C620.4	3	3	3	3	3	-	3	3	3	3
C620.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 631 MULTIMEDIA SYSTEMS

SCHEME OF INSTRUCTION AND EXAMINATION
No. of weeks / semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Multimedia Systems	5	75	25	75	100	3 Hrs

TOPICS AND ALLOCATION OF HOURS

UNIT	TOPIC	TIME(Hrs)
I	INTRODUCTION TO MULTIMEDIA	10
II	DEFINING OBJECTS FOR MULTIMEDIA SYSTEMS	10
III	MULTIMEDIA DATA AND STANDARDS	16
IV	MULTIMEDIA DEVICES AND MAKING MULTIMEDIA	15
V	MULTIMEDIA DESIGN,MULTIMEDIA FOR INTERNET	12
	REVISIONANDTEST	12
	TOTAL	75

COURSE DESCRIPTION

The exponential growth of Engineering and Technology particularly information and communications engineering has benefited the day-today life of entire mankind in all respects. The research and developments are continually happening in this field to fine tune and improve the field particularly also in multimedia which directly or indirectly has impact on every man's daily life. As such the introduction of current and future trends and technology of multimedia systems would strengthen the knowledge and skills of engineering community in taking one step further the prosperity of man kind.

OBJECTIVES:

- Students will be able to understand the relevance and underlining infrastructure of multimedia system.
- The purpose of the course for the students is to apply contemporary theories of multimedia learning to the development of multimedia products.
- Analyze instructional and informational media (audio/ visual materials, web based materials, games and simulations etc) applied with multimedia techniques.
- Acquire knowledge about multimedia software tools.
- To understand the multimedia systems components, evolving technologies and fundamental elements of any multimedia system.
- Acquire knowledge about the fundamentals of handling multimedia data, compression/ decompression and various media file formats.
- Understand the underlying principles of processing various multimedia data.
- Understand the working principles of various multimedia input–output devices.
- Gain knowledge about various multimedia related standards.
- Understand the design and development process of multimedia projects.
- Understand the technologies of multimedia used in Internet and its applications.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C631.1	Able to know the multimedia basics.
C631.2	Understand the multimedia systems components
C631.3	Learn about the fundamentals of handling multimedia data, compression/ decompression and various media file formats
C631.4	Apply the Multimedia input /output technologies to make multimedia project.
C631.5	Understand the technologies of multimedia used in Internet and its applications

CTC 631 MULTIMEDIA SYSTEMS

UNIT -I INTRODUCTION TO MULTIMEDIA **10 Hrs**

1.1	**Introduction :** Definition of multimedia, Multimedia Basics, Where to use Multimedia, Multimedia Elements –Multimedia Applications, Virtual Reality, Delivering Multimedia.	2 Hrs
1.2	**Multimedia Systems Architecture**: Multimedia Workstation Architecture, High resolution Graphic displays,	1 Hr
	Multimedia Architecture Based on interface bus, Network architecture for Multimedia systems.	1 Hr
1.3	**Evolving Technologies For Multimedia Systems**: Hypermedia Documents, Hypertext, Hyper Speech, HDTV and UDTV, 3D Technologies and Holography,	2 Hrs
1.4	**Defining Objects for Multimedia System:**, Text, Images, Audio and Voice, Full- Motion and Live Video, Multimedia Data Interface Standards, File formats for multimedia systems, Video processing standards.	2 Hrs
1.5	**Multimedia Software** :Overview of Multimedia Software Tools, Open Source Replacements, Multimedia OS, Multimedia Authoring,	1 Hr
	Some Useful Editing and Authoring Tools, VRML, OpenGL, Windows and Ope Source API	1 Hr

UNIT-II DEFINING OBJECTS FOR MULTIMEDIA SYSTEMS **10 Hrs**

2.1	**Text:** About Fonts and Faces, Using Text in Multimedia, Hypermedia and Hypertext, Using Hypertext, Hypermedia Structures, Hypertext Tools.	2 Hrs
2.2	**Images**: Making Still Images, Bitmaps, 1 bit images, 8-bit gray level images, 8-bit color images, Dithering, 24 bit color images, Vector Drawing, 3-D Drawing and Rendering, Color,	1 Hr
	Understanding Natural Light and Color, Computerized Color, Color Palettes, Color Look-up table. Image Processing, Image acquisition, Image enhancement. Color image processing.	1 Hr
2.3	**Sound :** The Power of Sound, Digital Audio, Making Digital Audio Files, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds,	1 Hr
	Adding Sound to Your Multimedia Project , Audio Recording, Keeping Track of Your Sounds, Audio CDs, Sound for Your Mobile, Sound for the Internet.	1 Hr
2.4	**Animation**, the Power of Motion, Principles of Animation, Animation by Computer, Animation Techniques. animation using OpenGL	2 Hrs
2.5	**Video**: Using Video, How Video Works and Is Displayed, Analog Video, Digital Video, Displays, Digital Video Containers, Codec, Video Format Converters, Obtaining Video Clips, Shooting and Editing Video.	2 Hrs

UNIT III MULTIMEDIA DATA AND STANDARDS **16 Hrs**

3.1	**Data Compression**: Need for Data compression, General Data compression Scheme, Compression standards,	1 Hr
	Non-lossy compression for images,Lossy compression for Photographs and video, Hardware Vs Software Compression.	2 Hrs
3.2	**Compression Schemes and standards**:(Only Concepts of) Binary image compression, Color, Gray Scale and Still-video image compression, JPEG, video image compression,	2 Hrs
	Multimedia Standards for Video, Requirements for Full-motion Video Compression, MPEG, Audio compression, Fractal compression, advantages / disadvantages.	2 Hrs
3.3	**Data and File Format Standards**: Popular File Formats, RTF, RIFF, GIF, PNG, TIFF, MIDI, JPEG, JFIF,	2 Hrs
	AVI, WAV, BMP, WMF,MIX, MPEG standards. TWAIN	1 Hr
3.4	**Multimedia Databases**, Storage and Retrieval, Database Management systems	2 Hrs
	Database Organization and Transaction management for multimedia	1 Hr
3.5	**Multimedia Information Sharing and Retrieval** - Social Media Sharing User- Generated Media Content Sharing-	1Hr
	Media Propagation in Online Social Networks. Content-Based Retrieval in Digital Libraries	2 Hrs

UNIT IV MULTMEDIA DEVICES AND MAKING MULTIMEDIA **15 Hrs**

4.1	**Multimedia input/output Technologies:** Limitations of Traditional input devices, Multimedia input output devices, PEN input, Working of Electronic Pen,	2 Hrs
	Video and image display systems, Video display technology standards, CRT, display terminology, Flat panel display system.	2 Hrs
4.2	**Print Output, image, audio and video Technologies:** Comparison of printing technologies, Laser printing, Dye sublimation printer	1 Hr
	Color printing technology issues. Image scanners, types, Digital voice and audio, Voice recognition systems,	2 Hrs
	Digital Camera, video frame grabber, video and still image processing, video camera, full-motion video controllers, video capture board.	2 Hrs
4.3	**Making Multimedia:** The Stages of a Multimedia Project, Creativity, organization, Communication, Hardware, Software, Text Editing and Word Processing Tools, OCR Software, Painting and Drawing Tools,	2 Hrs
	3-D Modeling and Animation Tools, Image- Editing Tools, Sound-Editing Tools, Animation, Video, and Digital Movie Tools, Authoring Systems, Making Instant Multimedia, Types of Authoring Tools.	2 Hrs
4.4	**Multimedia Skills**: The Team, Project Manager, Multimedia Designer, Interface Designer, Writer, Video Specialist, Audio Specialist,	1 Hr
	Multimedia Programmer, Producer of Multimedia for the Web	1 Hr

UNIT V MULTIMEDIA DESIGN, MULTIMEDIA FOR INTERNET **12 Hrs**

5.1 **Designing and Producing**, Designing, Designing the Structure, Designing the User Interface, 2 Hrs

Producing, Tracking, Copyrights, Virtual reality designing and modeling. 2 Hrs

5.2 **The Internet and Multimedia**: The Bandwidth Bottleneck, Internet Services, MIME-Types, 1 Hr

Multimedia on the Web, Web Page Makers and Site Builders, Plug-ins and Delivery Vehicles. 1 Hr

5.3 **Designing for the World Wide Web**: Developing for the Web, Small-Device 2 Hrs

Workspace, text and images for the Web, Clickable Buttons, Client-Side Sound for the Web, Animation for the Web, and Video for the Web, HTML5 Video - Plug-ins and Players. 1 Hr

5.4 Multimedia Communication and applications, Study of Multimedia networking, Quality of data transmission, Media on demand, Multimedia Over Wireless and Mobile Networks -Media Entertainment, web-based applications, 2 Hrs

e-learning and education- Cloud Computing for Multimedia Services – Cloud-Assisted Media Sharing - Delivering: Testing, Preparing for Delivery-File Archives-Delivering on CD-ROM-Delivering on DVD 1 Hr

Text Books

S.No	Title	Author	Publisher &Year of Publishing /Edition	
1	Fundamental of Multimedia	Ze- Nian Li and M. S. Drew.	Pearson Education	Second edition 2014
2	Multimedia: Making It Work.	Tay Vaughan	Tata-McGrawHill	Eighth Edition
3.	Multimedia systems Design.	Prabhatk.Andleigh, KiranThakra	PHI.	
4.	"Multimedia Computing, Communication andApplications",.	Ralf Steinmetz and KlaraNahrstedt	Pearson Education	
5.	Multimedia Communication Systems: Techniques, Standards, and Networks	K.R. Rao	TMH	

Reference Books:

S.No	Title	Author	Publisher &Year of Publishing /Edition	
1	Computer Graphics Multimedia and Animation,	Malay K.Pakhira	PHI	second edition
2	Principles of Multimedia,	RanjanParekh	TMGH, New Delhi	
3	Multimedia Systems	John F. Koegel Buford	Pearson Education	
4	Multimedia Technology & Application	David Hillman	Galgotia Publications Pvt Ltd.	

Learning websites

1. https://lecturenotes.in/subject/133/multimedia-systems-ms
2. https://nptel.ac.in/courses/117105083/pdf/ssg_m1l1.pdf

CONTINUOUS INTERNAL MARKS

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

I) Attendance - 5 Marks

Ii) Test - 10 Marks
Iii) Assignment - 5 Marks
Iv) Seminar - 5 Marks

Total - 25 Marks

Co-Pos&Pos Mapping Matrix

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PSO1**	**PSO2**
C631.1	3	3	3	3	3	-	3	3	3
C631.2	3	3	3	3	3	-	3	3	3
C631.3	3	3	3	3	3	-	3	3	3
C631.4	3	3	3	3	3	-	3	3	3
C631.5	3	3	3	3	3	-	3	3	3
Total	15	15	15	15	15	-	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 632 OPEN SOURCE SOFTWARE

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks / semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
OPEN SOURCE SOFTWARE	5	75	25	75	100	3 Hrs

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME(Hrs)
I	OVERVIEWOF OPEN SOURCE SOFTWARE AND OPERATING SYSTEM	10
II	OPEN SOURCE PROGRAMMING LANGUAGE – PHP	13
III	OPEN SOURCE DATABASE	12
IV	PYTHON	14
V	OPEN SOURCE SOFTWARE TOOLS AND TECHNOLOGIES	14
	TEST AND REVISION	12
	TOTAL	**75**

COURSE DESCRIPTION

The main aim of this subject is to enable the students to know the basic concepts of open source software and tools. The students will learn about the principles of open source software, web Servers, databases, operating systems, programming languages and application development.

OBJECTIVES:

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

- 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 in PHP.
- Understand how to access a database using PHP
- Discuss about the advanced Database techniques.
- Discuss about the ApacheWeb 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.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C632.1	Understand The Overviewof Open Source Software And Operating System
C632.2	Know Open Source Programming Language – Php
C632.3	Understand The Open Source Database
C632.4	Know About The Python
C632.5	Understand The Open Source Software Tools And Technologies

CTC 632 OPEN SOURCE SOFTWARE

	UNIT – I OVERVIEWOF OPEN SOURCE SOFTWARE AND OPERATING SYSTEM	**10 HRS**
1.1	Introduction : Need of Open Sources – Advantages of Open Sources – Applications -	2 Hrs
	FOSS – FOSS usage – Free Software Movement, Commercial aspects of Open Source movement -	2 Hrs
	Certification courses issues - global and Indian. Application of Open Sources	1 Hr
1.2	Open source software operating systems – LINUX – features of linux	1 Hr
	Linux architecture - Linux advanced concepts	2 Hrs
1.3	Open SPARC Project – Open source compilers –	1 Hr
	Model driven architecture – Eclipse IDE Platform	1 Hr
	Difference between open source softwares and other types of softwares	
	UNIT – II OPEN SOURCE PROGRAMMING LANGUAGE – PHP	**13 HRS**
2.1	Introduction: What is PHP? - Basic Syntax of PHP - programming in web environment -	2 Hrs
	Common PHP Script Elements - Using Variables - Constants -	2 Hrs
	Data types - Operators ; Statements -	1 Hr
	Working With Arrays - Using Functions – OOP - String Manipulation and Regular Expression	2 Hrs
2.2	File and Directory Handling - Including Files - File Access	2 Hrs
2.3	Working With Forms - Processing Forms -Form Validation -	2 Hrs
	Introduction to advanced PHP concept Simple programs Using PHP	2 Hrs
	UNIT – III OPEN SOURCE DATABASE	**12 HRS**
3.1	MySQL: Introduction - Setting up an account - Starting, Terminating and writing your own MySQL Programs -	2 Hrs
	Record Selection Technology - Working with Strings -	1 Hr
	Date and Time - Sorting Query Results module – Generating Summary -	1 Hr
	Working with Metadata - Using Sequences – MySQL and Web	2 Hrs
3.2	PHP and SQL database: PHP and LDAP ; PHP Connectivity ;	2 Hrs
	Sending and receiving emails	1 Hr
3.3	PHP Database Connectivity: Retrieving data from MySQL -	2 Hrs
	Manipulating data in MySQL using PHP	1 Hr

UNIT – IV PYTHON **14 HRS**

4.1	Basic features of Python: Overview – Installing - Running in windows/Linux	2 Hrs
4.2	Variables and Strings: Data types - Operators – Decision Control -	1 Hr
	Conditional Statements - Loops – Example Programs	1 Hr
4.3	Sequences: Lists: Introduction –Fixed size lists and arrays – Lists and Loops - Assignment and references –Identity and equality – Sorted lists -	2 Hrs
	Tuples: Tuples and string formatting – String functions -	1 Hr
	Sets: Unordered Collections - Simple programs Dictionaries, Sets)Using modules - File Handling - Exception – Handling exception	2 Hrs
4.4	Dictionaries : Introduction – Combining two dictionaries with UPDATE –	2 Hrs
	Making copies - Persistent variables – Internal Dictionaries	1 Hr
4.5	Functions and Files : Functions - File Handling –	1 Hr
	Exception – Handling Exceptions	1 Hr

UNIT – V OPEN SOURCE SOFTWARE TOOLS AND TECHNOLOGIES **14 HRS**

5.1	WEB SERVER : Apache Web server -	2 Hrs
	Working with web server –	1 Hr
	Configuring and using apache web server	1 Hr
5.2	Open Source Software tools and Processors : Introduction -	1 Hr
	Eclipse IDE Platform –	2 Hrs
	Compilers -	1 Hr
	Model driven architecture tools	2 Hrs
5.3	CASE STUDY: Government Policy toward OpenSource (E- Governance) –	2 Hrs
	Wikipedia as an open Source Project	2 Hrs

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	RasmusLerdorf and Levin Tatroe	O'Reilly Publications2002

LEARNING WEBSITES

1. https://www.smartzworld.com/notes/linux-programming-pdf-notes-lp-pdf-notes/
2. https://lecturenotes.in/subject/455/linux-programming-lp

CONTINUOUS INTERNAL MARKS

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

I)	Attendance	-	5 Marks
Ii)	Test	-	10 Marks
Iii)	Assignment	-	5 Marks
Iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO-POS & POS MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C632.1	3	3	3	3	3	-	3	3	3	3
C632.2	3	3	3	3	3	-	3	3	3	3
C632.3	3	3	3	3	3	-	3	3	3	3
C632.4	3	3	3	3	3	-	3	3	3	3
C632.5	3	3	3	3	3	-	3	3	3	3
Total	15	15	15	15	15	-	15	15	15	15
Correlation level	3	3	3	3	3	-	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C- Create
% to be included	90%	10%

CTC 640 COMPUTER SERVICING AND NETWORK PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks per semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Computer Servicing And Networking Practical	4	60	25	75	100	3 Hrs

SCHEME OF VALUATION

Procedure Writing – One Question from PART - A	10 Marks
Procedure Writing – One Question from PART - B	15 Marks
Executing Exercise (PART – A)	10 Marks
Executing Exercise (PART – B)	20 Marks
Result (PART – A)	5 Marks
Result (PART – B)	5 Marks
Demonstration of mini project	5 Marks
VIVA – VOCE	5 Marks
TOTAL	75 Marks

COURSE DESCRIPTION

The course aims at making the students familiar with various parts of computers and laptops and how to assemble them and the different types of peripherals desired. In addition, the course will provide the students with necessary knowledge and skills in computer and laptop software installation and maintenance and to make him diagnose the software faults. This subject also gives the knowledge and competency to diagnose the problems in computer hardware and peripherals and also gives the knowledge for trouble shooting for systematic repair and maintenance of computers and laptops.

OBJECTIVES

On completion of the following exercises, the students must be able to

- Know the various indicators, switches and connectors used in Computers.
- Familiarize the layout of SMPS, motherboard and various Disk Drives.
- Configure Bios set up options.
- Install various secondary storage devices with memory partition and formatting.
- Know the various types of printer installation and to handle the troubleshooting ability
- Assemble PC system and checking the working condition
- Installation of Dual OS in a system.
- Identify the problems in Computer systems, software installation and rectification
- Assembling and disassembling of Laptop to identify the parts and to install OS andconfigure it.
- Enable to perform different cabling in a network.
- Configure Internet connection and use utilities to debug the network issues.
- Configure router for any topology
- Install and configure Windows 2008 / 2013 Server
- Design Windows server Active directory Services.
- Install and configure server hardware devices.

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C640.1	Know the various indicators, switches and connectors used SMPS, motherboard and various Disk Drives. Configure Bios set up options.
C640.2	Install various secondary storage devices with memory partition and formatting. Know the various types of printer installation and to handle the troubleshooting ability OS, DUAL OS Assembling and disassembling of Laptop TROUBILESHOTING
C640.3	Know MOBILE PHONE servicing
C640.4	Enable to perform different cabling in a network. Configure Internet connection and use utilities to debug the network issues.
C640.5	Install and configure Windows 2008 / 2013 Server Design Windows server Active directory Services, Install and configure server hardware devices.

CTC 640 COMPUTER SERVICING AND NETWORK PRACTICAL

LAB EXERCISES

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
	PART A	
1	Identification of system layout (Study Exercise) a) Front panel indicators & switches and front side & rear side connectors. b) Familiarize the computer system Layout: Marking positions of SMPS, Motherboard, HDD, DVD and add on cards. c) Configure bios setup program and troubleshoot the typical problems using BIOS utility.	**C640.1**
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-fragmentation, Virus Detecting and Rectifying Software.	**C640.2**
3	a) Install and Configure a DVD Writer & Blu-ray Disc Writer. b) Recording a Blank DVD & Blu-ray Disc.	**C640.2**
4	Printer Installation and Servicing a) Install and configure Dot matrix printer and Laser printer. b) Troubleshoot the above printers	**C640.2**
5	Assemble a system with add on cards and check the working condition of the system and install Dual OS. Identification of mobile phone components (Study Exercise) a) Basic mobile phone components. b) Familiarizing the basic circuit board components: Marking position of different IC and Switches in the Network and Power sections of the PCB.	**C640.2**
6	a) Assembling and Disassembling of Mobile Phones. b) Fault finding and troubleshooting of Ear piece, Microphone, Keypad and Display	**C640.3**
7	Flashing, Unlocking and Formatting memory cards in Mobile	**C640.3**
8	Do the following cabling works in a network a) Cable Crimpling b) Standard Cabling c) Cross Cabling d) I/O Connector Crimping	**C640.4**
9	a) Configure Host IP, Subnet Mask and Default Gateway in a system in LAN (TCP/IP Configuration). b) Configure Internet connection and use IPCONFIG, PING / Tracert and Netstat utilitiesto Debug the Network issues.	**C640.4**
10	a) Install and configure Network Devices: HUB, Switch and Routers b) Install and Configure Wired and Wireless NIC and transfer files between systems	**C640.4**

11	Transfer files between systems in LAN using FTP Configuration. Install a printer in LAN and share it in the network.	**C640.4**
12	Configuring MFP using TCP/IP.	**C640.4**
PART B – SYSTEM ADMINISTRATION PRACTICAL		
13	Installation of Windows 2008 / 2013 Server.	**C640.5**
14	Installation and configuration of DHCP Server.	**C640.5**
15	Installation and configuration of Mail Server.	**C640.5**
16	a) Installation of Red Hat Linux using Graphical mode. b) Installation of Red Hat Linux using VMware.	**C640.5**
17	a) Configuring and troubleshooting of /etc/grub.conf b) Configuring and trouble shooting of /etc/passwd	**C640.5**

Note:
The students must and should install software's. After the demonstration, the same is uninstalled. Each batch has to learn to install and use the tools.

REQUIREMENTS

Hardware Requirements :	
Desktop Systems	30 Nos
Hard disk drive	06 Nos
DVD, Blu-ray Drive	06 Nos
Blank DVD , Blu-ray Disc	20 Nos
Head cleaning CD	
Dot matrix Printer	02 Nos
Laser Printer	02 Nos
Server	01 No
Mobile phones	06 Nos
Network Requirements :	
Crimping Tool	06 Nos
Screwdriver set	06 Nos
Network Cables	
Modem	02 Nos
Hub	01 No
Router	01 No
Switch	02 Nos
Software Requirements :	
Windows OS	
Windows Server 2008 / 2013 and LINUX	
Antivirus software.	
DVD and Blu-ray Burning S/W.	
Mobile Phone Flashing S/W	

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1. https://www.youtube.com/watch?v=kK8kKlbAtgY
2. https://www.youtube.com/watch?v=RyKXnwt75MU

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C640.1	3	-	3	3	-	3	3	3	3	3
C640.2	3	-	3	3	-	3	3	3	3	3
C640.3	3	-	3	3	-	3	3	3	3	3
C640.4	3	-	3	3	-	3	3	3	3	3
C640.5	3	-	3	3	-	3	3	3	3	3
Total	15	-	15	15	-	15	15	15	15	15
Correlation Level	3	-	3	3	-	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 650 MOBILE COMPUTING PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks / semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Mobile computing Lab	4	60	25	75	100	3 Hrs

SCHEME OF EVALUATION

Aim	5
Procedure / Program	25
Execution	30
Result & Print out	10
Viva	5
Total	75

COURSE DESCRIPTION

The Mobile Computing Lab studies design principles and evaluation methodologies for understanding and building systems support mechanisms for mobile computing systems including mobile ad hoc and sensor networks for achieving the goal of anytime, anywhere computing in wireless mobile environments. The primary research focuses of the Mobile Computing Lab are in mobility management, data and service management, security and dependability aspects in mobile computing environments.

OBJECTIVES

On completion of the following exercises, the students must be able to

- Provide a solid foundation and skills for programming to create applications for Mobile Devices
- Install, configure and use Android development environment.
- To Learn about Basic Mobile Application Development tools
- To learn How to create interactive applications in android with multiple activities
- Create Mobile Application Portfolio using Android and IOs

COURSE OUTCOME

Course	Statement
After successful completion of this course, the students should be able to	
C650.1	Provide a solid foundation and skills for programming to create applications for
C650.2	Install, configure and use Android development environment.
C650.3	To Learn about Basic Mobile Application Development tools
C650.4	To learn How to create interactive applications in android with multiple activities
C650.5	Create Mobile Application Portfolio using Android and IOs

CTC 650 MOBILE COMPUTING PRACTICAL

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
1	Write a program to demonstrate activity (Application Life Cycle)	**C650.1**
2	Write a program to demonstrate different types of layouts	**C650.2**
3	Write a program to implement simple calculator using text view, edit view, option button and button	**C650.2**
4	Write a program to demonstrate list view	**C650.2**
5	Write a program to demonstrate photo gallery	**C650.3**
6	Write a program to demonstrate Date picker and time picker	**C650.3**
7	Develop an simple application with context menu and option menu	**C650.3**
8	Develop an application to send SMS	**C650.4**
9	Write a program to view, edit contact	**C650.4**
10	Write a program to send e-mail	**C650.4**
11	Write a program to demonstrate a service	**C650.4**
12	Write a program to demonstrate web view to display web site	**C650.5**
13	Write a program to display map of given location/position using map view	**C650.5**
14	Write a program to demonstrate the application of intent class	**C650.3**
15	Write a program to create a text file in a external memory	**C650.5**
16	Study of GPRS services.	**C650.5**

HARDWARE REQUIREMENTS:

Desktop Computers – 36 Nos	Printer – 1 No

SOFTWARE REQUIREMENTS:

Net beans/Eclipse / Android Studio	Android ATD
Android SDK	JDK 6.0 or above

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1. http://www.informit.com/articles/article.aspx?p=169547&seqNum=2
2. https://link.springer.com/chapter/10.1007/978-3-540-45064-1_1

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C650.1	3	3	3	3	-	3	3	3	3	3
C650.2	3	3	3	3	-	3	3	3	3	3
C650.3	3	3	3	3	-	3	3	3	3	3
C650.4	3	3	3	3	-	3	3	3	3	3
C650.5	3	3	3	3	-	3	3	3	3	3
Total	15	15	15	15	-	15	15	15	15	15
Correlation Level	3	3	3	3	-	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 661 MULTIMEDIA SYSTEMS PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks /semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
Multimedia Systems Practical	4	60	25	75	100	3 Hrs

SCHEME OF EVALUATION

Aim	5
Procedure / Program	25
Execution	30
Result & Print out	10
Viva	5
Total	75

COURSE DESCRIPTION

The competencies which form the basis for this practical enable students to develop skills with interactive visual and auditory technology. This lab prepares students to use digital multimedia for communication, creativity, collaboration, critical thinking. This practical is to bring awareness to the students regarding the numerous resources available in the area of multimedia. Students will become a skilled and creative user of current multimedia technology with an increased understanding of multimedia concepts and techniques.

OBJECTIVES

After the completion of this lab students should know about

- How to create Audio hardware & software applications
- How to Record & Edit digital audio using sound editing software
- To learn about Video Editing
- How to apply various filters & Compression techniques in Multimedia Applications.
- To learn about 3D and cloud animation

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C661.1	To create Audio hardware & software applications, flash
C661.2	To Record & Edit digital audio using sound editing software
C661.3	To learn about Video Editing, webpage, tools
C661.4	To apply various filters & Compression techniques in Multimedia Applications.
C661.5	To learn about 3D and cloud animation

CTC 661 MULTIMEDIA SYSTEMS PRACTICAL

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
1	Use HTML5 multimedia support to play different audio and video formats in a browser using a desktop and a mobile.	**C661.1**
2	Use a audio processing Software and perform the audio editing tasks– Import audio, Select and edit the sound, Create fade-in fade-out effects, Label audio segments, Use noise remove filter, Mix audio, Change stereo to mono tracks, Export audio to different format and save.	**C661.1**
3.	Use a video processing Software to perform – Trim video clips, crop video, rotate video, join video, add subtitles, and edit video dimension, bit rate, frame rate, sample rate, channel, and video/audio quality tasks on a video.	**C661.1**
4	Create a Movie from video clips to demonstrate: - Audio-Video Mixing, Music, Video Effects, Video Transitions, and Titles.	**C661.2**
5	Create a 3D image of an object such as a magnifying glass using 3D	**C661.5**
6	Create a 3D animation (such as a animated eye) using a 3D modeling	**C661.5**
7	Create a moving cloud animation using any animation software.	**C661.5**
8	Use a scanner to create two or more partial scanned images of large poster / photo. Create a panoramic view of multiple photos by stitching together them using any panorama software	**C661.4**
9	Create a glossy web menu bar for a using in a web page.	**C661.3**
10	Using photo editor software and /or GIF creator software create a animation such as a flying balloon.	**C661.2**
11	Create a pencil sketch of a picture using suitable software.	**C661.2**
12	Use audio ripper tools to rip Audio-CDs, audio from video, audio from DVD. Convert the ripped audio into various formats. Burn the audio in to CDs.	**C661.3**
13	Use a audio recording program to record audio from different sources of input such as line-in, PC speaker output etc applying different filters, encoding and compression schemes. Split the audio into pieces. Merge different pieces together. Use appropriate tools.	**C661.2**
14	Use suitable software to (a) compress / decompress audio / video files. (b). convert audio / video to different formats. (c). split, join, rip audio / video.	**C661.2**
15	Create a fireworks art using a suitable software tool.	**C661.3**
16	Create a suitable mask for an object by using flash.	**C661.1**
17	Change the face of an photo by using Morphing technique with Photoshop software.	**C661.1**

LIST OF HARDWARE SUGGESTED

I	Desktop PCs with i3 or High end processor, 200 GB HDD, 4 MB RAM	-36 Nos
II	Laser printer Monochrome, Color	- 1 each
III	Digital (video)Camera	- 2 No.
IV	Flat bed A4 size Scanner	- 1 No.

LIST OF SOFTWARE SUGGESTED

Operating system	:	Windows XP, Windows 7, Linux
Software tools	:	Open Source software or Commercial software. The following : list is a suggestive list of Open Source software and their commercial replacement. Experiments may be done using either OSS or commercial software. OSS is preferred**.**

3D Graphics and Animation

1. Art of Illusion Replaces: AutoDesk Maya
2. Blender Replaces: AutoDesk Maya

Audio Players

3. Songbird Replaces: iTunes
4. CoolPlayer Replaces: Windows Media Player
5. Zinf Replaces: Windows Media Player

Audio Recorders and Editors

6. Audacity Replaces: Sonar X1, , Sony ACID, Adobe Audition
7. Frinika Replaces: Sonar X1, , Sony ACID

Audio Ripping and Conversion

8. BonkEnc Exact Audio Copy, Audio Convertor Studio
9. CDex Exact Audio Copy
10. MMConvert Exact Audio Copy,

Multimedia Players

11. VLC Media Player Replaces: Windows Media Player
12. Mplayer Replaces: Windows Media Player
13. XBMC Media Center Replaces: Windows Media Player
14. MediaPortal Replaces: Windows Media Player

Video Editing

15. Cinelerra Replaces: Adobe Premiere
16. OpenShot Video Editor Replaces: Adobe Premiere Pro CS5
17. Avidemux Replaces: Adobe Premiere
18. Kdenlive Replaces: Adobe Premiere Pro CS5
19. CineFX Replaces: Adobe Premiere Pro CS5

Video File Conversion

20. DVDx Replaces: Movavi Video Converter, Zamzar
21. DVD Flick Replaces: Movavi Video Converter, Zamzar
22. FFDShow Replaces: Movavi Video Converter, Zamzar

Video Player

23. Miro Replaces: Windows Media Player

CD / DVD Burners

24 Infrared Recorder
25 CDRDAO

DVD Authoring
26. DVD Flick, **DVDStyler,** Bombono DVD

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.https://www.wisdomjobs.com/e-university/multimedia-tutorial-270.html
2.https://www.igi-global.com/chapter/teaching-computer-graphics-multimedia/27072

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C661.1	3	-	3	3	-	3	3	3	3	3
C661.2	3	-	3	3	-	3	3	3	3	3
C661.3	3	-	3	3	-	3	3	3	3	3
C661.4	3	-	3	3	-	3	3	3	3	3
C661.5	3	-	3	3	-	3	3	3	3	3
Total	15	-	15	15	-	15	15	15	15	15
Correlation Level	3	-	3	3	-	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 662 OPEN SOURCE SOFTWARE PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks /semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
OPEN SOURCE SOFTWARE PRACTICAL	4	60	25	75	100	3 Hrs

SCHEME OF EVALUATION	
Aim	5 Marks
Procedure / Program	25 Marks
Execution	30 Marks
Result & Print out	10 Marks
Viva	5 Marks
Total	75 Marks

COURSE DESCRIPTION

The objective of this practical is to train students in becoming proficient PHP/MySQL web developers. At the end of this lab, students will have basic understanding of the web technology and be able to architect, write, debug, and run complete web applications using PHP /MySQL and python.

OBJECTIVES

On completion of the following exercises, the students must be able to

- Write PHP script for simple problems.
- Create data base and tables using MySql.
- Use PHP to access a database
- Install WAMP Web server
- Set up and configure PHP to work under WAMP web server
- Test PHP/WAMP web server setup

COURSE OUTCOMES

Course	Statement
After successful completion of this course, the students should be able to	
C662.1	Write PHP script for simple problems.
C662.2	Create data base and tables using MySql.
C662.3	Use PHP to access a database
C662.4	Install WAMP Web server, Set up and configure PHP to work under WAMP web server
C662.5	Write python program

CTC 662 OPEN SOURCE SOFTWARE PRACTICAL

LIST OF EXPERIMENTS

S.NO	NAME OF THE EXPERIMENT	COURSE OUTCOME
	PHP	
1.	Write a program to create Student registration form	**C662.1**
2	Write a program to perform EB bill calculation	**C662.1**
3	Write a program to perform Student grade manipulation	**C662.1**
4	Write a program to perform String operations in PHP	**C662.1**
5	Write a program to create Book master form	**C662.1**
6	Write a program to perform Form validation – Railway ticket reservation	**C662.4**
7	Write a program to perform Date and time operations in PHP	**C662.1**
8	Write a program to Identify the web browser	**C662.4**
9	Demonstrate the Database – Insert operation	**C662.3**
10	Demonstrate the Database – Delete operation	**C662.3**
11	Demonstrate the Database - Update operation	**C662.3**
	MYSQL	
12	Demonstrate the Queries Record selection operation	**C662.2**
13	Write the queries to demonstrate the working with date and time functions	**C662.2**
14	Write the queries to demonstrate the working of Summaries operation (Group by and order by)	**C662.2**
	PYTHON	
15	Demonstrate the File handling operation	**C662.5**
16	Write a python program to display the content of all text files (txt) in a directory	**C662.5**

HARDWARE REQUIREMENT

- Desktop Computers – 36 Nos
- Printer – 1 No

SOFTWARE REQUIREMNT

- Lamp server (or) wamp server (or) XAMP server
- Any text editor
- Browser with Javascript support

CONTINUOUS INTERNAL ASSESSMENT

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**

LEARNING WEBSITES

1.https://www.researchgate.net/publication/220542459_Understanding_FreeOpen_Source_Software_Development_Processes

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C662.1	3	-	3	3	-	3	3	3	3	3
C662.2	3	-	3	3	-	3	3	3	3	3
C662.3	3	-	3	3	-	3	3	3	3	3
C662.4	3	-	3	3	-	3	3	3	3	3
C662.5	3	-	3	3	-	3	3	3	3	3
Total	15	-	15	15	-	15	15	15	15	15
Correlation Level	3	-	3	3	-	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 670 PROJECT WORK

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks/semester: 15 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Continuous Assessment	Semester End Examination	Total	Duration
PROJECT WORK	4	60	25	75	100	3 Hrs

COURSE DESCRIPTION

Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students.

The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, so as to participate and manage a large software engineering projects in future.

OBJECTIVES

- 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
- Develop software packages or applications to implement the actual needs of the community.
- Get exposure on industrial environment and its work ethics.
- Understand what entrepreneurship is and how to become an entrepreneur.
- 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.
- 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.
- Expose students to the field of computing and to gain experience in software design.
- Understand and gain knowledge about disaster management

COURSE OUTCOMES

CTC 670 PROJECT WORK	
After successful completion of this course, the students should be able to	
C670.1	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 Understand the facts and importance of environmental management.
C670.2	Get exposure on industrial environment and its work ethics.
C670.3	Understand what entrepreneurship is and how to become an entrepreneur.
C670.4	arn and understand the gap between the technological knowledge acquired throug rriculum and the actual industrial need and to compensate it by acquiring additiona owledge as required.
C670.5	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.

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/researchand development laboratories/educational institutions/software companies, it is suggested thatthe project is to be chosen which should have some direct relevance in day-to-day activities ofthe candidates in his/her institution. Students are encouraged to work in the areas listed at theend. However, it is not mandatory for a student to work on a real life project. The student canformulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The project proposal should be prepared in consultation with your guide during fifth semester. The project proposal should clearly state the project objectives and the environmentof the proposed project to be undertaken. **The project work should compulsorily include the software development.** The project proposal should contain complete details in the followingform:

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.

- Process logic of each module.
- Testing process to be used.
- 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.

PROJECT PROPOSAL SUBMISSION AND APPROVAL

After finalizing the topic and the selection of the guide, students should be submitting the Project Proposal to the HOD along with the synopsis and bio-data of the guide. Incomplete project proposals in any respect will be immediately rejected. The project synopsis will be sent
to project monitoring committee for final approval.

SUGGESTIVE AREAS OF PROJECTWORK:

- 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
- Improving existing systems / equipments.
- Any other related area found work

CONTINUOUS 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	6^{TH} week	**10**
Second Review	14^{TH} week	**10**
Attendance	Entire semester	**5**
	TOTAL	**25**

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	**Max Marks**
Marks for Report Preparation, Demo, Viva-voce	**65**
Marks for answers of 4 questions which is to be set by the external examiner from the given question bank consisting of questions in the following two topics Disaster Management and Environmental	

Management. Out of four questions two questions to appear from each of the above topics i.e. 2 questions x 2 topics = 4 questions 4 questions x 2 ½ marks = 10 Marks	**10**
Total	**75**

DETAILED SYLLABUS

ENVIRONMENTAL MANAGEMENT & DISASTER MANAGEMENT

1. ENVIRONMENTAL MANAGEMENT

Introduction – Environmental Ethics – Assessment of Socio Economic Impact – Environmental Audit – Mitigation of adverse impact on Environment – Importance of Pollution Control – Types of Industries and Industrial Pollution.

Solid waste management – Characteristics of Industrial wastes – Methods of Collection, transfer and disposal of solid wastes – Converting waste to energy – Hazardous waste management Treatment technologies.

Waste water management – Characteristics of Industrial effluents – Treatment and disposal methods – Pollution of water sources and effects on human health.

Air pollution management – Sources and effects – Dispersion of air pollutants – Air pollution control methods – Air quality management.
Noise pollution management – Effects of noise on people – Noise control methods.

2. DISASTER MANAGEMENT

Introduction – Disasters due to natural calamities such as Earthquake, Rain, Flood,Hurricane, Cyclones etc – Man made Disasters – Crisis due to fires, accidents,strikesetc – Loss of property and life..

Disaster Mitigation measures – Causes for major disasters – Risk Identification –Hazard Zones– Selection of sites for Industries and residential buildings – Minimum distances from Sea – Orientation of Buildings – Stability of Structures – Fire escapes in buildings - Cyclone shelters – Warning systems.

Disaster Management – Preparedness, Response, Recovery – Arrangements to be made in the industries / factories and buildings – Mobilization of Emergency Services - Search and Rescue operations – First Aids – Transportation of affected people – Hospital facilities – Fire fighting arrangements – Communication systems – Restoration of Power supply – Getting assistance of neighbors / Other organizations in Recovery and Rebuilding works – Financial commitments – Compensations to be paid– Insurances – Rehabilitation.

LEARNING WEBSITES

1. https://nevonprojects.com/year-projects-for-computer-engineering/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C670.1	3	3	3	3	3	3	3	3	3	3
C670.2	3	3	3	3	3	3	3	3	3	3
C670.3	3	3	3	3	3	3	3	3	3	3
C670.4	3	3	3	3	3	3	3	3	3	3
C670.5	3	3	3	3	3	3	3	3	3	3
Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	-	3	3	-	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTC 610 COMPUTER HARDWARE AND SERVICING

Time: 3hrs **Marks:75**

PART – B (5X3=15 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	What is a firmware?	I	R
2	Expand the term USB.	I	R
3	Name the type of laser used in blue-ray disk?	II	R
4	Give the full form of LCD and LED.	II	R
5	What is meant by BIOS?	III	R
6	Give any two differences between laptop and desktop.	IV	R
7	What is meant by flashing?	IV	R
8	Define diagnostics software.	IV	R
PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	Where are xeon processors mainly used?	I	R
10	Give the components connected with south bridge?	I	R
11	Define key bouncing.	II	R
12	Define barcode scanner.	II	R
13	Give the principle of SMPS.	III	R
14	Define cold and warm booting	IV	R
15	Define active and passive maintenance.	IV	R
16	List any three anti-virus software	V	R

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max Marks
17	A	Explain motherboard architecture and block diagram.	I	R	10
		[OR]			
	B	(i) Define chipset. (ii) Explain the different bus standard in	I	U	10
18	A	Explain the construction and working of hard disk	II	U	10
		[OR]			
	B	(i) Explain the different types of keyboards.	II	U	10
		(ii)Explain the basic principle of laser printer.	II	U	10
		[OR]			
19	A	(i)Define graphics card and give its application	III	R	10

		(ii)Explain the common SMPS failures.	III	U	10
		[OR]			
	B	(i) Explain the BIOS functions.	III	R	10
		(ii) Define error and error messages.	III	U	10
20	A	(i) Define configure laptop and explain.	IV	U	10
		ii) Explain ESD.	IV	U	10
		[OR]			
	B	(i) Explain the preventive maintenance for a laptop	IV	U	10
		(ii) Explain the steps to upgrade a mother board.	IV	U	10
21	A	Briefly explain names and functions of different ICs used in mobile phones.	V	U	10
		[OR]			
	B	(i)Define jumper techniques.	V	U	10
		(ii) What is a mobile virus? What are the precautions taken to avoid viruses?	V	U	10

Note: the question paper setters are requested to follow the revised Bloom's Taxonomy levels as presented below:

Bloom's taxonomy level	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
	R-Remember, U-Understand, Ap-Apply	An-Analyse, E-Evaluate, C-Create
% to be included	90%	10%

CTC 620 MOBILE COMPUTING

Time: 3hrs Marks: 75

PART – A (5X2=10 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	What is mobile communication?	I	R
2	Define wireless LAN?	I	R
3	Define GSM?	II	U
4	Define GPRS?	II	R
5	Expand ADT and AVD.	III	R
6	Define checkbox.	IV	R
7	Define SMS.	IV	R
8	What is meant by content provider?	V	R

PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	Define WI-FI and Bluetooth?	I	R
10	What are the features of 3G and 4G Data Service?	I	R
11	Give any three features of Android	II	R
12	Define display orientation	III	R
13	Define analog and digital view?	III	U
14	Define Time Picker View and Date Picker View.	III	R
15	What is meant by Geo coding?	IV	R
16	Define SQLite.	V	R

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			**Unit**	**Blooms Level**	**Max.Marks**
17	A	Explain briefly about architecture of mobile computing?	I	U	10
		[OR]			
	B	(i) Write about the features of wi-fi and wi-max?.	I	R	05
		ii) Define WLAN and its applications.	I	R	05
18	A	Briefly write about GSM architecture?	II	R	10
		[OR]			
	B	(i) Define CDMA.	II	R	10
		(ii)Write about GPRS application?	II	R	10
19	A	Explain briefly about architecture of Android?	III	R	10
		[OR]			
	B	(i) Explain linking activities and indents.(ii) Define views and view	III	U	10

20	A	Define views and its types of basic views?	IV	R	10
		[OR]			
	B	(i)How to displaying pictures in Image switcher view?	IV	R	5
		(ii)Explain Sending and receiving SMS.	IV	R	5
21	A	Briefly explain about Location Based Services?	V	R	10
		[OR]			
	B	(i)Explain about internal and external storage.	V	U	5
		(ii)How to consuming web service using HTTP?		U	5

CTC 631MULTIMEDIA SYSTEMS

Time: 3hrs Marks:75

PART – A (5X2=10 MARKS)			
Answer any Five Questions			
S.NO		Unit	Blooms Level
1	Define Multimedia.	I	R
2	What are multimedia elements?	I	R
3	What is bitmaps?	I	R
4	What is image processing?	I	R
5	What is need for data compression?	II	U
6	Expand RIFF, AIFF?	II	R
7	List the types of Authoring tools?	III	R
8	What is tracking?	III	U
PART – B (5X3=15 MARKS)			
Answer any Five Questions		Unit	Blooms Level
9	What is virtual reality?	I	R
10	List out the multimedia applications.	III	U
11	What are the principles are used for animation?	III	U
12	List the video format converters.	IV	U
13	What is the disadvantage of fractal compression?	V	R
14	What is the use of JPEG?	IV	R
15	Give short notes on OCR software.	IV	R
16	What are the types of MIME?	V	U

PART –C (5X 10 =50 MARKS)					
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max Marks
17	A	(i) Define multimedia. Where to use multimedia?	I	U	5
		(ii) Explain the multimedia elements?	I	U	5
		[OR]			
	B	Explain multimedia workstation architecture?	I	U	10
18	A	(i) Explain the hypermedia structure? (ii) Explain about hypertext tools?	II	U	10
		[OR]			
	B	Explain the computer animation techniques?	II	U	10
19	A	(i) Write about fractal compression?	III	U	10

		(ii) Explain RTF and RIFF?			
		[OR]			
	B	(i) Explain database organization for multimedia? ii) Write about transaction management of multimedia?	III	U	10
20	A	(i) Write about flat-panel display system (ii) Explain the function of laser printer?	IV	U	10
		[OR]			
	B	Explain the types of authoring tools?	IV	R	10
21	A	Explain how text is used in various ways in web pages?	V	U	10
		[OR]			
	B	Explain with example how clickable buttons are created?	V	U	10

CTC 632 OPEN SOURCE SOFTWARE

Time: 3hrs Marks:75

PART – A (5X2=10MARKS)				
Answer any Five Questions				
S.NO			Unit	Blooms Level
1		What are the needs for open sources?	I	R
2		What is FOSS?	I	R
3		What is PHP?	II	R
4		What is Constants?	II	R
5		What is record selection technology?	III	R
6		Write a command for sending e-mails using PHP and SQL database.	III	R
7		Give any two operations for file handling.	IV	R
8		State any two open source software tools?	V	R
PART – B (5X3=15 MARKS)				
Answer any Five Questions			Unit	Blooms Level
9		Give short notes on FOSS usage.	I	R
10		What are the features of linux?	I	R
11		What is file and directory handling?	II	R
12		What is processing forms?	II	R
13		How to manipulate the data in MYSQL using PHP?	III	U
14		What are the basic features of Python?	IV	U
15		What is persistent variable?	IV	R
16		How to configuring and using apache web server?	V	R
PART –C (5X 10 =50 MARKS)				
Answer all the question choosing sub- division (A) or Sub division (B) of each question.			Unit	Blooms Level	Max . Marks
17	A	(i) What are the needs and	I	U	5
		(ii) advantages of open sources?	I	U	5
		(ii) Explain open source compilers.	I	U	5
		[OR]			
	B	Explain application of open sources.	I	U	10
18	A	i) What is PHP? explain in detail.	II	U	5
		ii) Explain data types and operators	II	U	5
		[OR]			
	B	Explain working with forms.	II	R	10

19	A	(i) Explain record selection technology.	III	R	5
		(ii) Explain about PHP database connectivity.	III	R	5
		[OR]			
	B	(i) Explain briefly about sending and receiving E-mails using PHP and SQL database.	III	U	10
		(ii)Explain manipulating data in MYSQL using PHP.	III	U	10
20	A	(i) Explain the procedure for installing Python.	IV	U	5
		ii) Explain about Sequences of lists in Python.	IV	U	5
		[OR]			
	B	How to python running in windows /linux? & explain about functions and files.	IV	R	10
21	A	Explain about the government policy towards open sources?	V	U	10
		[OR]			
	B	How will you configure and the use of apache web server?	V	R	10

DIPLOMA IN COMPUTER ENGINEERING

ALTERNATIVE SUBJECTS FOR C-SCHEME

B SCHEME SUBJECTS		**C SCHEME SUBJECTS**	
III SEMESTER			
CEB 310	BASICS OF ELECTRICAL AND ELECTRONIC S ENGGINEERING	CTC310	BASICS OF ELECTRICAL AND ELECTRONICS ENGGINEERING
CEB 320	OPERATING SYSTEM S	CTC320	OPERATING SYSTEMS
CEB 330	C PROGRAMMING	CTC330	C PROGRAMMING
CEB 340	ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL	CTC340	ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL
CEB 350	LINUX PRACTICAL	CTC350	LINUX PRACTICAL
CEB 360	C PROGRAMMING PRACTICAL	CTC360	C PROGRAMMING PRACTICAL
CEB 370	COMPUTER APPLICATIONS PRACTICAL	CTC370	COMPUTER APPLICATIONS PRACTICAL
IV SEMESTER			
CEB 410	COMPUTER ARCHITECTURE	CTC 410	COMPUTER ARCHITECTURE
CEB 420	COMPUTER NETWORK AND SECURITY	CTC 420	COMPUTER NETWORKS AND SECURITY
CEB 430	OOPS WITH JAVA	CTC 430	OOPS WITH JAVA
CEB 440	DATA STRUCTURES USING C	CTC 440	DATA STRUCTURES USING C
CEB 450	JAVA PROGRAMMING PRACTICAL	CTC 450	JAVA PROGRAMMING PRACTICAL
CEB 460	DATA STRUCTURES USING C PRACTICAL	CTC 460	DATA STRUCTURES USING C PRACTICAL
CEB 470	COMMUNICATION AND LIFE SKILLS PRACTICAL	CTC 470	LIFE AND EMPLOYABILITY SKILL S PRACTICAL

V SEMESTER			
CEB 510	WEB PROGRAMMING	CTC510	WEB PROGRAMMING
CEB 520	RELATIONAL DATABASE MANAGEMENT SYSTEMS	CTC520	RELATIONAL DATABASE MANAGEMENT SYSTEMS
CEB 530	.NET PROGRAMMING	CTC530	COMPONENT BASED TECHNOLOGY
ELECTIVE –I -THEORY		**ELECTIVE –I -THEORY**	
CEB 531	CONCEPTS OF ADVANCED COMPUTING	CTC541	CLOUD COMPUTING
CEB 532	SOFTWARE ENGINEERING	CTC542	SOFTWARE ENGINEERING
CEB 550	WEB PROGRAMMING PRACTICAL	CTC550	WEB PROGRAMMING PRACTICAL
CEB 560	RELATIONAL DATABASE MANAGEMENT SYSTEMS PRACTICAL	CTC560	RELATIONAL DATABASE MANAGEMENT SYSTEMS PRACTICAL
CEB 570	.NET PROGRAMMING PRACTICAL	CTC570	COMPONENT BASED TECHNOLOGY PRACTICAL
VI SEMESTER			
CEB 610	COMPUTER HARDWARE AND SERVICING	CTC610	COMPUTER HARDWARE AND SERVICING
CEB 620	MOBIL E COMPUTING	CTC620	MOBIL E COMPUTING
ELECTIVE –II THEORY		**ELECTIVE –II THEORY**	
CEB 631	A. MULTIMEDIA SYSTEMS	CTC631	A. MULTIMEDIA SYSTEMS
CEB 632	B. OPEN SOURCE SOFTWARE S	CTC632	B. OPEN SOURCE SOFTWARE
CEB 640	COMPUTER SERVICING AND NETWORK PRACTICAL	CTC640	COMPUTER SERVICEING AND NETWORK PRACTICAL

CEB 650	SYSTEM ADMIN PRACTICAL	NO EQUIVALENT	
		CTC650	MOBILE COMPUTING PRACTICAL
ELECTIVE-II PRACTICAL		**ELECTIVE-II PRACTICAL**	
CEB 651	A. MULTIMEDIA SYSTEMS PRACTICAL	CTC661	A. MULTIMEDIA SYSTEMS PRACTICAL
CEB 652	B. OPEN SOURCE SOFTWARE PRACTICAL	CTC662	B. OPEN SOURCE SOFTWARE PRACTICAL
CEB 670	PROJECT WORK AND ENTREPRENEURSHIP	CTC670	PROJECT WORK