R14 - IT- (AUTONOMOUS)

REGULATIONS, COURSE STRUCTURE AND SYLLABUS

For

INFORMATION TECHNOLOGY

(I, II, III, & IV YEAR)

SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

DEPARTMENT OF INFORMATION TECHNOLOGY

SEETHARAMPURAM, NARSAPUR – 534 280, W.G.DT.

ANDHRA PRADESH

VISION OF THE INSTITUTE

❖ To provide the society with Centre of Learning in Technical Education and Research that motivates the students to evolve into dynamic professionals.

MISSION OF THE INSTITUTE

❖ Providing Quality education, student centered teaching learning process and state of the art infrastructure for professional aspirants hailing from both rural and urban areas.

❖ Evolving this organization into a centre of Academic and Research Excellence.

❖ Imparting Technical Education that encourages independent thinking, develops strong domain knowledge and positive attitude towards holistic growth of young MINDS

DEPARTMENT OF IT VISION:

❖ To be a premier center in Information Technology education, research and a source of qualitative, innovative, successful software professionals who cater the needs and society.

DEPARTMENT OF IT MISSION:

❖ To provide outcome based education through well-designed curriculum, innovative teaching, collaborative learning and industry interaction.

❖ To promote state-of-the-art research facilities and consultancy in the thrust areas of Information Technology.

❖ To impart the necessity of continuing education in order to grow proficiently in the focused areas.

❖ To inculcate professional behavior, leadership qualities and ethical values to serve the society.

PROGRAM EDUCATIONAL OBECTIVES:

PEO1: The IT Graduates will be moderately good at applying fundamental Engineering knowledge. PEO2: They shall be proficient at developing sophisticated software solutions.

PEO3: They shall possess
Essential Life skills. PEO4:
Acquire Ethical and moral
values.

PROGRAM OUTCOMES (PO):

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and nengineeringspecializationtothesolutionofcomplexengineeringproblems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or process esthatmeet the specified needs with appropriate considerationforthepublichealthandsafety,andthecultural,societal,andenvironmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES:

PSO1: Understand the fundamental knowledge on computer programming using algorithms, mathematical foundation for modeling and analysis of computer based systems **(PO1, PO2).**

PSO2: Develop software solutions for complex engineering problems using different modern software tools **(PO3, PO5).**

ACADEMIC REGULATIONS

1. INTRODUCTION

Academic Programmes of the institute are governed by rules and regulations approved by the Academic Council, which is the highest Academic body of the Institute. These academic rules and regulations are applicable to the students admitted during the academic year 2014-15 into first year of four year undergraduate programme offered by the college leading to Bachelor of Technology (B.Tech) degree in the disciplines viz., Computer Science and Engineering, Electronics and Communication Engineering, Electrical and Electronics Engineering, Information Technology, Mechanical Engineering & Civil Engineering.

- **EXTENT:** All the rules and regulations, specified herein after will be read as a whole for the purpose of interpretation and when a doubt arises, the interpretation of the Chairman, Academic Council, and Swarnandhra College of Engineering & Technology (Autonomous) is the final. As per the requirements of the Statutory Bodies, Principal, Swarnandhra College of Engineering & Technology (Autonomous), will be the Chairman of the College Academic Council.

2. ADMISSIONS:

Admission into first year of any Four Year B.Tech Programmes of study in Engineering: Admissions into first year of B.Tech Programme of Swarnandhra College of Engineering & Technology (**Subsequently referred to as SCET**) will be as per the norms stipulated by Jawaharlal Nehru Technological University Kakinada & Govt. of Andhra Pradesh. Admissions in each programme in the Institution are classified into **CATEGORY - A** (70% of intake) through convener, EAMCET and **CATEGORY- B** (30% of intake) filled by the college management.

Admission into the Second year (Lateral Entry) of any Four year B.Tech Programme of study in engineering: The candidates should have passed the qualifying exam.(B.Sc. graduation & Diploma holders) for admission into the 3rd semester directly, based on the rank secured by the candidate at Engineering Common Entrance Test [ECET for (FDH)] in accordance with the instructions received from the Convener, ECET and Government of Andhra Pradesh. The candidate has to satisfy the other eligibility requirements stipulated by the JNT University Kakinada and / or the Government of Andhra Pradesh from time to time.

ADMISSIONS WITH ADVANCE STANDING: These may arise in the following cases:

a) When a student seeks transfer from other colleges to SCET and desirous to pursue the study at SCET in an eligible branch of study.

b) When students of SCET get transferred from one regulation to another regulation or from previous syllabus to revised syllabus.

c) When a student after long discontinuity rejoins the college to complete his/her Programme of study for the award of degree.

d) When a student is not able to pursue his/her existing Programme of study but wishes to get transferred to another Programme of study.

These admissions may be permitted by the Academic Council of SCET as per the norms stipulated by the statutory bodies and Govt. of Andhra Pradesh. In all such cases for admission, when needed, permissions from the statutory bodies are to be obtained and the Programme of study at SCET will be governed by the transitory regulations.

3. PROGRAMMES OFFERED (UNDER GRADUATE)

Presently, the college is offering Under Graduate Programmes in the following disciplines:

- Computer Science and Engineering (CSE)
- Electronics and communication Engineering(ECE)
- Electrical and Electronics Engineering(EEE)
- Information Technology(IT)
- Mechanical Engineering(ME)
- Civil Engineering(CE)

STRUCTURE OF THE PROGRAMME:

Each Programme of a Discipline or branch of study will consist of:

i). eneral core courses in Basic Sciences, Engineering & Technology, Humanities, Mathematics and Management.

ii). Interdisciplinary courses in Engineering, to impart the fundamentals of Engineering.

iii).   Compulsory core courses to impart broad based knowledge needed in the concerned branch of study.

iv).   Elective courses from the discipline or interdisciplinary areas / industry related opted by the student based on his/her interest in specialization.

v).   Seminars, Technical Paper, Comprehensive Viva-Voce, Mini Project and Major Project approved by the Department to be submitted in the course of study.

Each Programme of study will be designed to have 40-45 theory courses and 16-18 laboratory Courses. The distribution and types of courses offered from the above is indicated in the Following table.

General Core courses	25-30%
Interdisciplinary courses in engineering	15-20%
Compulsory Core courses in the branch of study	45-50%
Elective Courses	5-10%

Note: All components prescribed in the curriculum of any Programme of study will be conducted and evaluated.

Contact hours: Depending on the complexity and volume of the course the number of contact hours per week will be determined (4 to 6 hours per week per course).

Credits: Credits are assigned to each course as per norms mentioned in the following table.

Subject	Credits
Theory Course	03
Laboratory Course	02
Seminar/ Technical Paper	02
Soft Skills / Aptitude Lab	01
Comprehensive Viva	02
Mini Project	02
Major Project	06

CURRICULUM FOR EACH PROGRAMME OF STUDY:

o The Four year curriculum of any B.Tech Programme of study in any branch of Engineering is formulated based on the guidelines mentioned in 3.1 and will be recommended by the concerned Board of Studies and is approved by the Academic council of the college.

o In case of students admitted under lateral entry, the respective regular curriculum contents from 3rdsemester onwards are to be pursued by them.

o In case of students admitted under advanced standing, the Programme of curriculum will be prepared by the concerned Board of Studies and the Academic Council has to approve the same.

o After approval from the Academic Council, Programme of curriculum for the same will be prepared and made available to all the students along with the academic regulations.

MAXIMUM DURATION OF STUDY AND CANCELLATION OF ADMISSION:

Maximum duration permitted for any student to successfully complete the four year B.Tech. Programme of study will be:

- Eight academic years in sequence from the year of admission for a normal student admitted into first year of any Programme.

- Six academic years in sequence from the year of admission for a Lateral entry student admitted into second year of any Programme.

- For students admitted with advanced standing, the maximum time for completion of Programme of study, will be twice the period in terms of academic years in sequence, stipulated in the Programme curriculum defined at the time of admission.

In case, any student fails to meet the above applicable/eligible conditions for the award of degree, his/her admission stands cancelled.

4. **DURATION OF THE PROGRAMME AND MEDIUM OF INSTRUCTION:** The duration of the B.Tech. Programme is four academic years consisting of eight semesters. The medium of instruction and examinations is in English. Students, who fail to fulfill all the academic requirements for the award of the degree within minimum of eight academic years, will forfeit their admission in B.Tech course**.**

5. **MINIMUM INSTRUCTION DAYS:** Each semester will consist of 22 weeks duration with minimum of 110 working days which includes instruction, Mid examinations and Final examinations. The no. of contact periods per week are 42 to48.

6. TRANSITORYREGULATIONS:

For students admitted under advance standing, these transitory regulations will provide the modus of operandi. At the time of such admission, based on the Programme pursued (case by case)

- Equivalent courses completed by the student are established by the BOS of concerned discipline.

- Marks/Credits are transferred for all such equivalent courses and treated as successfully completed in the Programme of study prescribed by SCET.

- A Programme chart of residual courses not completed will be derived and a Programme of study with duration specified will be prescribed for pursuit at SCET.

- Marks obtained in the previous system, as the case maybe, are converted to grades and CGPA is calculated.

All other modalities and regulations governing will be the same as those applicable to the stream of students with whom; such a candidate is merged with current regulations.

7. DISTRIBUTION AND WEIGHTAGE OFMARKS:

(i) In each semester the course of study consists of 5/6 theory subjects + 2/3 laboratories. However, in the 8th semester there will be only 3 theory subjects in addition to the major project work and comprehensive viva-voce.

(ii) The performance of a student in each semester will be evaluated subject wise with a maximum of 100 marks for theory and 75 marks for practical subject, In addition Seminar, Technical Paper and Mini Project at the end of 7th semester. (Mini Project, Technical paper and Seminar is for 50 marks each Main Project during 8th Sem. for 200 marks) are evaluated.

SEMINAR/TECHNICAL PAPER: THE Seminar/Technical paper has two components of study one from the topics of current study (course work) and the other component is suggested by the staff advisor, like as reproduction of the concept in any standard research paper or an extension of concept from earlier course

(iii) From all units (Brainstorming/Thought provoking/Case study) for 22 marks. Part – B has 6 questions (one question from each unit) of which three questions to be answered and valued for 48marks.

(iv) End practical examination will be conducted for 50 marks by the teacher concerned and external examiner. For practical subjects there will be a continuous assessment during the semester for 25 internal marks with 15 marks

for day-to-day work, including record valuation and 10 marks for two internal tests (80% of first best + 20% of second).For the subjects of design and / or drawing (such as Engineering Drawing, machine drawing etc.) and estimation, the distributionwillbe30marksforinternalevaluation with 10 marks for day-to-day work, 20 marks for three internal tests (50% of first best + 35% of second best + 15% of third). End examination will be conducted for 70marks.

(v) **MAIN PROJECT:** The project work carried out by the students during 8th semester is evaluated for internal assessment and external examination.

a) INTERNAL ASSESSMENT: Internal Assessment will be carried out by Projects internal assessment committee consisting of 1) Head of the Department 2) Supervisor and 3) Senior faculty member appointed by the Principal.

b) EXTERNAL EXAMINATION: External Examination will be conducted by Project external examination committee consisting of 1) Head of the Department 2) Supervisor and 3) External member selected from the panel of examiners.

(vi) Total marks to be awarded for Project work is 200, of which 60 marks will be for Internal Evaluation and 140 marks for External examination through presentation / viva - voice by / of the student. The internal evaluation will be on the basis of two seminars on the topic of the project.

(vii) Thecomprehensivevivawillbeconductedfor50marksin8thSem. The comprehensive Viva will be conducted evaluated in the topics covering the core aspects of the subjects in which the candidate is likely to be graduated.

8. ATTENDANCE REGULATIONS ANDCONDONATION:

(i) A student will be eligible to appear for end semester examinations, if he/she acquired a minimum of 75% of attendance in aggregate of all the subjects.

(ii) Condo nation of shortage of attendance in aggregate up to 10% on medical grounds (Above 65% and, below 75%) in any semester may be granted by the College Academic Committee. However, the subject of granting is totally at the discretion of the College Academic Committee.

A Student will not be promoted to the next semester unless he/she satisfies the attendance requirement of the present semester as applicable. They may seek re- admission for that semester as and when offered consecutively by the Department.

(iii)   Shortage of Attendance below 65% in aggregate in no case be condoned

(iv)   Students with less than 65% of attendance in any semester are not eligible to take up their end examination of that particular semester and their registration for examination will be cancelled.

(v)   A stipulated fee will be payable by the student towards attendance condo nation.

(vi)   Attendance may also be condoned for those who participate in Intercollegiate/university sports, co- and extracurricular activities provided their attendance is in the minimum prescribed range for the purpose ($>65^0$) and recommended by the concerned authority condo nation fees in to be paid.

(vii)   A student will be condoned only twice during his entire course of study.

9. MINIMUM ACADEMICREQUIREMENTS:

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in **S.No.8.**

(i)   A student will be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical design or drawing subject or project if he/she secures not less than a minimum of 35% of marks exclusively in the end semester examinations in each of the subjects, for which the candidate had appeared. However, the candidate should have secured a minimum of 40% marks in both external and internal components put together to declare eligible for pass in the subject.

(ii)   A student will be promoted from first sem to second sem , second sem to third and third to fourth sem, if he/she satisfies the minimum attendance requirement.

(iii)   A student will be promoted from 4th Semester to 5th Semester, if he/she fulfills the academic requirements of 50% of the credits up to 4th Semester from all the examinations (Regular and supplementary) whether or not the candidate takes the examinations.

(iv)   A student will be promoted from 6th to 7th Semester, only if he/she fulfills the academic requirements of 50% of the credits up to 6th Semester from, all the examinations (regular and supply) whether or not the candidate takes the examinations.

(v) There will be supplementary examinations along with the regular semester examinations enabling the students to give a fair chance to appear in the subject if any failed.

(vi) Candidate who fails in 8[th]Semester can appear for Advanced Supplementary Examinations soon after the announcement of result.
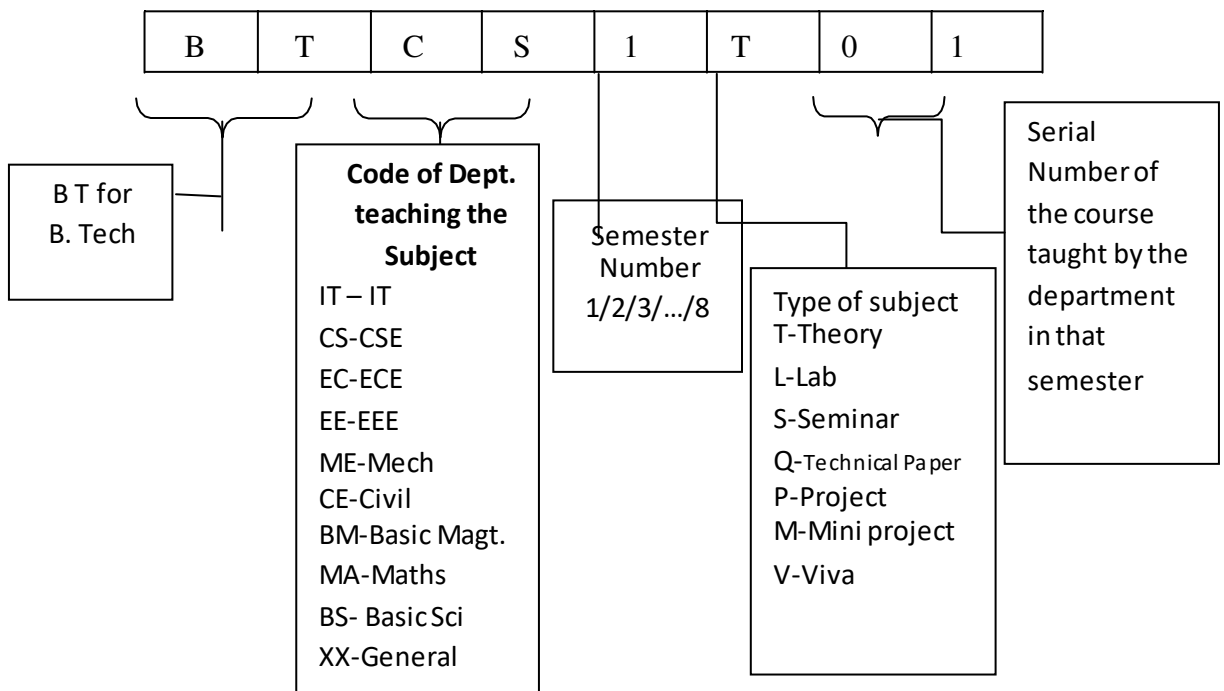
10. ELIGIBILITY FOR AWARD OFDEGREE:

A student shall be eligible for award of the B.Tech. Degree if he/she fulfills all the following conditions:

(i) Pursued a course of study for a stipulated period of four years and not more than eight years.

(ii) Registered and successfully completed all the components prescribed in the programme of study to which he/she is admitted.

(iii) Obtained CGPA greater than or equal to 5 (minimum requirements for pass).

(iv) Has no dues to the institute, hostels, libraries, NCC/NSS etc., and No disciplinary action is pending against him/her.

11. <u>COURSE CODE & COURSE NUMBERINGSCHEME:</u>

The subject codes will be given by the department teaching the subject. Each subject code contains 8 characters. The 8 characters for each subject will be filled as per the following guidelines.

| B | T | C | S | 1 | T | 0 | 1 |

B T for B. Tech

Code of Dept. teaching the Subject
IT – IT
CS-CSE
EC-ECE
EE-EEE
ME-Mech
CE-Civil
BM-Basic Magt.
MA-Maths
BS- Basic Sci
XX-General

Semester Number 1/2/3/.../8

Type of subject
T-Theory
L-Lab
S-Seminar
Q-Technical Paper
P-Project
M-Mini project
V-Viva

Serial Number of the course taught by the department in that semester

12. RADINGSYSTEM:

Award of Grade:

(i) Grade Point Average(GPA):

The Grade Point Average (GPA) will be calculated according to the formula.

$$GPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where C_i = number of credits for the subject i

G_i = grade points obtained by the student in the subject.

a) Semester Grade Point Average (SGPA) is awarded to candidates considering all the subjects of the semester. Zero grade points are also included in this computation.

b) To arrive at Cumulative Grade Point Average (CGPA), the formula is used considering the student's performance in all the courses taken in all the semesters completed up to the particular point of time.

$$CGPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where C_i = number of credits for the subject i

G_i = grade points obtained by the student in the subject.

(ii) After a student satisfies the requirements prescribed for the award of UG/PG Program he/she shall be placed in one of the following four grades. The award of the degree is based on CGPA on a grade point scale of10.

CGPA	Award of Division
□8.00*	First Class with Distinction
□7.00	First Division
□6.00	Second Division
□5.00	Pass Division
<5.00	Unsatisfactory

* In addition to the required CGPA of 8, the student must have necessarily passed all the courses of every semester in the minimum stipulated period for the programme.

AWARD OF GRADE IN EACH SEMESTER:

(i) Based on the student performance during a given semester, a final letter grade will be awarded at the end of the semester for each subject. The letter grades and the corresponding grade points are as given in the Table.

Percentage of Marks Scored	Letter Grade	Grade points
>=90	S	10
80 - 89	A	9
70-79	B	8
60-69	C	7
50-59	D	6
40-49	E	5
<40	F	Fail

(ii) A student earns a minimum of 5 grade points (E grade) in a subject is declared to have successfully completed the subject, and is deemed to have earned the credits assigned to that Subject. However it should be noted that a pass in any subject/term paper/seminar/project/mini project shall be governed by the rules mentioned in S.No.7.

(iii) Grade Sheet: A grade sheet (memorandum) will be issued to each student indicating his/her performance in all courses taken in that semester and also indicating the grades and SGPA.

(iv) Transcripts:Aftersuccessfulcompletionofthetotalprogrammeofstudy,aTranscript

Containing performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued up to any point of study to any student on request and by paying the stipulated fee in force.

(v) Candidates shall be permitted to apply for recounting/revaluation within the stipulated period with payment of prescribed fee.

(vi) The Academic Council has to approve and recommend to the JNTUK, Kakinada for the award of a degree to any student.

13. **SUPPLEMENTARY EXAMINATIONS:** In addition to the Regular Final Examinations held at the end of each semester, Supplementary Final Examinations will be conducted during the academic year. A student can appear for any number of supplementary examinations till he/she clears all courses which he/she could not clear in the first attempt. However the maximum stipulated period cannot be relaxed under any circumstance.

14. **ADVANCED SUPPLEMENTARYEXAMINATIONS:** Candidate who fails the subjects in8thSemester can appear for Advanced Supplementary Examinations.

15. **ACADEMIC REGULATIONS FOR B.TECH (LATERAL ENTRYSCHEME):**

   (i) The students have to acquire 132 credits from 3rdSemester to 8thSemester of B.Tech Programme (regular) for the award of the degree.

   (ii) Students, who fail to fulfill the requirement for the award of the degree in 6 consecutive academic years from the year of admission, shall forfeit their seat.

   (iii) The same attendance regulations are to be adopted as per the rules mentioned in itemNo.8.

   (iv) **Rules for Promotion in to Next Higher Class:** (6thSemester to 7thSemester): A student shall be promoted from 6thSemester to 7thSemester only if he/she fulfills the academic requirements of 50% credits up to 6thSemester.

16. **CONDUCT ANDDISCIPLINE:**

   (a) Students shall conduct themselves within and outside the premises of the institute in a manner befitting to be the student of our institution.

   (b) As per the order of Honorable Supreme Court of India, ragging in any form is considered as a criminal offence and is strictly banned. Any form of ragging will be severely dealt with.

   (c) The following acts of omission and/or commission shall constitute gross violation of the code of conduct and are liable to invoke disciplinary measures with regard to ragging.

      (i) Lack of courtesy and decorum inducement behavior anywhere within or outside the campus.

      (ii) Willful damage or distribution of alcoholic drinks or any kind of narcotics or of fellow students/citizens.

   (d) Possession, consumption or distribution of alcoholic drinks or any kind of narcotics or hallucinogenic drugs.

(e) Mutilation or unauthorized possession of library books.

(f) Noisy and unseemly behavior, disturbing studies of fellow students.

(g) Hacking in computer systems (such as entering into other person's areas without prior permission, manipulation and/or damage of computer hardware and software or any other cybercrimes).

(h) Usage of cells phones and cameras in the classroom/campus.

(i) Plagiarism of any nature in any academic report of submission.

(j) Any other act of gross indiscipline as decided by the academic council from time to me.

(k) Commensurate with the gravity of offense, the punishment may be reprimand, fine, expulsion from the institute / hostel, debarment from examination, disallowing the use of certain facilities of the institute, suspension for a specified period or even outright expulsion from the institute, or even handing over the case to appropriate law enforcement authorizes or the judiciary, as required by the circumstances.

(l) For an offence committed in (i) a hostel (ii) a department or in a class room and (iii) elsewhere, the chief Warden, the Head of the Department and the principal respectively, shall have the authority to reprimand or impose fine.

(m) Cases of adoption of unfair means and/or any malpractice in an examination shall be reported to the principal for taking appropriate action.

(n) All cases of serious offence, possible requiring punishment other than reprimand, shall be reported to the Academic council.

(o) The Institute Level Standing Disciplinary Action Committee constituted by the academic council, shall be the authority to investigate the details of the offence, and recommend disciplinary action based on the nature and extent of the offence committed.

(p) The Principal shall deal with any academic problem, which is not covered under these rules and regulations, in consultation with the Programmes Committee in an appropriate manner, and subsequently such action shall be placed before the academic council for ratification, Any emergency modification of regulation, approved by the academic council earlier, shall be reported to the academic council for ratification.

(q) **"Grievance and Redressed Committee" (General)** constituted by the principal shall deal with all grievances pertaining to the academic / administrative/ disciplinary matters.

(r) All the students must abide by the code and conduct rules of the college.

17. **MALPRACTICES:** The Principal shall refer the cases of malpractices in internal assessment tests and Semester-End Examinations, to a Malpractice Enquiry Committee, constituted by him/her for the purpose. The principal will take necessary action, against the erring students basing on the recommendations of the committee and shall deal with any academic problem, which is not covered under these rules and regulations, in consultation with the Heads of the Departments in an appropriate manner, and subsequently such actions shall be placed before the academic council for ratification. Any emergency modification of regulation, approved in the Heads of the Departments meetings, shall be reported to the academic council for ratification.

18. **AMENDMENTS TOREGULATIONS:**

The Academic Council of Swarnandhra College of Engineering & Technology (Autonomous) reserves the right to revise, amend or change the Regulations, Schemes of Examinations, and/or Syllabi or any other matter pertained suitable to the needs of the students, society, industry without any notice.

INFORMATION TECHNOLOGY
COURSE STRUCTURE – UG
SEMESTER-I

S. No.	Course Code	Course Name	L	T	P	C	I	E	TM
1	BTBS1T01	English –I	3		-	3	30	70	100
2	BTMA1T01	Differential Equations	3	1	-	3	30	70	100
3	BTMA1T02	Numerical Methods and Integral Transforms	3	1	-	3	30	70	100
4	BTBS1T02	Engineering Chemistry	3	1	-	3	30	70	100
5	BTBS1T04	Environmental Studies	3	1	-	3	30	70	100
6	BTCS1T01	C-Programming	3	1	-	3	30	70	100
7	BTBS1L01	English Communication Skills Lab-I	-		3	2	25	50	75
8	BTBS1L02	Engineering Chemistry Lab	-		3	2	25	50	75
9	BTCS1L01	C-Programming Lab	-		3	2	25	50	75
		Total				**24**	**255**	**570**	**825**

SEMESTER-II

S. No.	Course Code	Course Name	L	T	P	C	I	E	TM
1	BTBS2T01	English –II	3		-	3	30	70	100
2	BTMA2T01	Linear Algebra and Vector Calculus	3	1	-	3	30	70	100
3	BTEE2T02	Basic Electrical & Electronics	3	1	-	3	30	70	100
4	BTBS2T01	Engineering Physics	3	1	-	3	30	70	100
5	BTME2T01	Engineering Drawing	1	-	3	3	30	70	100
6	BTCS2T01	OOPS through C++	3	1	-	3	30	70	100
7	BTBS2L01	English Communication Skills Lab-II	-		3	2	25	50	75
8	BTBS2L03	Engineering Physics Lab	-		3	2	25	50	75
9	BTCS2LO1	OOPS Lab	-		3	2	25	50	75
		Total				**24**	**255**	**570**	**825**

INFORMATIONTECHNOLOGY

COURSE STRUCTURE – UG

SEMESTER -III

S. No.	Course Code	Course Name	L	T	P	C	I	E	Total
1	BTCS3T01	Data Structures	3	1	-	3	30	70	100
2	BTIT3T01	Software Engineering	3	1	-	3	30	70	100
3	BTCS3T04	JAVA Programming	3	1	-	3	30	70	100
4	BTEC3T05	Digital Logic Design	3	1	-	3	30	70	100
5	BTMA3T01	Discrete Mathematics	3	1	-	3	30	70	100
6	BTBM3T02	Principles of Economics & Management	3	1	-	3	30	70	100
7	BTBS3L01	Soft Skills /Aptitude Lab-1	-	-	3	1	25	-	25
8	BTIT3L01	Data Structures Lab using C	-	-	3	2	25	50	75
9	BTIT3L02	Java Programming Lab	-	-	3	2	25	50	75
		Total				**23**	**255**	**520**	**775**

SEMESTER - IV

S. No.	Course Code	Course Name	L	T	P	C	I	E	Total
1	BTCS4T01	Data Base Management Systems	3	1	-	3	30	70	100
2	BTIT4T01	Operating Systems	3	1	-	3	30	70	100
3	BTIT4T02	Principles of Programming Languages	3	1	-	3	30	70	100
4	BTCS4T04	Formal Language and Automata Theory	3	1		3	30	70	100
5	BTMA4T01	Probability & Statistics	3	1	-	3	30	70	100
6	BTCS4T05	Computer Organization	3	1	-	3	30	70	100
7	BTBS4L01	Soft Skills /Aptitude Lab-2	-	-	3	1	25	-	25
8	BTIT4L01	Operating Systems Lab	-	-	3	2	25	50	75
9	BTCS4L02	DBMS Lab	-	-	3	2	25	50	75
		Total				**23**	**255**	**520**	**775**

INFORMATIONTECHNOLOGY
COURSE STRUCTURE – UG

SEMESTER -IV

S. No.	Course Code	Course Name	L	T	P	C	I	E	Total
1	**BTIT5T01**	Unix Programming	3	1	-	3	30	70	100
2	**BTIT5T02**	Design and Analysis of Algorithms	3	1	-	3	30	70	100
3	**BTIT5T03**	Advanced Java and Web Technologies	3	1		3	30	70	100
		Elective-I	3	1	--	3	30	70	100
5	**BTCS5T04**	Computer Networks	3	1	-	3	30	70	100
6	**BTIT5L01**	Unix Programming Lab	-	-	3	2	25	50	75
7	**BTCS5L02**	Computer Networks Lab	-	-	3	2	25	50	75
8	**BTIT5L02**	Advanced Java and Web Technologies Lab	-	-	3	2	25	50	75
9	**BTCS5S01**	Seminar	-	-	3	2	50	-	50
		Total				23	275	500	775

Elective-I		
1	**BTIT5TE1**	Computer Vision and Graphics
2	**BTIT5TE2**	Software Quality Assurance
3	**BTIT5TE3**	Neural Networks

INFORMATION TECHNOLOGY
COURSE STRUCTURE – UG

SEMESTER - VI

S.No.	Course Code	Course Name	L	T	P	C	I	E	Total
1	BTIT6T01	Cloud Computing	3	1	-	3	30	70	100
2	BTIT6T02	UML & Design Pattern	3	1	-	3	30	70	100
3	BTEC6T05	Microprocessor and its Application	3	1	-	3	30	70	100
4	BTCS6T04	Cryptography and Network Security	3	1	-	3	30	70	100
5		Elective-2	3	1	-	3	30	70	100
6	BTIT6L01	Cloud Computing Lab	-	-	3	2	25	50	75
7	BTIT6L02	UML & Design Pattern Lab	-	-	3	2	25	50	75
8	BTEC6L03	Microprocessor and its Applications Lab	-	-	3	2	25	50	75
9	BTIT6Q01	Technical Paper	-	-	3	2	50	-	50
		Total				**23**	275	500	775

Elective-2			
1	BTIT6TE1	Image Processing	
2	BTIT6TE2	Software Reliability Engineering	
3	BTIT6TE3	Genetic Algorithm	
Elective-2			
1	BTIT6TE1	Image Processing	
2	BTIT6TE2	Software Reliability Engineering	
3	BTIT6TE3	Genetic Algorithm	

INFORMATIONTECHNOLOGY
COURSE STRUCTURE – UG

SEMESTER - VII

S.No	Course Code	Course Name	L	T	P	C	I	E	Total
1	BTIT7T01	Android Programming	3	1	-	3	30	70	100
2	BTIT7T02	Data Mining and Data Warehousing	3	1	-	3	30	70	100
3	BTCS7T03	Open Source Software	3	1	-	3	30	70	100
4	BTIT7T03	Business Intelligence	3	1	-	3	30	70	100
5		**Elective-3**	3	1	-	3	30	70	100
6	BTBM7T01	Professional Ethics and Intellectual Property Rights	3	1	-	-	Mandatory		
7	BTIT7L01	Android Programming Lab	-	-	3	2	25	50	75
8	BTIT7L02	Data Mining and Data Warehousing Lab	-	-	3	2	25	50	75
9	BTIT7M01	Mini Project	-	-	3	2	50	-	50
		Total				**21**	250	450	700

Elective-3		
1	**BTIT7TE1**	Fog Computing
2	**BTIT7TE2**	Machine Learning
3	**BTIT7TE3**	Mobile Computing

SEMESTER - VIII

S.NO	Course Code	Course Name	L	T	P	C	I	E	Total
1	BTCS8T01	Information Retrieval Systems	3	1	-	3	30	70	100
2	BTIT8T01	Information Retrieval Systems	3	1	-	3	30	70	100
3		Elective - 4	3	1	-	3	30	70	100
4	BTIT8S01	Seminar	-	-	3	2	50	-	50
5	BTCS8V01	Comprehensive Viva Voce		-	3	2	50	-	50
6	BTCS8P01	**Main Project**		-	3	6	60	140	200
		TOTAL				19	250	350	600

Elective-4

1	BTIT8TE1	Software Project Management
3	BTCS8TE4	Pattern Recognition
5	BTIT8TE2	Internet of Things

SEMESTER – I	L	T	P	C
	3	1	-	3
ENGLISH – I				

DETAILED TEXT-I ENGLISH ESSENTIALS: RECOMMENDED TOPICS:

1. IN LONDON: M.K.GANDHI

OBJECTIVE: To apprise the learner how Gandhi spent a period of three years in London as a student.

OUTCOME: The learner will understand how Gandhi grew in introspection and maturity.

THE KNOWLEDGE SOCIETY- APJKALAM

OBJECTIVE: To make the learners rediscover India as a land of Knowledge.

OUTCOME: The learners will achieve a higher quality of life, strength and sovereignty of a developed nation.

2. PRINCIPLES OF GOODWRITING:

OBJECTIVE: To inform the learners how to write clearly and logically.

OUTCOME: The learner will be able to think clearly and logically and write clearly and logically.

3. MAN'SPERIL

OBJECTIVE: To inform the learner that all men are in peril.

OUTCOME: The learner will understand that all men can come together and avert the peril.

4. THE DYING SUN—SIR JAMES JEANS

OBJECTIVE: This excerpt from the book "The Mysterious Universe" presents the mysterious nature of the Universe and the stars which present numerous problems to the scientific mind. Sir James Jeans uses a poetic approach to discuss the scientific phenomena.

OUTCOME: This provides the students to think about the scientific phenomena from a different angle and also exposes the readers to poetic expressions.

5. LUCK—MARK TWAIN

OBJECTIVE: This is a short story about a man's public image and his true nature. The theme of the story is that luck can be a factor of life, so that even if one is incompetent but lucky, one can still succeed.

OUTCOME: The story is humorous in that it contains a lot of irony. Thus this develops in the learner understand humorous texts and use of words for irony.

TEXT BOOK: "English Essentials" by Ravindra Publications.

NON-DETAILED TEXT: (From Modern Trailblazers of Orient Black swan) (Common single Text book for two semesters) [Semester I (1 to 4 lessons) / Semester II (5 to 8 lessons)]

1. G. D.Naidu

OBJECTIVE: To inspire the learners by G. D. Naidu's example of inventions and contributions.
OUTCOME:

The learner will be in a position to emulate G. D. Naidu and take to practical applications.

2. G. R.Gopinath

OBJECTIVE: To inspire the learners by his example of inventions.

OUTCOME: Like G. R. Goliath, the learners will be able to achieve much at a low cost and help the common man.

3. Sudhamurthy

OBJECTIVE: To inspire the learners by the unique interests and contributions of Sudhamurthy.

OUTCOME: The learner will take interest in multiple fields of knowledge and make life worthwhile through social service.

4. VijayBhatkar

OBJECTIVE: To inspire the learner by his work and studies in different fields of engineering and science.

OUTCOME: The learner will emulate him and produce memorable things.

Text Book: "Trail Blazers" by Orient Black Swan Pvt. Ltd. Publishers

SEMESTER - I	L	T	P	C
	3	1	-	3
DIFFERENTIAL EQUATIONS				

UNIT – I: Differential equations of first order and first degree

Linear-Bernoulli-Exact-Reducible to exact.

Applications: Newton's Law of cooling-Law of natural growth and decay- Orthogonal trajectories.

UNIT – II: Linear differential equations of higher order

Non-homogeneous equations of higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, $e^{ax}V(x)$, ivy(x). Method of Variation of parameters for solving second order linear differential equations

Applications: LCR circuit, Simple Harmonic motion

UNIT – III: Laplace transforms

Laplace transforms of standard functions-Shifting Theorems, Transforms of derivatives and integrals – Unit step function –Dirac's delta function-

UNIT – IV: Inverse Laplace transforms

Inverse Laplace transforms -Convolution theorem (without proof).

Application: Solutions of ordinary differential equations of using Laplace transforms.

UNIT – V: Mean value theorems (Without poof) & Partial Differentiation

Role's The Orem-Lagrange's mean value Theorem –Cauchy's mean value theorem - Taylor series and Malaren's series expansions of functions of single variable - Jacobean, Functional dependence.

UNIT – VI: First order Partial differential equations

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard type) equations- Solutions of Linear Partial differential equations with constant coefficients by the method of separation of Variables.

BOOKS:

1. **B.S. GREWAL**, Higher Engineering Mathematics, 42^{nd}Edition, Khans Publishers

2. **B.V. RAMANA**, Higher Engineering Mathematics, Tata McGraw-Hill

REFERENCE BOOK:

1. **ERWIN KREYSZIG**, Advanced Engineering Mathematics, 9^{th}Edition, Wiley-India

SEMESTER - I	L	T	P	C
	3	1	-	3

NUMERICAL METHODS & INTEGRAL TRANSFORMS

UNIT – I: Solution of Algebraic and Transcendental Equations

Introduction- Bisection Method – Method of False Position – Iteration Method –New ton Rap son Method.

UNIT – II: Interpolation

Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences-Backward differences –Central differences – Symbolic relations and separation of symbols, Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points – Lagrange's Interpolation formula

UNIT – III: Numerical solution of Ordinary Differential equations

Solution by Taylor's series-Picard's Method of successive Approximations - Euler's MethoRungeKutta Methods

UNIT – IV: Fourier series

Introduction- Determination of Fourier coefficients – even and odd functions –change of interval– Half-range sine and cosine series

UNIT – V: Fourier Transforms

Fourier integral theorem (only statement) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms

UNIT –V I: Z-transform

Introduction– properties – Damping rule – Shifting rule – Initial and final value theorems - Inverse z transform- -Convolution theorem.

Applications: Solution of difference equation by Z-transforms.

BOOKS:

1. **B.S. GREWAL**, Higher Engineering Mathematics, 42ndEdition, Khanna Publishers
2. **B.V. RAMANA**, Higher Engineering Mathematics, Tata McGraw-Hill
3. **V. RAVINDRANADH, P. VIJAYA LAXMI,** A Text Book on Mathematical Methods by Himalaya Publishing House.

REFERENCE BOOKS

1. **ERWIN KREYSZIG**, Advanced Engineering Mathematics, 9thEdition, Wiley-India
2. **S. S. Sartre (PHI),** Introductory Methods of Numerical Analysis.

SEMESTER – I	**L**	**T**	**P**	**C**
	3	**1**	**-**	**3**
ENGINEERING CHEMISTRY				

UNIT – I: WATER TECHNOLOGY

Hard Water – Estimation of Hardness By EDTA Method – Potable Water - Sterilization and Disinfection – Boiler Feed Water – Boiler Troubles – Priming And Foaming , Scale Formation, Corrosion, Caustic Embrittlement, Turbine Deposits – Softening of Water – Lime Soda, Zeolite Processes – Ion Exchange Process - Reverse Osmosis – Electro Dialysis.

UNIT – II: ELECTRO CHEMISTRY

Electro Potential –Determination of single electrode potential –Standard electrode potential - Nernst Equation(problems) – Electro Chemical cell (Galvanic Cell) -Reference Electrodes- Standard Hydrogen Electrode, Calomel Electrode -– Ion Selective Electrode –Glass electrode – Determination of pH – conduct metric titration- Potentiometric titrations-Batteries – Primary Cell: Dry Cell, Alkaline Battery – Secondary Cell: Lead Acid Accumulator, Lithium Ion Battery – Fuel Cells – Hydrogen – Oxygen Fuel Cell, Methanol – Oxygen Fuel Cell- solar cell - Photovoltaic Cell-Applications.

UNIT – III: CORROSION

Introduction - Theories of Corrosion(i) Dry Corrosion (Pilling Bed worth rule) (ii) Wet Corrosion – Galvanic Series – Types of Corrosion: Galvanic Corrosion, Differential Aeration Corrosion, Pitting Corrosion, Stress Corrosion – Factors Influencing Corrosion – Nature of The Metal , Nature of The Environment – Corrosion Control: Material Selection & Design –Catholic Protection- Surface Coatings – Methods of Applications on Metals -Hot Dipping, Electroplating, Electro less Plating) – Organic Surface Coating – Paints – Their Constituents & Their Function.

UNIT – IV: FUELS

Introduction to Fuels – Classification – Solid Fuels Merits & Demerits - Calorific Value – HCV and LCV – Bomb Calorimeter - Problems Based on Calorific Values – Analysis of Coal (Proximate and Ultimate Analysis) – Numerical Problems Based on Analysis – Working of Thermal Power Station; Liquid Fuels Merits & Demerits – Petroleum – Refining – Cracking (types) –Petrol – Diesel Knocking – Octane Number, Cetane Number - Gaseous Fuels Merits & Demerits – Natural Gas – LPG,CNG.

UNIT – V: POLYMERS SCIENCES & TECHNOLOGY

POLYMERS – Introduction – Types of Polymers – Mechanism of Polymerization (Addition and Condensation)

– Individual Polymers (Preparation Properties and uses of PS, PVC and Bakelite) Conducting Polymers – Biodegradable Polymers – Stereo Specific Polymers, Ziegler Natta Catalysis.

PLASTIC – Types – Compounding of Plastics – Maudling (Four Types) – Fiber Reinforced Plastics - Bullet Proof Plastics – Engineering Applications.

RUBBER &ELASTOMERS: Introduction –Preparation – Vulcanization – Compounding of Rubber – Preparation, Properties and Uses of Buna-S, Buna-N and Thiokol-Engineering Applications

UNIT – VI: ENGINEERING MATERIALS

Refractory's – Ceramics (Types, Properties Applications) – Cement – Hardening and Setting-Deteriorations of cement concrete – Nonmaterial's (Preparation, Properties & Applications of Carbon Nano tubes) – Definitions of Green Chemistry – Principle – Engineering Applications.

TEXT BOOKS

1. Jain and Jain (Latest Edition), Engineering Chemistry, Dhanpat Rai Publishing companyLtd.
2. N. Y. S. Murthy, V. Anuradha, K Ramana Rao" A Text Book of Engineering Chemistry", Matuthi Publications.
3. K.Sesha Maheswaramma and MridulaChugh (2013) A Text Book of Engineering Chemistry, Pearson Publications.

REFERENCE BOOKS:

1. Shashi Chawal "A Text Book of Engineering Chemistry, Dhanpat Rai Publishing companyLtd,

S. S. Dara (2013) Text Book of Engineering Chemistry, S. Chand Technical Series.

SEMESTER - I	L	T	P	C
	3	1	-	3
C-PROGRAMMING				

UNIT-I:

INTRODUCTION:

Introduction to Computer System, Hardware and Software, Algorithm, Flowchart, Types of Computer Languages.

FUNDAMENTALS OF C:

Character Set, Tokens, Identifiers, Constants, Basic Data Types and Sizes, Operators: Arithmetic Operators, Relational Operators, Logical Operators, Conditional Operator, Increment and Decrement Operators, Assignment Operators, Bit-wise Operators, Special Operators, Expressions, Operator Precedence and Order of Evaluation, Evaluation of Expressions, Type Conversions: Implicit and Explicit.

UNIT-II:

CONTROL STRUCTURES:

Selection Statements: if-else Statement, null else Statement, nested if Statement, else-if Statement, switch Statement, Applications.

Iterative Statements: break statement, continue statement, counter and event controlled loops, while loop, do-while loop, for loop, Looping Applications.

ARRAYS:

Introduction to arrays, declaration, initialization and accessing array elements of 1-D Arrays, declaration, initialization and accessing elements of 2-D Arrays, Strings, String Functions, Application of Arrays.

UNIT-III:

FUNCTIONS:

Introduction To Functions, User-Defined & Library Functions, Parameter Passing, Return Statement Storage Class, Recursion, Recursive Functions And Recursive Solutions For Different Problems, C Preprocessor, Passing 1-D Arrays And 2-D Arrays To Functions.

UNIT-IV:

POINTERS:

Introduction to Pointers, Declaration, Initialization and Accessing A Pointer, Passing By Address, Pointer As Function Argument, Pointer Arithmetic, Pointer To Pointer, Pointer To Multi-dimensional Arrays, Dynamic Memory Management Functions, Command Line Arguments.

UNIT-V:

DERIVED TYPES:

Definition, Declaration and Initialization of Structures, Accessing Structures, Nested structures, Array of Structures, Structures and Functions, pointer to structure, Self-Referential Structures, bit-fields, Definition, Declaration and Initialization of Unions, Type-definition.

UNIT-VI:

FILES:

Introduction to Files, File Streams: binary and text, Formatted I/O functions: fprintf( ), fscanf( ), and File I/O Functions: feof ( ), rewind( ), ferror ( ), fopen ( ), fclose ( ).

TEXT BOOKS:

The C Programming Language	Kernighan Ritchi PHI
Programming in C: Practical approach	Ajay Mittal Pearson
Programming in ANSIC	E BalagurusamyTMH

REFERENCE BOOKS:

Understanding and using Pointers	Richard ReeseOreille

SEMESTER - I	L	T	P	C
	3	1	-	3
ENVIRONMENTAL STUDIES				

UNIT – I: MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion.

UNIT – II: NATURAL RESOURCES: NATURAL RESOURCES AND ASSOCIATED PROBLEMS

Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.

Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources

Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity

Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.

Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification.

Role of an Individual In Conservation Of Natural Resources. Equitable Use of Resources for Sustainable Life Styles.

UNIT – III: ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION

Concept of an ecosystem - Structure and function of an ecosystem - Producers, consumers and decomposers - Energy flow in the ecosystem - Ecological succession - Food chains, food webs and ecological pyramids - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems. Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels - India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. -

Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.

Solid Waste Management: Sources, classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products.UNIT – V: SOCIAL ISSUES AND THE ENVIRONMENT

Population Growth and Explosion, Effects. Urban Problems Related To Energy -Water Conservation, Rain Water Harvesting-Resettlement and Rehabilitation of People; Its Problems and Concerns. Role of Information Technology in Environment and Human Health. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act – Motor Vehicle Act - Issues involved in enforcement of environmental legislation -Public awareness.

UNIT – VI: ENVIRONMENTAL MANAGEMENT

Environmental ethics - Issues and possible solutions and Environmental Education - Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism The student should submit a report individually on any issues related to Environmental Studies course and make a power point presentation – Field work: visit to an industrial area/ecosystem area (Forest, Grassland, Desert, and Aquatic)

TEXT BOOK:

1. Environmental Studies by K. V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. A text book of Environmental Studies by C. P. Kaushik &Anubha Kaushik, New Age International Publishers.

REFERENCE:

1. Text Book of Environmental Studies by Deeshita Dave & P. UdayaBhaskar, CengageLearning.
2. A text book of Environmental Studies by Shaashi Chawla, TMH, New Delhi.

SEMESTER - I	L	T	P	C
	3	1	1	2
ENGLISH COMMUNICATION SKILLS LAB – I				

OBJECTIVE: To impart to the learner the skills of grammar as well as communication through listening, speaking, reading, and writing including soft, that is life skills.

BASIC COMMUNICATION SKILLS

UNIT 1 A. Greeting and Introductions

      B. Pure Vowels

UNIT 2 A. Asking for information and Requests

      B. Diphthongs

UNIT 3 A. Invitations

      B. Consonants

UNIT 4 A. Commands and Instructions

      B. Accent and Rhythm

UNIT 5 A. Suggestions and Opinions

      B. Intonation

Text Book: 'Strengthen your Communication Skills' Part-A by Maruthi Publications

REFERENCE BOOKS:

1. INFOTECH English (MaruthiPublications)

2. Personality Development and Soft Skills (Oxford University Press, New Delhi)

SEMESTER - I	**L**	**T**	**P**	**C**
	3	**1**	**-**	**2**
ENGINEERING CHEMISTRY LAB				

Introduction to chemistry lab

Estimation of HCl using standard Na_2CO_3

Analysis of Water

1   Determination of Total hardness of water

2   Estimation of Ferric iron

3   Estimation of $KMnO_4$ using standard $H_2C_2O_4$

4   Estimation of Copper(Iodometry)

5   Estimation of Dissolved Oxygen by Wrinkles Method

6   Determination of pH the of given water sample

7   Conduct metric titration of strong acid **Vs** Strong base.

8   Potentiometric Titration of Strong Acid Vs Strong Base

9   Preparation of Phenol-Formaldehyde Resin

Estimation of properties of Oil

10   Acid Number

11 Saponification value

List of Experiments

Student has to do Any Ten Experiments of the Following

MANUAL:

1. Engineering Chemistry Lab Manual Prepared by Chemistry Faculty.

SEMESTER - I	L	T	P	C
	3	**1**	**3**	**2**
COMPUTER PROGRAMMING LAB				

EXERCISE 1

a) Write a C Program to calculate the area of triangle, circumference of a circle.

b) Write a C program to find the largest of three numbers using ternary operator.

c) Write a C Program to swap two numbers without using a temporary variable.

EXERCISE 2

a) Write a C program to find the roots of a Quadratic Equation.

b) Write a C program, which takes two integer operands and one operator form the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

EXERCISE 3

a) Write a C program to find the sum of individual digits of a positive integer and find the reverse of the given number.

b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence

c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

EXERCISE 4

a) Write a C Program to print the multiplication table of a given number n up to a given value, where n is entered by the user.

b) Write a C Program to enter a decimal number, and calculate and display the binary equivalent of that number.

c) Write a C Program to check whether the given number is Armstrong number or not & Perfect number or not.

EXERCISE 5

a) Write a C program to interchange the largest and smallest numbers in the array.

b) Write a C program to Search and element in the array using linear search.

EXERCISE 6

a) Write a C program to input two m x n matrices, check the compatibility and perform addition and multiplication of them

EXERCISE 7

Write a C program that uses functions to perform the following operations:

i. To insert a sub-string in to given main string from a given position.

ii. To delete n Characters from a given position in a given string.

iii. To replace a character of string either from beginning or ending or at a specified location

EXERCISE 8

a) Write C Programs for the following string operations without using the built in functions - to concatenate two strings - to append a string to another string - to compare two strings

EXERCISE 9

a) Write C Programs for the following string operations without using the built in functions - to find t he length of a string - to find whether a given string is palindrome or not

EXERCISE 10

a) Write a C functions to find both the largest and smallest number of an array of integers.

b) Write C programs illustrating call by value and call by reference concept.

EXERCISE 11

Write C programs that use both recursive and non-recursive functions for the following

i) To find the factorial of a given integer.

ii) To find the GCD (greatest common divisor) of two given integers.

iii) To find Fibonacci sequence

EXERCISE 12

a) Write a C program consisting of Pointer based function to exchange value of two integers using passing by address.

b) Write a C program to swap two numbers using pointers

c) Write a C Program to compare two arrays using pointers

EXERCISE 13

Examples which explores the use of structures, union and other user defined variables

EXERCISE 14

a) Write a C program which copies one file to another using command line argument.

b) Write a C program to count the number of characters and number of lines in afile.

c) Write a C Program to merge two files into a third file. The names of the files must be entered using command line arguments.

SEMESTER - II	L	T	P	C
	3	1	-	3
ENGLISH – II				

DETAILED TEXT-II: Sure Outcomes: English for Engineers and Technologists

RECOMMENDED TOPICS:

1. TECHNOLGY WITH A HUMANFACE

OBJECTIVE: To make the learner understand how modern life has been shaped by technology.

OUTCOME: The proposed technology is people's technology. It serves the human person instead of making him the servant of machines.

2. CLIMATE CHANGE AND HUMANSTRATEGY

OBJECTIVE: To make the learner understand how the unequal heating of earth's surface by the Sun, an atmospheric circulation pattern is developed and maintained.

OUTCOME: The learner's understand that climate must be preserved.

3. EMRGING TECHNOLOGIES

OBJECTIVE: To introduce the technologies of the 20th century and 21st centuries to the learners.

OUTCOME: The learner will adopt the applications of modern technologies such as nanotechnology.

4. WATER- THE ELIXIR OFLIFE

OBJECTIVE: To inform the learner of the various advantages and characteristics of water.

OUTCOME: The learners will understand that water is the elixir of life.

5. THE SECRET OFWORK

OBJECTIVE: In this lesson, Swami Vivekananda highlights the importance of work for any development.

OUTCOME: The students will learn to work hard with devotion and dedication.

6. WORK BRINGSSOLACE

OBJECTIVE: In this lesson Abdul Kalam highlights the advantage of work.

OUTCOME: The students will understand the advantages of work. They will overcome their personal problems and address themselves to national and other problems.

Text Book: "Sure Outcomes" by Orient Black Swan Pvt. Ltd. Publishers

NON-DETAILED TEXT:

(From Modern Trailblazers of Orient Black swan) (Common single Text book for two semesters) (Semester I (1 to 4 lessons)/ Semester II (5 to 8 lessons)

1. **J.C. Bose**

   OBJECTIVE: To appraise of J.C.Bose"s original contributions.

   OUTCOME: The learner will be inspired by Bose's achievements so that he may start his own original work.

2. **Homi Jehangir Bhaba**

   OBJECTIVE: To show Bhabha as the originator of nuclear experiments in India.
   OUTCOME: The learner will be inspired by Bhabha"s achievements so as to make his own experiments.

   a. **Vikram Sarabhai**

   OBJECTIVE: To inform the learner of the pioneering experiments conducted by Sarabhai in nuclear energy and relevance of space programmes.

   OUTCOME: The learner will realize that development is impossible without scientific research.

   b. **A Shadow-R.K.Narayan**

   OBJECTIVE: To expose the reader to the pleasure of the humorous story

   OUTCOME: The learner will be in a position to appreciate the art of writing a short story and try his hand at it.

   TEXT BOOK: "Trail Blazers" by Orient Black Swan Pvt. Ltd. Publishers

SEMESTER – II	**L**	**T**	**P**	**C**
	3	**1**	**-**	**3**
LINEARALGEBRA & VECTOR CALCULUS				

UNIT I: Linear systems of equations

Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination- Gauss Jordon and Gauss Seidal Methods.

Application: Finding the current in an electrical circuit.

UNIT II: Eigen values - Eigen vectors and Quadratic forms

Eigen values - Eigen vectors– Properties (without proof)– Cayley-Hamilton Theorem (without proof) - Quadratic forms- Reduction of quadratic form to canonical form – Rank, index, signature and nature of the Quadratic form.

Applications: Finding Inverse and powers of a matrix by using Cayley-Hamilton theorem.

UNIT III: Multiple integrals

Multiple integrals - Double and triple integrals – Change of variables – Change of order of Integration Application: Applications of Integration to Lengths, Volumes and Surface areas of solids of revolution in Cartesian and Polar Coordinates.

UNIT IV: Special functions

Beta and Gamma functions- Properties - Relation between Beta and Gamma functions Application: Evaluation of improper integrals.

UNIT V: Vector Differentiation

Gradient- Divergence- Curl - Palladian and second order operators - Vector identities Application: Equation of continuity, potential surfaces

UNIT VI: Vector Integration

Line integral – work done – Potential function – area- surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence Theorems (without proof) and related problems.

Application: Work done by a force

BOOKS:

1. **B.S. GREWAL**, Higher Engineering Mathematics, 42^{nd}Edition, KhannaPublishers

2. **B.V. RAMANA**, Higher Engineering Mathematics, Tata McGraw-Hill

REFERENCE BOOKS:

1. **ERWIN KREYSZIG**, Advanced Engineering Mathematics, 9^{th}Edition, Wiley-India

2. **S. S. SASTRI (PHI),** Introductory Methods of Numerical Analysis.

3. **V. RAVINDRANADH, P. VIJAYA LAXMI,** A Text Book on Mathematical Methods by Himalaya Publishing House.

SEMESTER - II	L	T	P	C
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NETWORKS & SYNTHESIS				

UNIT – I

Introduction to Electrical Circuits: Network elements classification, Electric charge and current, Electric energy and potential, Resistance parameter – series and parallel combination, Inductance parameter – series and parallel combination, Capacitance parameter – series and parallel combination. Energy sources: Ideal, Non-ideal, Independent and dependent sources, Source transformation, Kirchhoff's laws, Mesh analysis and Nodal analysis.

UNIT – II

Fundamentals and Network Topology: Definitions of terms associated with periodic functions: Time period, Angular velocity and frequency, RMS value, Average value, Form factor and peak factor- problem solving, Phase angle, Pharos representation, Addition and subtraction of Phasors, mathematical representation of sinusoidal quantities, explanation with relevant theory, problem solving. Principle of Duality with examples.

Network Topology: Definitions of branch, node, tree, planar, non-planar graph, incidence matrix, Basic Tie- set schedule, Basic Cut-set schedule.

UNIT – III

Steady State Analysis of A.C. Circuits: Response to sinusoidal excitation - pure resistance, pure inductance, pure capacitance, impedance concept, phase angle, series R-L, R-C, R-L-C circuits problem solving. Complex impedance and Phasor notation for R-L, R-C, R-L-C problem solving using mesh and nodal analysis, Star- Delta conversion, Problem solving.

UNIT – IV

Coupled Circuits and Resonance: Coupled Circuits: Self inductance, Mutual inductance, Coefficient of coupling, analysis of coupled circuits, Natural current, Dot rule of coupled circuits, conductively coupled equivalent circuits- problem solving.

Resonance: Introduction, Definition of Q, Series resonance, Bandwidth of series resonance, Parallel resonance, Condition for maximum impedance, current in anti resonance, Bandwidth of parallel resonance, general case- resistance present in both branches, anti resonance at all frequencies.

UNIT – V

Network Theorems: the venins, Norton's, Mill man's, Reciprocity, Compensation, Substitution, Max.Power Transfer, Tellegen's Theorems - problem solving using dependent sources also.

UNIT-VI

Network synthesis: Positive real function, Basic Synthesis procedure, LC Immittance functions, RC Impedance functions, RL impedance function or RC admittance functions, Foster and Cauer methods.

Text Books:

1. Engineering Circuit Analysis – William H. Hayt, Jack E.Kemmerly, and S. Durbin, Tata McGraw-Hill Company, 6thedition.

2. Electrical Circuit Analysis (Including Passive Network Synthesis) – C. L. Wadhwa, 2^{nd}Edition, New Age International Publishers.

Reference Books:

1. Network Analysis – A. Sudhakar and Shyammohan S Palli, 1^{st}Edition, Tata McGraw-Hill Publications.

2. Network Analysis – N.C.Jagan, C.LakshmiNarayana, 2^{nd}edition, BSPublications.

3. Network Synthesis – Van Valkenburg, Prentice-Hall of India PrivateLtd.

4. Introduction to circuit analysis and design – Tildon Glisson, Jr. SpringerPublications

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ENGINEERING PHYSICS				

UNIT – I: CRYSTALLOGRAPHY AND X-RAY DIFFRACTION

(6 hours) Introduction – Space lattice – Basis – Unit Cell – Lattice parameters – Crystal systems – Brava is lattices – Structures and packing fractions of SC, BCC and FCC-Directions and planes in crystals – Miller indices – Separation between successive (h k l) planes – Bragg's law-Bragg's Spectrometer.

UNIT – II: QUANTUM MECHANICS FOR ELECTRONIC TRANSPORT

QUANTUM MECHANICS AND ELECTRON THEORY OF METALS: Schrodinger Time Independent and Time Dependent wave equations – Particle in a box – Classical free electron theory – electrical conductivity – Mean free path – Relaxation time and drifty velocity – Quantum free electron theory – Fermi – Dirac distribution function (analytical) and its dependence on temperature – Fermi energy.

BAND THEORY OF SOLIDS: Bloch theorem (qualitative) – Kronig – Penney model – Origin of energy band formation in solids – Classification of materials into conductors, semi – conductors & insulators – Concepts of effective mass of electron and concept of hole.

UNIT – III: MAGNETIC RESPONSE OF MATERIALS & SUPERCONDUCTIVITY

MAGNETIC PROPERTIES : Magnetic permeability – Magnetization – Origin of magnetic moment – Classification of Magnetic materials – Dia, Para, Ferro, Anti-Ferro and Ferry-magnetism – Hysteresis curve by Weiss Domain Theory -Soft and Hard Magnetic materials

SUPERCONDUCTIVITY: General properties – Meissner effect – Type I and Type II superconductors – London's equations – Penetration depth – BCS Theory- Flux quantization –DC and AC Josephson effects- Applications of Superconductors.

UNIT – IV: COHERENT OPTICS – COMMUNICATIONS AND STRUCTURE OF MATERIALS

LASERS: Introduction – coherent sources – Characteristics of lasers – Spontaneous and Stimulated emission of radiation – Einstein's coefficients – three level and four level laser pumping schemes – Population inversion – Ruby laser – Helium-Neon laser- Applications of Laser.

FIBER OPTICS: Introduction-Principle of wave propagation in Optical Fiber-Acceptance angle and acceptance cone-Numerical aperture-Types of optical fibers - Application of optical fibers.

UNIT – V: SEMICONDUCTOR PHYSICS

Introduction – Intrinsic semiconductor and carrier concentration – Equation for conductivity – Extrinsic semiconductor and carrier concentration – Drift and diffusion – Einstein's equation – Hall Effect – direct & indirect band gap semiconductors.

UNIT – VI: DIELECTRIC PROPERTIES& ACOUSTICS

DIELECTRIC PROPERTIES: Introduction - Dielectric constant - Electronic, ionic and orientation polarizations - Internal fields in solids - Clausius-Mossotti equation - Ferro and Piezo electricity's

ACOUSTICS: Sound absorption, absorption coefficient and its measurements,

Reverberations time – Sabine's formula, Erving's formula.

TEXT BOOKS

1. A Text Book of Engineering Physics by M. N. Avadhanulu& P. G. Kshirasagar (S. Chan publications)

2. Engineering Physics by Mani Naidu S (Pearson Publications)

REFERENCE BOOKS

1. Introduction to solid state physics by Charles Kittle (Willey IndiaPvt.Ltd)

2. Applied Physics by T. Bhimasenkaram (BSP BH Publications)

3. Applied Physics by M. Arumugam (AnuradhaAgencies)

4. Engineering Physics by Palanisamy (Scitech Publishers)

5. Engineering Physics by D.K.Bhattacharya (Oxford Universitypress)

6. Engineering Physics by Sanjay D Jain and Girish G Sahasrabudhe (University Press)

7. Engineering Physics by B.K.Pandey& S. Chaturvedi (Cengage Learning)

SEMESTER - II	L	T	P	C
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OOPS THROUGH C++

UNIT – I

INTRODUCTION:

Differences between C and C++ , The Object Oriented Technology, Disadvantages of Conventional Programming, Advantages of OOP, Structure of a C++ Program, Header Files and Libraries.

INPUT and OUTPUT in C++:

Streams, Stream Classes, Pre-defined Streams and Stream Classes, Formatted and Unformatted Data, Unformatted Console I/O Operations, Member Functions of Input Stream Classes, Formatted Console I/O Operations, Bit Fields, Manipulators, User Defined Manipulators.

UNIT – II

Tokens in C++, Variable Declaration and Initialization, Data Types, Operators in C and C++, Scope Access Operators, Comma Operator, Revision of Decision Statements, Control Loop Statements

FUNCTIONS IN C++:

Structure of a Function, Passing Arguments, L Value and R Values, Return by reference, Returning more values by reference, Default arguments, Const Arguments, Inputting Default Arguments, Inline Functions, Function Overloading, Recursion

UNIT – III

CLASSES AND OBJECTS:

Classes in C++, Declaring Objects, Access Specifies and their scope, Member functions, Outside member functions as inline, Data Hiding or Encapsulation, Classes, Objects and Memory, Static Member variables, Static Member Functions Static Object, Array of Objects, Objects as Function Arguments, Friend Functions, The Const Member Functions, The Volatile Member Functions, Recursive Member Functions, Local Classes, Empty , Static and Const Classes, Member Function and Non-Member Function, Overloading Member Functions, Nested Classes

UNIT – IV

CONSTRUCTORS AND DESTRUCTORS:

Characteristics of Constructors & Destructors, Applications of Constructors, Parameterized Constructors, Overloading Constructors, Constructor with Default Arguments, Copy Constructor, the Const Objects, Destructors, Qualifiers and Nested Classes

OPERATOR OVERLOADING AND TYPE CONVERSION:

Overloading Unary Operators, Constraint on Increment and decrement operators, Overloading binary operators, Overloading with friend functions, Overloading Assignment operator, type conversion, rules for overloading operators.

UNIT – V

INHERITANCE:

Reusability, Access Specifies and Simple Inheritance, Protected data with private inheritance, types of inheritances, virtual base class, Constructors, Destructors and Inheritance, Object as Class member, Abstract Classes, Qualifier Classes and Inheritance, Constructor in Derived Class, Pointer and Inheritance, Overloading member function, advantages and disadvantages of Inheritance

UNIT – VI

APPLICATIONS WITH FILES:

File Stream Classes, File Opening Modes, File Pointers and manipulators, Manipulators with Arguments, Sequential Access Files, Binary and ASCII Files, Random Access Files

EXCEPTION HANDLING:

Principles of Exception handling, the keywords: try catch, throw, exception handling mechanism, multiple catch statements, catching multiple exceptions

TEXT BOOKS:

1. Programming in C++, Ashok N Kamthane, and Pearson 2ndEdition.
2. Object Oriented Programming through C++, E Balagurusamy, and McGraw Hill Education.

REFERENCE BOOKS:

1. Object Oriented Programming C++, Joyce Farrell, Cengage.
2. Mastering C++, Venugopal, Rajkumar, Ravi KumarTMH.

Object Oriented Programming with C++, 2ndEd, Sourav Sahay OXFORD

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ENGINEERING DRAWING				

UNIT – I:

INTRODUCTION: Engineering Drawing and Plane Curves, Use of Drawing Instruments and Conventions.

GEOMETRICAL CONSTRUCTIONS: Constructions of Polygons using General Method-

CONICS: Construction of Ellipse, Parabola and Hyperbola by Eccentricity Method.

CYCLOIDAL CURVES: Construction of Cycloid, Epi-Cycloid and Hypo-Cycloid.

UNIT – II:

PROJECTIONS OF POINTS AND LINES: Introduction to Orthographic Projections - Projection of Points, **PROJECTION OF STRAIGHT LINES:** Parallel to both the Planes, Parallel to One Plane and Inclined to Other Plane, Inclined to Both the Planes.

UNIT – III:

PROJECTIONS OF PLANES: Introduction to Perpendicular Planes, Perpendicular to both the Reference Planes, Perpendicular to One Plane and Parallel to Other Plane, Perpendicular to One Plane and Inclined to Other Plane, Inclined to Both the Reference Planes.

UNIT – IV:

PROJECTIONS OF SOLIDS: Projections of Simple Solids like Prism, Cylinder, Pyramids and Cones. Projections of Solids with Axis Perpendicular to one Plane, Projections of Solids with Axis Parallel to Both the Planes.

UNIT – V:

PROJECTIONS OF SOLIDS – AXIS INCLINED TO ONE PLANE: Projections of Solids with Axis inclined to one plane Parallel to other Plane, Axis inclined to the VP and Parallel to the HP, Axis Inclined to the HP and Parallel to the VP.

UNIT – VI:

ISOMETRIC PROJECTIONS: Principles of Isometric Projections - Isometric Scale, Isometric Projections of Planes, Simple Solids, Conversion of Isometric to Orthographic Views and Vice Versa.

TEXT BOOKS:

1) Engineering Drawing by K.L. Narayana & P. Khannaiah., SCIETECH Publishers.

2) Engineering Drawing by M.B. Shah & B.C. Rana., Pearson's Publishers .

REFERENCE BOOKS:

1) Engineering Drawing by N.D. Bhatt, Charotar Publishers.

2) Engineering Drawing by K. Venugopal., NEW AGE Publications.

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ENGLISH COMMUNICATION SKILLS LAB – II				

UNIT – I:

INTRODUCTION: Engineering Drawing and Plane Curves, Use of Drawing Instruments and Conventions.

GEOMETRICAL CONSTRUCTIONS: Constructions of Polygons using General Method-

CONICS: Construction of Ellipse, Parabola and Hyperbola by Eccentricity Method.

CYCLOIDAL CURVES: Construction of Cycloid, Epi-Cycloid and Hypo-Cycloid.

UNIT – II:

PROJECTIONS OF POINTS AND LINES: Introduction to Orthographic Projections - Projection of Points, **PROJECTION OF STRAIGHT LINES:** Parallel to both the Planes, Parallel to One Plane and Inclined to Other Plane, Inclined to Both the Planes.

UNIT – III:

PROJECTIONS OF PLANES: Introduction to Perpendicular Planes, Perpendicular to both the Reference Planes, Perpendicular to One Plane and Parallel to Other Plane, Perpendicular to One Plane and Inclined to Other Plane, Inclined to Both the Reference Planes.

UNIT – IV:

PROJECTIONS OF SOLIDS: Projections of Simple Solids like Prism, Cylinder, Pyramids and Cones. Projections of Solids with Axis Perpendicular to one Plane, Projections of Solids with Axis Parallel to Both the Planes.

UNIT – V:

PROJECTIONS OF SOLIDS – AXIS INCLINED TO ONE PLANE: Projections of Solids with Axis inclined to one plane Parallel to other Plane, Axis inclined to the VP and Parallel to the HP, Axis Inclined to the HP and Parallel to the VP.

UNIT – VI:

ISOMETRIC PROJECTIONS: Principles of Isometric Projections - Isometric Scale, Isometric Projections of Planes, Simple Solids, Conversion of Isometric to Orthographic Views and Vice Versa.

TEXT BOOKS:

3) Engineering Drawing by K.L. Narayana & P. Khannaiah., SCIETECHPublishers.

4) Engineering Drawing by M.B. Shah & B.C. Rana. Pearson'sPublishers.

REFERENCE BOOKS:

3) Engineering Drawing by N.D. Bhatt, CharotarPublishers.

Engineering Drawing by K. Venugopal., NEW AGEPulications

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ENGLISH COMMUNICATION SKILLS LAB – II				

Suggested Lab Manuals:

OBJECTIVE: To impart to the learner the skills of grammar as well as communication through listening, speaking, reading, and writing including soft, that is life skills.

ADVANCED COMMUNICATION SKILLS

Unit 6   body language

Unit 7   dialogues

Unit 8   interview and telephonic interview

Unit 9   group discussion

Unit 10   presentation skills

Unit 11   debates

Text Book: 'Strengthen your Communication Skills' Part-B by Maruthi Publications

Reference Books:

1. INFOTECH English (MaruthiPublications)

2. Personality Development and Soft Skills (Oxford University Press, New Delhi)

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ENGINEERING PHYSICS LAB				

List of Experiments

Student has to do Any Ten Experiments of the Following

1. Determination of the Rigidity Modulus of given material wire using Torsional Pendulum.

2. Determination of the Acceleration due to Gravity and Radius of Gyration using Compound Pendulum.

3. Determination the Frequency of vibration in Transverse and Longitudinal Modes using Melde's Apparatus.

4. Determination Frequency of A.C supply by using Monometer

5. Determination of wavelength using Laser.

6. Determination of Numerical Aperture of an Optical Fiber.

7. Determination of the Planck's constant using Photo-Cell.

8. Study the variation of Magnetic Field along the axis of a solenoid coil using Stewart-Gee's Apparatus.

9. Determination of the Time Constant for a C-Circuit.

10. Determination of the Band Gap of a Semiconductor using a p-n junction diode.

11. Study of Characteristic curves (I/V) of a Zener diode to determine its Breakdown voltage.

12. Determination of Thermoelectric coefficient of a Thermistor by using its Characteristic curve.

MANUAL:

1. Engineering Physics Lab Manual Prepared by Physics Faculty.

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OOPS THROUGH C++ LAB				

EXERCISE 1

Write a CPP program that contains a function to exchange values of two arguments (swap) by using pointers and reference parameters.

EXERCISE 2

Write a CPP program to find the given string is palindrome or not. Declare private member function to find palindrome of the given string and access it using public member function.

EXERCISE 3

Write a CPP program to find transpose of 2D matrix and allocate memory dynamically to the matrix using dynamic memory allocation. Initialize and display contents of the matrix and de-allocate memory.

EXERCISE 4

Write a CPP program to add two polynomials of any degree using object as function arguments. Hint:createt objects each represent one polynomial equation.

EXERCISE 5

Two classes them outside the class.

EXERCISE 6

Write a program to find total and average marks of each student in class. Create a student class with student number, name, 6 subject marks as its members and initializes the details. Use friend class that access the details of student and calculates total, average marks and prints the result.

EXERCISE 7

Refers one memory when one array object is used to initialize another.

EXERCISE 8

Write a Program to Generate Fibonacci Series by using Constructor to Initialize the Data Members.

EXERCISE 9

Write a program for finding area of different geometric shapes (circle, Rectangle, cube). Use function overloading with type, order, sequence of arguments to find the area of shapes.

EXERCISE 10

Of identical For "AAAAA".

EXERCISE 11

Write a program to calculate gross and net pay of employee from basic salary. Create employee class which constructor in employee

EXERCISE 12

Write a program to calculate bonus of the employees. The class master derives the information from both admin and account classes which intern derives information from class person. Create base and all derived pointer that functions)

EXERCISE 13

Write a program to add two matrices of mxn size using binary operator over loading.

EXERCISE 14

Write a program to find transpose of a given matrix of mxn size using unary operator overloading.

EXERCISE 15

Write a program to concatenate one string to another using binary operator overloading.

EXERCISE 16

Write a program that uses functions to perform the following operations:

        a. To copy contents of one file into another file.

        b. To replace a word with other word in a given file

        c. To count the no of occurrences of a word in a given file

EXERCISE 17

Write a program to sort a given set of elements using function template.

EXERCISE 18

Write a program to search a key element in a given set of elements using class template.

EXERCISE 19

Define multiple

EXERCISE 20

Catch statements given number is negative value and out of memory exception is thrown if the given number is greater than20.

SEMESTER - III	L	T	P	C
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	DATA STRUCTURES(BTCS3T01)			

COURSE OBJECTIVES:

1   To impart the basic concepts of data structures and algorithms

2   To understand concepts about searching and sorting techniques

3   To Understand basic concepts about stacks,queues,lists,trees and graphs

4   To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures

COURSE OUTCOMES:

1   Ability to analyze algorithms and algorithm correctness.

2   Ability to summarize searching and sorting techniques

3   Ability to describe stack, queue and linked list operation.

4   Ability to have knowledge of tree and graphs concepts.

UNIT I

Preliminaries of algorithm, Algorithm analysis and complexity, Data structure- Definition, types of data structures.

RECURSION: Definition, Design Methodology and Implementation of recursive algorithms, Linear and binary recursion, recursive algorithms for factorial function, GCD computation, Fibonacci sequence, Towers of Hanoi, Tail recursion.

SEARCHING TECHNIQUES: List Searches using Linear Search, Binary Search, Fibonacci Search

UNIT II

SORTING TECHNIQUES: Basic concepts, Sorting by: insertion (Insertion sort), selection (heap sort), exchange (bubble sort, quick sort), distribution (radix sort) and merging (merge sort) Algorithms.

UNIT III

STACKS AND QUEUES:

STACKS: Basic Stack Operations, Representation of a Stack using Arrays, Stack Applications: Reversing list, Factorial Calculation, Infix to postfix Transformation, Evaluating Arithmetic Expressions.

QUEUES: Basic Queue Operations, Representation of a Queue using array, Implementation of Queue Operations using Stack, Applications of Queues- Round, Robin Algorithm, Circular Queues, Priority Queues.

UNIT IV

Linked Lists: Introduction, single linked list, representation of a linked list in memory, Operations on a Single linked list, Reversing a single linked list, Advantages and disadvantages of single linked list, Linked list, double linked list

UNIT V

TREES: Properties, Representation of Binary, Trees using arrays and linked lists, operations on a Binary Tree, Binary Tree Traversals (recursive), Creation of binary tree from in, pre and post order traversals.

ADVANCED CONCEPTS OF TREES: Tree Travels using stack (non recursive), Threaded Binary Trees. Binary search, tree, Basic concepts, BST operations: insertion, deletion.

UNIT VI

GRAPHS: Basic concepts, Representations of Graphs: using Linked list and adjacency matrix, Graph algorithms.

Graph Traversals (BFS & DFS), app1ications: Dijkstra's shortest path, Transitive closure, Minimum Spanning Tree using Prim's Algorithm, Warshall'sAlgorithm (Algorithmic Concepts Only, No Programs required).

TEXT BOOKS:

1. Data structures and algorithm analysis in C, 2^{nd}ed, mark allenweiss

2. Data Structure with C, Seymour Lipschutz,TMH

3. Data Structures using C. ReemaTharej ,Oxford

4. Data Structures, 2/e, Richard F, Gilberg , Forouzan,Cengage

REFERENCE BOOKS:

1. Data Structures and Algorithms, 2008, G. A. V. Pai, TMH

2. Classic Data Structures, 2/e, Debasis , Sarnanta,PHI,2009

3. Fundamentals of Data Structure in C, 2le,' Horowitz, Sahni, Anderson Freed, University Press

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SOFTWARE ENGINEERING (BTIT3T01)				

COURSE OBJECTIVES:

1. To make the students learn about the basic concepts on software engineering methods and practices and their appropriate application in software industry.
2. To develop an understanding of software process models and Software Development Lifecycle.
3. To provide an idea on software testing techniques.
4. To teach an understanding role of the different aspects of Software Project Management.
5. To develop an approach on ethical and professional issues those are important for software Project Management.

COURSE OUTCOMES:

1. Capabilities to identify, formulate, and solve software engineering problems.
2. Be able to elicit, analyze and specify software requirements with various stakeholders of a software development project.
3. Ability to participate in design, development, deployment and maintenance of a medium scale software development project.
4. Ability to evaluate the impact of potential solutions to software engineering problems in a global society, using the knowledge of models, tools, and techniques.

UNIT I:

Introduction to Software Engineering: The evolving role of software, Attributes of good software, Changing Nature of Software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), process assessment,

UNIT II:

Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

UNIT III:

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT IV:

Design Engineering: Design process and Design quality, Design concepts, the design model.

Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution

UNIT V :

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards

UNIT VI:

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Metrics for Process and Products: Software Measurement, Metrics for software quality.

TEXT BOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 7thedition.McGrawHill International Edition.

2. Software Engineering- Summerville, 7th edition, Pearson education.

REFERENCES:

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers

2. Software Engineering, an Engineering approach- James F. Peters, WitoldPedrycz, JohnWiely.

3. Systems Analysis and Design- Shely Cashman Rosenblatt, Thomson Publications.

4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

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JAVA PROGRAMMING (BTCS3T04)				

COURSE OBJECTIVES:

1 Concepts of object oriented programming in java are needed.

2 To provide sufficient knowledge about developing real world projects with object oriented Concept.

COURSE OUTCOMES:

1 Ability to describe the concepts of object-oriented programming.

2 Ability to handle interfaces, class hierarchies and exceptions in programs.

3 Ability to construct appropriate diagrams and textual descriptions to communicate the static structure and dynamic behavior of an object oriented solution.

4 Ability to design and develop Object Oriented systems

UNIT I: Basics of Object Oriented Programming (OOP):

Introduction to OOPS: Paradigms of Programming Languages - Basic concepts of Object Oriented Programming – Differences between Procedure Oriented Programming and Object Oriented Programming - Objects and Classes – Data abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic binding, Message communication – Benefits of OOP – Application of OOPs. Introduction to Java : History – Java features – Java Environment – JDK1.7 – API, Creating and Executing a Java program – Java Tokens: Keywords, Character set, Identifiers, Literals, Comments in Java program Separator – Java Virtual Machine (JVM).

UNIT II: JAVA BASICS:

Data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT III: INHERITANCE:

Defining a subclass – Deriving a sub class – Single Inheritance – Multilevel Inheritance – Hierarchical Inheritance – Overriding methods – Final variables and methods – Final Classes - Abstract methods and classes – Visibility Control: public access, private access,

Protected.

Member access rules, super uses, polymorphism, abstract classes.

UNIT IV: PACKAGES AND INTERFACES:

Defining, Creating And Accessing A Package, Understanding CLASSPATH, Importing Packages. Interfaces: Differences Between Classes And Interfaces, Defining An Interface, Implementing Interface, Applying Interfaces, Variables In Interface And Extending Interfaces.

UNIT V: EXCEPTION HANDLING

Concepts of exception handling, benefits of exception handling, Termination or presumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

UNIT VI: MULTITHREADING:

Creating Threads – Life Cycle of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization – Implementing run able interface – Thread Scheduling.

Differences between multi threading and multitasking, daemon threads, thread groups.

TEXT BOOKS:

1. Java; The Complete Reference, 7th edition, Herbert Scheldt,TMH.

2. Java: How to Program, 8/e, Dietal, Dietal, PHI

3. Programming in JAVA, SachinMalhotra, Saurabhchoudhary,Oxford.

4. Introduction to Java programming 6th edition, Y. Daniel Liang, Pearsoneducation.

5. Introduction to Java Programming, 7th ed, Y Daniel Liang,Pearson.

REFERENCES:

1. JAVA Programming, K.Rajkumar, Pearson.

2. Core JAVA, Black Book, NageswaraRao, Wiley, Dream Tech.

3. Core JAVA for Beginners, RashmiKanta Das,Vikas.

4. Object Oriented Programming Through Java, P.Radha Krishna, UniversitiesPress.

An Introduction to programming and OO design using Java, J.Nino and F.A. Hosch, John wiley&sons.

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DIGITAL LOGIC DESIGN (BTEC3T05)				

DIGITAL LOGIC DESIGN (BTEC3T05)

COURSE OBJECTIVES:

1   To Work with a variety of number systems and numeric representations, including signed and unsigned binary, hexadecimal, 2's complement.

2   To introduce the methods for simplifying Boolean expressions. To introduce basic postulates

   of Boolean algebra and show the correlation between Boolean expression.

3   To outline the formal procedures for the analysis and design of combinational circuits and sequential circuits

COURSE OUTCOMES:

1   Ability to understand the principles of digital circuits

2   Ability to learn the hardware concepts in a digital system

3   Ability to knowledge of the logic behind the operation of counters

4   Ability to analyse the internal design of integrated circuits

UNIT-I

Digital Design and Binary Numbers:

Binary Arithmetic, Negative Numbers and their Arithmetic, Floating point representation, Binary Codes, Cyclic Codes, Error Detecting and Correcting Codes, Hamming Codes.

UNIT-II

Minterm and Maxterm Realization of Boolean Functions, Gate-level minimization: The map method up to four variable, don't care conditions, SOP and POS simplification, NAND and NOR implementation, Quine Mc- Cluskey Method (Tabular method).

UNIT-III

Combinational Logic:

Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder-Subtractor, Code Converters, Parity Generators and Checkers, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers,

UNIT-IV

Memory and Programmable Logic Devices:

Semiconductor Memories, RAM, ROM, PLA, PAL, Memory System design.

UNIT-V

Synchronous Sequential Logic:

Sequential Circuits, Storage Elements: Latches, Flip Flops, Analysis of Clocked Sequential circuits, state reduction and assignments, design procedure.

UNIT-VI

Registers and Counters: Shift Registers, Ripple Counter, Synchronous Counter, Other Counters.

Text book:

1. M. Morris Mano and M. D. Ciletti, "Digital Design", Pearson Education.

References:

A.K .Singh, "Foundation of Digital Electronics and Logic design", New Ageinternati

DIGITAL LOGIC DESIGN (BTEC3T05)

COURSE OBJECTIVES:

1 To Work with a variety of number systems and numeric representations, including signed and unsigned binary, hexadecimal, 2's complement.

2 To introduce the methods for simplifying Boolean expressions. To introduce basic postulates

    Of Boolean algebra and show the correlation between Boolean expression.

3 To outline the formal procedures for the analysis and design of combinational circuits and sequential circuits

COURSE OUTCOMES:

1   Ability to understand the principles of digital circuits

2   Ability to learn the hardware concepts in a digital system

3   Ability to knowledge of the logic behind the operation of counters

4   Ability to analyse the internal design of integrated circuits

UNIT-I

Digital Design and Binary Numbers:

Binary Arithmetic, Negative Numbers and their Arithmetic, Floating point representation, Binary Codes, Cyclic Codes, Error Detecting and Correcting Codes, Hamming Codes.

UNIT-II

Minterm and Maxterm Realization of Boolean Functions, Gate-level minimization: The map method up to four variable, don't care conditions, SOP and POS simplification, NAND and NOR implementation, Quine Mc- Cluskey Method (Tabular method).

UNIT-III

Combinational Logic:

Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder-Subtractor, Code Converters, Parity Generators and Checkers, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers,

UNIT-IV

Memory and Programmable Logic Devices:

Semiconductor Memories, RAM, ROM, PLA, PAL, Memory System design.

UNIT-V

Synchronous Sequential Logic:

Sequential Circuits, Storage Elements: Latches, Flip Flops, Analysis of Clocked Sequential

circuits, state reduction and assignments, design procedure.

UNIT-VI

Registers and Counters: Shift Registers, Ripple Counter, Synchronous Counter, Other Counters.

Text book:

1. M. Morris Mano and M. D. Ciletti, "Digital Design", Pearson Education.

References:

A.K .Singh, "Foundation of Digital Electronics and Logic design", New Ageinternati

1. M. Rafiquzzaman, "Fundamentals of Digital Logic and Microcomputer Design", Wiley Dreantech Publication.
2. C.H Roth, Jr., "Fundamentals of Logic Design", ,JaicoPublishing.
3. Rajaraman & Radhakrishnan, "Digital Logic and Computer Organization", PHI Learning Private Limited, Delhi India.

SEMESTER - III	L	T	P	C
	3	1	-	3
DISCRETE MATHEMATICS (BTMA3T01)				

COURSE OBJECTIVES:

1 Enable the students to understand and create mathematical arguments and solving them with logical skills.

2 Enable the students to learn Number Theory, Which is applied in data security and Networking.

3 Enable the students to learn Set Theory, Graph Relations, functions which are used in cryptography and data structures, basic concepts of Graph Theory

COURSE OUTCOMES:

1 Ability to apply logic and Mathematical reasoning in practical applications like computer programming

2 Ability to employ Number Theory concepts in cryptography and security

3 Ability to differentiate set theory concepts in designing efficient Algorithms both in space and time. and Graph Theory concepts

4 Ability to solve various methods of solving Recurrence relations

UNIT-I

Mathematical Logic: Statements and notations, Connectives, Well-formed formulas, Truth Tables, tautology, equivalence, implication, Normal forms, Theory of inference for the statement calculus, Rules of inference, Consistency of premises and indirect method of proof.

UNIT-II

Predicate calculus: Predicates, statement functions, variables and quantifiers, predicate formulas, free & bound variables, universe of discourse, inference theory of predicate calculus

UNIT-III

Set theory & Relations: Introduction, Relations and ordering, Properties of binary Relations, Equivalence, Compatibility Relations, Partial ordering, Hasse diagram.

Functions: composition of functions, Inverse Function, Principle of Inclusion-Exclusion, Pigeonhole Principles and its application.

UNIT-IV

Recurrence Relations: Generating Function of Sequences, Calculating Coefficient of generating functions, Recurrence relations, Solving recurrence relation by substitution and Generating functions, the method of Characteristic roots, Solution of Inhomogeneous Recurrence Relation.

UNIT-V

Graph Theory: Basic Concepts, Representation of Graph, Sub graphs, Multigraphs, Euler Paths, Euler circuits and Graph Isomorphism and its related Problems.

UNIT-VI

Graph Theory and Applications: Hamiltonian graphs, Chromatic Numbers, Spanning Trees, minimal Spanning Trees, BFS, DFS, Kruskals Algorithm, Prim's Algorithm's Binary trees, Planar Graphs.

TEXTBOOKS:

1. Discrete Mathematical Structures with Applications to computer science J.P Trembley, R. Manohar,TMH

2. Discrete Mathematical for computer Scientists & Mathematicians "J.L. Molt, A. Kandel,

T.P.Baker,PHI

REFERENCETEXTBOOKS:

1. Discrete Mathematics and its Applications, Kennth .H. Rosen, 5th, TMGraw-Hilled, 2006.

2. Discrete Mathematical Structures, Kolman, Busby, Ross, 6th, PHI,2009

3. Discrete Mathematics with Combinatorics and Graph Theory, Santha, Cengage Learning,200

SEMESTER - III	L	T	P	C
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PRINCIPLES OF ECONOMICS& MANAGEMENT (BTBM3T02)				

COURSE OBJECTIVES:

1 To impart the basic concepts of Economics and Accounting

2 To know marketing structures, public & private organizations, to understand the accounting.

COURSE OUTCOMES:

1 Ability to understand knowledge in economics & demand concepts and forecasting

2 Ability to define the production and cost analysis

3 Ability to differentiate cost concepts and variables

  Ability to Analyse market structure & pricing strategies and Assess financial

4 Accounting

UNIT-I

Introduction to Economics: Concept, Nature & Scope of Economics-Macro and Micro Economics- Demand Analysis: Demand Determinants- Law of Demand& its exceptions- Elasticity of Demand-Types – Demand Forecasting-Methods.

UNIT-II

Market Structures: Types of Markets-Price output determination in Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly **-** Pricing methods - Break – Even Analysis (simple problems).

UNIT-III

Introduction to Management: Concept - Functions of Management- Scientific Management- Principles of Management- Leadership Styles - Functional areas of Management.

Human Resource Management: Definition, Significance and Functions - PM Vs HRM Recruitment, Selection, Training and Development -Job Analysis - Role and position of HR department – Performance Appraisal.

UNIT-IV

Marketing Management : Needs- Wants - Products - Market- Marketing- Production Concept, Product Concept, Sales Concept, Marketing Concept, Societal Marketing Concept- Organizing the Marketing Department - **Marketing Mix**: Product, Price, Place, Promotion (in brief)

Production Management: Concept of production management-Types of Production processes- Plant Location & Layout, Statistical Quality Control.

UNIT-V

Financial Management: Financial Statements – Contents of Trading Account, Profit and Loss

Account – Balance Sheet (Theory only) - Analysis of Financial statements: Ratio analysis (simple problems)

- Concept of Finance - Objectives of Finance-Wealth Maximization Vs. Profit Maximization Functions of Finance - Role of financial manager - Organization of finance function.

UNIT-VI

Forms of Business Organizations- Sole Proprietorship, Partnership, Joint Stock Compan Private limited and Public limited Companies, Public enterprises and their types, Business Cycles.

Entrepreneurship- Entrepreneur – Qualities of good entrepreneur - Entrepreneurial Functions, Entrepreneurial Development: Objectives, Training, Benefits - Phases of Installing a Project.

TEXT BOOKS:

1. P.G.Ramanujam, B.V.R.Naidu& PVR Sastry, **Management Science**, Himalaya Publishing House, Mumbai.
2. A.R. Aryasri, **Managerial Economics and Financial Analysis**, Tata Mc Graw- Hill, New Delhi.

REFERENCE BOOKS:

M.Y. Khan & P.K. Jain, **Financial Management**, TATA McGraw-Hill, New Delhi.

1. Koontz O Donnel, **Management**, TATA McGraw-Hill, New Delhi.
2. K. Aswathappa, **Production Management**, Himalaya Publishing House, Mumbai.
3. P.Subba Rao, **Human Resource Management**, Himalaya Publishing House, Mumbai.
4. Philip Kotler, **Marketing Management**, Pearson Prentice Hall, New Delhi.
5. Vasant Desai, **Entreprenuership**, Himalaya Publishing House, Mumbai.
6. Varshini & Maheswari, **Managerial Economics**, SChand& Co, New Delhi.

SEMESTER – III	**L**	**T**	**P**	**C**
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SOFTSKILLS/APTITUDE LAB – I (BTBS3L01)				

Reading comprehension: Reading Passage – 1 (1 hour): **Artificial Intelligence**

Reading Passage – 2 (1 hour): **Atmosphere**

Reading Passage – 3 (1 hour): **Modern Life**

Reading Passage – 4 (1 hour): **Father of the**

Olympic Games Speaking Skills: Task-1 **- Self Introduction :** (1 hour)

Task-2- **Presentation skills** :(1 hour) Task-3- **Group Discussion** : (1 hour) Task-4- **Review of a Cinema** : (1 hour)

Task-5- **Just A Minute** : (1 hour)

Task-6- **Role Play** :1 hour)

Writing Skills: Task-1- **Letter writing** - Formal (1hour)

Task-2- **Resume writing** : (1 hour)

Task-3- **Parallel writing** : (1 hour)

Task-4- **Story generating** : (1 hour) Task-5- **Text Building** : (1 hour)

Task-6- **Diary writing** : (1 hour)

Verbal Reasoning: Task-1 **- Detection of errors** (1hour)

Task-2- **Sentence corrections** (1 hour)

Task-3- **Insertions of apt words from the given confusionable words**

Task-4-**Scrambled words**(1 hour) Task-5-

Dialogue completion(1 hour)

Task-6-**Analogies (1 hour)**

Task-7-**Root words(**1 hour)

Task-8-**Synonyms**(1 hour) Task-9-

Antonyms(1 hour) Task-10-

Odd one out

(1hour)

Speed Mathematics

Think Without Ink(TWI) Approach - Speed Math's: Squaring of Numbers - Multiplication of Numbers -Finding Square Roots - Finding Cube Roots - Solving Simultaneous Equations Faster – Number System: HCF, LCM - Decimals - Percentages - Averages - Powers and Roots - Sudoku (level 1) -Series Completion (Numbers, Alphabets, Pictures) - Odd Man Out - Puzzles

Verbal Reasoning

Analogies - Alphabet Test - Theme Detection - Family Tree - Blood Relations (Identifying relationships amonggroupofpeople)-Coding&Decoding-SituationReactionTest– Statement&Conclusions

REFERENCE BOOKS:

1. Instructional Manual- Prepared by Faculty.

2. Aggarwal, R.S. "A Modern Approach to Verbal and Non-verbal Reasoning", Revised Edition 2008, Reprint 2009, S.Chand& Co Ltd., New Delhi.

3. Abhijit Guha, "Quantitative Aptitude", TMH,3rdedition

SEMESTER –III	**L**	**T**	**P**	**C**
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DATA STRUCTURES LAB USING C (BTIT3L01)				

Course Objectives:

- ✓ To assess how the choice of data structures and algorithm design methods impacts the performance of programs.
- ✓ To choose the appropriate data structure and algorithm design method for a specified application.
- ✓ To write programs using procedure-oriented design principles.
- ✓ To solve problems using data structures such as linear lists, stacks, queues, hash tables, binary trees, heaps, binary search trees, and graphs and writing programs for these solutions.

Course Outcomes:

- ✓ Able to write well-structured procedure-oriented programs of up to 1000 lines of code.
- ✓ Analyze run-time execution of previous learned sorting methods, including selection, merge sort, heap sort and Quick sort.
- ✓ To implement the Stack ADT using both array based and linked-list based data structures.
- ✓ To implement the Queue ADT using both array based circular queue and linked-list based implementations.
- ✓ Able to implement binary search trees.

STUDENT HAS TO DO ANY TEN

EXERCISE OF THE FOLLOWING

EXERCISE 1:

a) Write a C Program that use recursive function to perform linear search for a Key value in a given list.

b) Write a C Program that use non recursive function to perform linear search for a Key value in a given list.

EXERCISE 2:

a) Write a C Program that use recursive function to perform Binary search for a Key value in a given list.

b) Write a C Program that use non recursive function to perform Binary search for a Key value in a given list.

EXERCISE 3:

a) Write a C Program that implement Bubble sort, to sort a given list of integers in ascending order

b) Write a C Program that implement Quick sort, to sort a given list of integers in ascending order

c) Write a C Program that implement Insertion sort, to sort a given list of integers in ascending order.

EXERCISE 4:

a) Write a C Program that implement radix sort, to sort a given list of integers in ascending order

b) Write a C Program that implement merge sort, to sort a given list of integers in ascending order.

c) Write a C Program that implement selection sort, to sort a given list of integers in ascending order.

EXERCISE 5:

a) Write a C Program that implement stack (its operations) using arrays.

b) Write a C Program that implement stack (its operations) using linked list

EXERCISE 6:

a) Write a C Program that implement Queue (its operations) using arrays.

b) Write a C Program that implement Queue (its operations) using linked lists

EXERCISE 7:

Write a C Program that implement Stack (its operations) using Queue.

EXERCISE 8:

Write a C program that implement Queue (its operations) using Stack.

EXERCISE 9:

Write a C Program to implement Circular Queue (its operations) using arrays.

EXERCISE 10

Write a C Program to implement Circular Queue (its operations) using arrays.

EXERCISE 11:

a) Write a C Program that uses functions to create a singly linked list.

b) Write a C Program that uses functions to perform insertion operation on a singly linked list.

c) Write a C Program that uses functions to perform deletion operation on a singly linked list.

EXERCISE 12:

a) Write a C Program Adding two large integers which are represented in linked list fashion.

b) Write a C Program to reverse elements of a single linked list.

EXERCISE 13:

a) Write a C Program that uses functions to create a doubly linked list.

b) Write a C Program that uses functions to perform insertion operation on a doubly linked list.

c) Write a C Program that uses functions to perform deletion operation on a doubly linked list.

EXERCISE 14:

a) Write a C Program that uses functions to create a circular linked list.

b) Write a C Program that uses functions to perform insertion operation on a circular linked list.

c) Write a C Program that uses functions to perform deletion operation on a circular linked list.

EXERCISE 15:

a) Write a C Program to Create a Binary Tree of integers.

b) Write a recursive C Program for Traversing a binary, tree in preorder, in order and post order.

c) Write a non recursive C Program for traversing a binary tree in preorder, in order and post order.

EXERCISE 16:

a) Write a C Program to Create a BST.

b) Write a C Program to insert a node into a BST.

c) Write a C Program to delete a node from a BST.

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SEMESTER - III	**3**	**1**	**-**	**3**
	JAVA PROGRAMMING LAB (BTIT3L02)			

COURSE OBJECTIVES:

1. Understand the syntax and principles of Object Oriented Programming language to write simple Java applications using control statements, class's and interfaces.

2. Implementation of secure and extendable java applications.

3. Design and development of event driven Graphical User Interface (GUI) and Web Browser related applications by using awt and Swing components, with necessary Exception handling mechanisms.

4. Implementation of Multi tasking application programs using Threads and developing different I/O Stream oriented applications.

Course Outcomes:

1. Students are familiar with the syntax and semantics of java programming language.

2. Understands the concepts of OOPs, different predefined class's and packages.

3. Students will learn how to develop secure java applications.

4. Students are able to develop event driven GUI and web related applications to handle multiple tasks.

Use JDK 1.5 or above on any platform e.g. Windows or UNIX.

1. The Fibonacci sequence is defined by the following rule. The first 2 values in the sequence are 1, 1. Every subsequent value is the sum of the 2 values preceding it. Write A Java Program (WAJP) that uses both recursive and non-recursive functions to print the nth value of the Fibonacci sequence.

2. WAJP to demonstrate wrapper classes, and to fix the precision.

3. WAJP that prompts the user for an integer and then prints out all the prime numbers up to that Integer.

4. WAJP that checks whether a given string is a palindrome or not. Ex: MALAYALAM is palindrome.

5. WAJP for sorting a given list of names in ascending order.

6. WAJP to check the compatibility for multiplication, if compatible multiply two matrices and find its transpose.

7. WAJP that illustrates how runtime polymorphism is achieved.

8. WAJP to create and demonstrate packages.

9. WAJP, using String Tokenize class, which reads a line of integers and then displays each integer and the sum of all integers.

10. WAJP that displays the number of characters, lines and words in a text/textile.

11. WAJP demonstrating the life cycle of at head.

12. WAJP that correctly implements Producer-Consumer problem using the concept of Inter Thread Communication.

13. WAJP to generate a set of random numbers between two numbers x1 and x2, andx1>0.

14. WAJP to create an abstract class named Shape, that contains an empty method named number Of Sides (). Provide three classes named Trapezoid, Triangle and Hexagon, such that each one of the classes contains only the method number Of Sides (), that contains the number of sides in the given geometrical figure.

15. WAJP to implement user defined Exception Handling (also make use of throw, throws).

16. WAJP that creates 3 threads by extending Thread class. First thread displays "Good Morning" every 1 sec, the second thread displays "Hello" every 2 seconds and the third displays "Welcome" every 3 seconds. (Repeat the same by implementing Run able).

SEMESTER - IV	L	T	P	C
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DATABASE MANAGEMENT SYSTEMS (BTCS4T01)				

COURSE OBJECTIVES:

1. To understand the fundamental concepts, historical perspectives, current trends, structures, operations and functions of different components of Databases.

2. To understand the concepts provided by Relational Algebra, Relational Calculus and SQL and able to specify queries on any database using them.

3. To recognize the importance of database analysis and design in the implementation of any database application.

4. To understand how to perform the normalization process of relations before implementation.

5. To describe the role of transaction processing in a database system

6. To understand various concurrency control mechanisms for a database system. To describe the roles of recovery and security in a database system

COURSE OUTCOMES:

1. An understanding of basic concepts and current trends of different databasesystems.

2. An ability to write relational algebra and Relational calculusexpressions.

3. An ability to use Standard Query Language and its variousversions

4. An ability to design and develop a database that is in specified normal form and transaction processing.

5. An ability to use different concurrency control techniques while implementing real time applications and the importance of backup and recovery techniques.

6. An ability to build Database systems that can handle real world problems.

UNIT-I

History of DBMS, Where can be used?, File vs. DBMS, Advantages of DBMS, Describing Storing Data in DBMS,Structure of a DBMS, Database Languages for DDL and DML, Database users and Administrator, Transaction Management, Query Processor.

UNIT-II

Database Design and ER Diagrams, How it works of Design Models?, Attributes and Entity Sets, Relationships and Relationship sets, Additional Features of ER Models, Conceptual Design with ER Models, Conceptual Design for Large Enterprise, Introduction to UML.

UNIT-III

Relational Model, Constraints and Types, Querying in Relational Data, Logical Database Design, Views and its operations, Form of Basic SQL Query, Nested Queries, Correlated Nested Queries, Set Comparison Operators, Aggregate Operators, Logical Connectivity Operators, Joins and Types.

UNIT-IV

Schema Refinement-Problems Caused by Redundancy-Decompositions-Problem Related to Decomposition, Normalizations and Types, Overview of Transaction, Transaction State, implementation of Atomicity and Durability, Concurrent Execution, Serializability, Recoverability.

UNIT –V

Lock based Concurrency Control, Concurrency Control without Locking-Optimistic Concurrency Control, Time stamp based Concurrency Control, Crash Recovery-Introduction to ARIES, Write a Head Log Protocol, Check Point, Recovery from a System Crash.

UNIT-VI

Data on External Storage, File Organization and Types, Indexing and Types, Comparison of File Organizations and Indexing, Indexes and Performance Tuning, B+Trees: A Dynamic Index Structures.

TEXT BOOKS:

1. Database Management Systems- Raghurama Krishnan, Johannes Gehrke, Tata McGraw-Hill., 3^{rd}Edition.

2. Database System Concepts, Silberschatz, Korth, McGraw hill, Vedition.

REFERENCES:

1. Database System Design, Implementation and Management, Peter Rob & Carlos Coronel 7^{th}Edition.

2. Fundamentals of Database Systems, ElmastriNavrate Pearson Education.

3. Introduction to Database Systems, C.J.Date Pearson Education.

SEMESTER - IV	L	T	P	C
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OPERATING SYSTEMS (BTIT4T01)				

COURSE OBJECTIVES:

1. To understand the fundamental concepts and techniques of Operating Systems.
2. To study the concepts in process management and concurrency control mechanisims
3. to understand the concepts in memory managements and deadlocks
4. to study on file management and storage structures

COURSE OUTCOMES:

1. an ability to understand basic concepts of operating system.
2. an ability to describe process management ,scheduling and concurrency control mechanisims.
3. an ability to analyze memory management and deadlocks.
4. an ability to compare various file systems and Disk Scheduling

UNIT-I:

Computer System and Operating System Overview: Overview of computer operating systems, operating systems functions, protection and security, distributed systems, special purpose systems, operating systems structures and systems calls, operating systems generation.

UNIT-II:

Process Management – Process concept- process scheduling, operations, Inter process communication. Multi Thread programming models. Process scheduling criteria and algorithms, and their evaluation.

UNIT-III:

Concurrency: Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, and Synchronization examples

UNIT-IV:

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation

Virtual Memory Management:

Virtual memory, demand paging, page-Replacement, algorithms, Allocation of Frames, Thrashing

UNIT-V:

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock,

UNIT-VI:

File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, allocation methods, free-space management
Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling.

TEXT BOOKS:

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin,Gagne 7thEdition, John Wiley.

2. Operating Systems' – Internal and Design Principles Stallings, Sixth Edition–2005, Pearson education

REFERENCE BOOKS:

1. http://nptel.iitm.ac.in/courses/Webcourse-
   contents/IISc-
   BANG/Operating%20Systems/New_index1.html

2. Operating systems- A Concept based Approach-D.M.Dhamdhere, 2ndEdition,TMH

3. Operating System A Design Approach-Crowley,TMH.

4. Modern Operating Systems, Andrew S Tanenbaum 3rdeditionPHI.

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SEMESTER - IV	L	T	P	C
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PRINCIPLES OF PROGRAMMING LANGUAGES (BTIT4T02)				

Course objectives:

1. To understand and describe syntax and semantics of programming languages
2. To understand data, data types, and basic statements
3. To understand call-return architecture and ways of implementing them
4. To understand object-orientation, concurrency, and event handling in programming languages
5. To develop programs in non-procedural programming paradigms

COURSE OUTCOMES:

Upon Completion of the course, the students will be able to

1. Describe syntax and semantics of programming languages
2. Explain data, data types, and basic statements of programming languages
3. Design and implement subprogram constructs, Apply object - oriented, concurrency, and event handling programming constructs
4. Develop programs in Scheme, ML, and Prolog
5. Understand and adopt new programming languages

SYLLABUS:

UNIT I:

SYNTAX AND SEMANTICS: Preliminaries, describing syntax, context, free grammars, attribute grammars, describing semantics, lexical analysis, parsing, and recursive - decent bottom - up parsing

UNIT II:

DATA, DATA TYPES, AND BASIC STATEMENTS: Names, variables, binding, type checking, scope, scope rules, lifetime and garbage collection, primitive data types, strings, array types, associative arrays, record types, union types, pointers and references, Arithmetic expressions, overloaded operators, type conversions, relational and boolean expressions , assignment statements , mixed mode assignments, control structures – selection, iterations, branching, guarded Statements

UNIT III:

SUBPROGRAMS AND IMPLEMENTATIONS: Subprograms, design issues, local referencing, parameter passing, overloaded methods, generic methods, design issues for functions, semantics of call and return, implementing simple subprograms, stack and dynamic local variables, nested subprograms, blocks, dynamic scoping

UNIT IV:

OBJECT- ORIENTATION, CONCURRENCY, AND EVENT HANDLING: Object – orientation, design issues for OOP languages, implementation of object, oriented constructs, concurrency, semaphores,

Monitors, message passing, threads, statement level concurrency, exception handling, event handling

UNIT V:

FUNCTIONAL PROGRAMMING LANGUAGES: Introduction to

lambda calculus, fundamentals of functional programming languages,

Programming with Scheme, –

Programming with ML,

UNIT VI:

LOGIC PROGRAMMING LANGUAGES: Introduction to logic and logic programming,

– Programming with Prolog, multi - paradigm languages

TEXT BOOKS:

1. Robert W. Sebesta, "Concepts of Programming

Languages", Tenth Edition, Addison Wesley,2012.

2. Programming Languages, Principles & Paradigms, 2ed, Allen B Tucker, Robert E Noonan,TMH

REFERENCES:

1. R. Kent Dybvig, "The Scheme programming language", Fourth Edition, MIT Press,2009.

2. Jeffrey D. Ullman, "Elements of ML programming", Second Edition, Prentice Hall,1998.

3. Richard A. O'Keefe, "The craft of Prolog", MIT Press,2009.

4. W. F. Clocksin and C. S. Mellish, "Programming in Prolog: Using the ISO Standard", Fifth Edition, Springer,2003

SEMESTER - IV	L	T	P	C
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FORMAL LANGUAGES AND AUTOMATA THEORY (BTCS4T04)				

COURSE OBJECTIVES:

1 To impart the basic concepts of theory of automata, languages and computation.

2 To develop understanding about machines for sequential computation, formal languages and grammars, and classification of feasible and intractable problems.

COURSE OUTCOMES:

1   Ability to prove the equivalence of languages described by finite state machines and regular expressions.

2   Ability to construct pushdown automata and the equivalent context free grammars.

3   Ability to understand how to use Turing Machines to represent computable functions.

4   Ability to define classes P, NP, the notions of polynomial time reduction.

UNIT 1.

Finite Automata and Regular Expressions: Basic Concepts of Finite State Systems, Deterministic and Non- Deterministic Finite Automata, Finite Automata with e-moves, Regular Expressions, Minimization of Finite Automata, Mealy and Moore Machines, Two-Way Finite Automate.

UNIT2.

Regular sets & Regular Grammars: Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem, Minimization of Finite Automata.

UNIT3.

Context Free Grammars and Languages: Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, closure properties of CFL's, Decision Algorithm for CFL.

UNIT4.

Push down Automata and Deterministic CFL: Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.

UNIT5.

Universal Turing Machines and Undesirability: Design and Techniques for Construction of Turing Machines, Undesirability of PCP.

UNIT6

Chomsky Hierarchy, Regular Grammars, Unrestricted Grammars, Context Sensitive languages, Relationship between classes of languages.

TEXT BOOKS:

1. Introduction to Automata Theory, Languages& Computation by J.E.Hopcraft& Jeffery D.Ulman – Narosa Publishing Company.

REFERENCE BOOKS:

1. Theory of Computer Science By Mishra & Chandrasekhar an, PHI.

2. An Introduction To Formal Languages and Automata,3e By Peter Linz – Narosa Publishing House.

SEMESTER - IV	**L**	**T**	**P**	**C**
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PROBABILITY & STATISTICS (BTMA4T01)				

Course Objectives:

1. To provide knowledge on fundamental concepts of Probability and statistics from engineering prospective, emphasizing applications, more precisely, on basic probability distributions and densities, joint distributions and their applications.

2. To provide knowledge on Sampling distributions, Inferences concerning means, and variances which enables to make predictions related to the data?

3. To provide skills in applying the basic principles of statistical inference to practical problems. Course Outcomes:

4. Understand and apply the concepts of Probability and Statistics to solve a range of different problems, and understand their applications in a variety of engineering situations.

5. Define Probability distributions and densities, understand and solve problems related to these distributions.

6. Calculate probabilities related to joint distributions and apply them in understanding sampling distributions.

7. Test Statistical hypotheses concerning means, variances and proportions.

UNIT-I

Probability: Sample spaces and events-probability –the axioms of probability-some elementary theorems – conditional probability – Baye's theorem.

UNIT-II

Random variables: Introduction – random variables – discrete & continues and their applications Distributions – Distributions Functions.

UNIT-III

Distributions: Discrete Distribution – binomial & Poisson distributions with their applications. Continuous distributions – normal and exponential distributions with their applications

UNIT-IV

Sampling distributions: Population and samples –sampling distributions of mean for large and small samples (with known and un-knows variance) – Proportion sums and differences of means – sampling distributions of variance - point and interval estimators for means and proportions.

UNIT-V

Tests of Hypothesis: Introduction – Types I and II type II errors – Maximum error-One tail, two-tail tests-Tests concerning one mean and proportion, two means-proportions and their differences using Z-test, Student's t-test-F-test and Chi-square test.

UNIT-VI

Curve Fitting: Method of least squares -Fitting a straight line, Second degree parabola - exponential curve-power curves

TEXT BOOKS:

1. Probability, statistics and random processes by Mr. K. Murugesan and Mr. P.Gurusamy
2. Higher Engineering Mathematics by Dr.B.S.Grewal

REFERENCE BOOKS:

1. Probability and Statistics for Engineers, By Miller &Freund'

SEMESTER - IV	L	T	P	C
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COMPUTER ORGANIZATION (BTCS4T05)				

COURSE OBJECTIVES:

1. To impart the basic knowledge of computer system including the analysis and design of Components of the system.

2. To understand the register transfer language, micro operations and design of basic components of the system.

3. To outline the description of different parameters of a memory system, organization and mapping of various types of memories.

COURSE OUTCOMES:

1. Graduates will have fundamental knowledge about structure of computers.

2. Graduates will be able to choose appropriate addressing modes and instructions for writing programs.

3. Graduates will understand the need for using Peripheral devices for efficient Operation of system.

4. Graduates will gain basic ability to analyze Micro operations such as Arithmetic Micro operations, Shift micro operations and Logic micro operations.

UNIT I

Basic Structure of Computers:

Basics of computer, Von Neumann Architecture, Generation of Computer, Types of Compute, Functional unit, Basic Operational Concepts and Bus Structures.

UNIT II

Register Transfer Language and Micro Operations: Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer Instructions, Timing and control, Instruction Cycle, Memory – Reference, Input – Output and Interrupt Instructions. Design of basic computer, Design of Accumulator logic.

UNIT III

Central Processing Unit: General Register Organization, STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation, Program control, Reduced Instruction Set Computer.

Micro Programmed Control: Control Memory, Address sequencing, micro program example, design of control unit.

UNIT IV

Computer Arithmetic: Addition and Subtraction, multiplication algorithms, Division Algorithms. Floating point arithmetic operations. Decimal Arithmetic unit, Decimal arithmetic operations.

UNIT V

Input- Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupts, Direct memory Access.

The Memory System: Memory Hierarchy, Main Memory, Auxiliary memory, Associative Memory, Cache Memory and Virtual Memory.

UNIT VI

Parallel Processing and Vector Processing

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

Text Books

1. Computer System Organization, M.Moris Mano, 3rd Edition, Pearson /PHI
2. Computer Organization, Carl Hamacher, ZvonksVranesic, SafeaZaky, 5th Edition, McGraw-Hill.
3. Computer Organization, a quantitative approach, John L.Hennessy and David A.Patterson, Fourth Edition Elsevier

Reference Books

1. Computer Organization and Architecture - William Stallings Sixth Edition, Pearson /PHI
2. Structured Computer Organization - Andrew s. Tanenbaum, 4th Edition, PHI/Pearson.
3. Fundamentals of Computer Organization and Design, - SivaraamaDandamudi, Springer Int.Edition.

SEMESTER - IV	L	T	P	C
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SOFTSKILLS/APTITUDE LAB – II (BTBS4L01)				

Reading Comprehension: Reading Passage- 1(1hour): The First and Only Indian-American to Reach Space.

Reading Passage- 2(1hour): The Moral Basis of Vegetarianism

Reading Passage-3(1hour): Health Programme of the Chinese Government

Reading Passage-4 (1hour): Remedy to Ease Inflation

Speaking Skills: Task-1-Self Introduction: (1hour)

Task-2-Presentation Skills (1hour)

Task-3-Group Discussion Skills: (1hour)

Task-4-Review Of A Book: (1hour)

Task -5-Just a Minute: (1hour)

Task-6-Role Of Play: (1hour)

Writing Skills: Task-1-Letter Writing – Informal (1hour)

Task-2-Resume Writing: (1hour)

Task-3-Pragraph Writing: (1hour)

Task-4-Story Generation With Picture Sequence: (1hour)

Task-5-Text Building With Topic Sentence: (1hour)

Verbal Reasoning: Task-1-Detection Of Errors (1hour)

Task-2-Sentence Corrections (1hour)

Task-3-Sentence Completion with Apt Words Form The Given Confusion Able

Words (1hour)

Task-4-Scrambled Words (1hour)

Task-5-Dialogue Completion (1hour)

Task-6-Analogies (1hour)

Task-7-Root Words (1hour)

Task-8-Synonyms (1hour)

Task-9-Antonyms (1hour)

Task-10-Odd One Out (1hour)

Quantitative Aptitude- Part-I

Problem on Ages - Percentages - Profit and Loss - Simple & Compound Interest - Averages - Ratio, Proportion

Quantitative Aptitude – Part 2

Speed, Time & Work and Distance - Pipes and Cisterns - Mixtures and Allegations - Races - Problem on Trains

- Boats and Streams

Practice: Puzzles, Sudoku, Series Completion, Problem on Numbers

Reference Books:

1. Instructional Manual- Prepared by Faculty.

2. Aggarwal, R.S. "AModernApproachtoVerbalandNon-verbalReasoning", RevisedEdition2008, Reprint2009, Scand& Co Ltd., New Delhi.

3. Abhijit Guha, "Quantitative Aptitude", TMH,3rdedition

SEMESTER - IV	L	T	P	C
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OPERATING SYSTEMS LAB (BTIT4L01)

COURSE OUTCOMES:

1.An ability to understand concepts of operating system.

2.An ability to describe process management, scheduling and concurrency control mechanisms.

3.An ability to analyze Page Replacements and deadlocks.

4. An ability to compare various file systems and its operating systems examples.

LIST OF PROGRAMS:

1. **Simulate First Come First Serve CPU scheduling algorithm.**

2. **Simulate Shortest Job First CPU scheduling algorithm.**

3. **Simulate Priority CPU scheduling algorithm.**

4. **Simulate Round Robin CPU scheduling algorithm.**

5. **Simulate Sequential file allocation strategy.**

6. **Simulate Linked file allocation strategy.**

7. **Simulate Indexed file allocation strategy.**

8. **Simulate first In first Out page replacement algorithm.**

9. **Simulate Least Recently used page replacement algorithm.**

10. **Simulate optimal page replacement algorithm.**

11. **Write Programs to simulate free space management.**

12. **Simulate Bankers Algorithm for Dead Lock Avoidance.**

SEMESTER - IV	L	T	P	C
	3	1	-	2
DBMS LAB (BTCS4L02)				

Course Objectives:

1. To understand the concept of Database system and Client ServerArchitecture.

2. To understand and develop the concepts of Relational Data Model, Security andIntegrity.

3. Toun derstand and execute different SQL queries an dPL/SQLprograms.

4. To understand the concept of Transaction Control and Data

Control language. Course Outcomes:

1. An ability to define, manipulate and control data using Structured Query Language (SQL).

2. An ability to enforce Database Integrity Constraints (primary & foreign keys; null, unique & check constraints).

3. An ability to develop applications using various features of PL/SQL like Database Function, Stored Procedure, Package, Triggers.

4. An ability to develop Database system to handle the real world problem.

List of Programs:

1. DDL and DML Commands.

2. I) Simple-complex conditions (AND, OR, NOT) II). Partial Matching operators (LIKE, %, _, *,?)

   III) ASC-DESC ordering combinations.

3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING Clause

4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date).

5. Multi-table queries (JOINOPERATIONS)

i. Simple joins (no INNERJOIN)

ii. Inner-joins (two and more (different)tables)

iii. Inner-recursive-joins (joining toitself)

v. Outer-joins (restrictions as part of the WHERE and ON clauses)

6. Nested queries

i. In, Not In

ii. Exists, Not Exists

7. Creation of simple/SQLprograme which included claration section, executable section and exception handling section.

8. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.

9. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.

TEXT BOOKS:

1) ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rdEdition

2) ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc- Graw Hill. SQL & PL/SQL for Oracle 10g, Black Book, Dr. P.S. Deshpande.

SEMESTER -V	L	L	P	C
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UNIX PROGRAMMING (BTIT5T01)				

COURSE OBJECTIVES:

1   To provide a fair knowledge of Unix concepts

2   To gain sharp skills in Unix Shell

   programming

COURSE OUTCOMES:

1   Ability to define fundamental knowledge and concepts of UNIX Operating System

2   Ability to summerise the concepts of UNIX shell as a beginner user

3   Ability analyze about text processing utilities like grep, sed and awk in UNIX

4   Ability to distinguish about programming features of UNIX shells sh and csh and process

   management , system operation of UNIX

UNIT-I

Introduction to Unix file system, short history, why is unix so successful?, Unix vs Linux, Standards, System Architecture,Shelltypes,vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, cp, mv, ln, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, arp, ftp, telnet, rlogin. Text processing utilities and backup utilities, detailed commands to be covered are cat, tail, head , sort, nl, uniq, grep, egrep,fgrep, cut, paste, join, tee, pg, comm, camp, diff, tr, awk, tar,cpio.

UNIT-II

Problem solving approaches in Unix: Using single commands, using compound. Commands, shell scripts, Java Programs, building own command library of programs. How to working with the shell - What is a shell, shell responsibilities, pipes and Input Redirection, output redirection, the shell as a programming language, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT-III

Unix file structure, directories, files, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, ioctl, umask, dup and dup2, the standard i/o (fopen, fopen, fclose,fflush, fseek, fgetc, getc, getchar, fputc, putc, putchar, fgets, gets), formatted I/O, stream errors, streams and file descriptors, file and directory maintenance (chmod, chown, unlink, link, symlink, mkdir, rmdir, chdir, getcwd), Directory handling system calls (opendir, readdir, closedir,rewinddir, seekdir, telldir).

UNIT-IV

Process and Signals : What is process, process structure, starting new process,Waiting for a process, zombie process, process control, process identifiers, fork, Vfork, exit, wait, exec, Signal functions, unreliable signals, interrupted system Calls, kill and raise functions, alarm, pause functions, abort, system, sleep functions.

UNIT - V

Data Management:Management of memory (malloc, free, realloc, calloc), File Locking (creating lock files, Locking regions, use of read/write locking, competing locks, other commands, deadlocks)

UNIT - VI

Inter-Process communication : Pipe, Process Pipes, the pipe call, parent-child process, named pipes: FIFOs, Semaphores, message queues and shared memory and applications of IPC.

TEXT BOOKS :

1. Unix the ultimate guide, Sumitabha Das,TMH.
2. Unix Network Programming, W.R.Stevens Pearson/PHI.

REFERENCES :

1. Advanced programming in the Unix environment, W.R.Stevens, Pearson education.
2. Unix system programming using C++, T.Chan,PHI.
3. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education
4. Unix Internals The New Frontiers, U.Vahalia, Pearson Education.
5. Unix for programmers and users, 3rd edition, Graham Glass, King Ables, Pearson Education.

SEMESTER -V	L	T	P	C
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DESIGN AND ANALYSIS OF ALGORITHMS (BTIT5T02)				

COURSE OBJECTIVES:

1 To develop an understanding about basic algorithms and different problem solving strategies

2 To improve creativeness and the confidence to solve non-conventional problems and expertise for analyzing existing solutions

3 To design and implementation of various basic data structure

COURSE OUTCOMES:

1 Ability to evaluate complexity of algorithm

2 Ability to understand divide and conquer techniques of algorithm design

3 Ability to distinguish greedy and dynamic programming in algorithm design

4 Ability to analyze how backtracking and branch and bound technique can be used in Algorithms.

UNIT I:

Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis.

Disjoint Sets- disjoint set operations, union and find algorithms, spanning trees, connected components and disconnected components.

UNIT II:

Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Stassen's matrix multiplication.

Greedy method: General method, applications-Job sequencing with deadlines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT III:

Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT IV:

Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT V:

Branch and Bound: General method, applications - Travelling sales person problem,0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT VI:

NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP - Hard and NPComplete classes, Cook's theorem.

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, SatrajSahniand Rajasekharam,

2. University Press.

3. The Algorithm Design Manual, 2ndedition, Steven S.Skiena,Springer.

4. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L.Rivest and C.Stein, PHI Pvt. Ltd.

REFERENCES:

1.Introduction to Design and Analysis of Algorithms , Anany Levitin,PEA

2.Design and Analysis of algorithms, Parag Himanshu Dave, HimansuBalachandra Dave, Pearson Education.

3.Introduction to Design and Analysis of Algorithms A Strategic approach, R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc GrawHill.

4.Design and Analysis of Algorithms, Aho, Ullman and Hopcroft, Pearson Education.

SEMESTER -V	L	T	P	C
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ADVANCED JAVA AND WEB TECHNOLOGIES (BTIT5T03)				

COURSE OBJECTIVES:

1. Describes the fundamentals of html tags and JavaScript for web designing.
2. Acquire background knowledge on MySQL database withphp.
3. Understands the basic knowledge of servlets and jsp in building dynamic web applications.

COURSE OUTCOMES:

1. An ability to distinguish various static web pages and dynamic web pages using html,xml and javascript.
2. An ability to review on php&mysql database connectivity.
3. An ability to design web applications using servlets &jsp using oracle database connectivity.

UNIT-I:

HTML & Java Script HTML: HTML tags, Lists, Tables, Images, forms, Frames, Cascading style sheets.

Java script: Objects in Java Script, Dynamic HTML with Java Script. (T1)

UNIT-II:

Introduction to PHP

PHP Programming: Creating PHP script- Variables, Constants, Data types, Operators, Control Structures, Arrays, Function. Working with forms and Database using MySQL.(T1)

UNIT-III :

XML EXTENSIBLEMARKUP LANGUAGE:XML-Document type Definition,XML schemas, Document object model, XSLT, DOM and SAX. (T1)

UNIT-IV:

Web Servers and Servlets: Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servlet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servlet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues. (T2)

UNIT-V:

Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC.

JSP Application Development: Generating Dynamic Content Using Scripting Elements, Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data between JSP pages, Accessing a Database from a JSP Page.(T3)

UNIT-VI:

Database Access

Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions. (T4)

TEXT BOOKS:

1. Web Technologies – Black Book, Kogent Learning solutions Inc sol. Dramatic press. (Units- 1,2,3,)

2. The complete Reference Java 2, 7th Edition by Patrick Naughton and Herbert Schildt. TMH (Units- 4,5,6,) 3.Java Server Pages –Hans Bergsten, SPDO'Reilly

3. An Introduction to Web Design + Programming, Wang, Katila, CENGAGE

REFERENCE BOOKS:

1. Web Technologies, Uttam K Roy -Oxford
2. Head first Java – Kathy sierra -Orally–
3. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
4. Internet and World Wide Web – How to program by Diesel and Nieto PHI/Pearson Education Asia.
5. Murach's beginning JAVA JDK 5, Murach,SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Beginning Web Programming-Jon DuckettWROX.
8. Programming the World Wide Web – Robert W Segesta. Pearson publications.Fourthedition.
9. Web Technologies. TCP/IP Architecture and Java programming- God bole, AtulKahate- 2nd ed,TMH

Web Technologies, A developer's Perspective, N P Gopalan, Akhilandeswari,PHI

SEMESTER -V	**L**	**T**	**P**	**C**
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COMPUTER NETWORKS (BTCS5T04)				

COURSE OBJECTIVES:

1   Study various Network reference models such as ISO/OSI,TCP/IP

2   Understand the theory of various multiplexing techniques

3   study and analyze various data link layer protocols

4   Introduction to advanced Network Technologies like blue tooth

COURSE OUTCOMES:

1   **An ability to differentiate network reference models such as OSI,TCP/IP and multiplexing techniques**

2   **An ability to classify various Data Link Layer Protocols such as elementary, slidingwindow, HDLC, PPP**

3   **An ability to distinguish various MAC sub Layer Protocols and Its Applications (i.e. IEEE Standards)**

4   **An ability to understand advanced communication technologies such as blue tooth, cellur telephony concepts and bridges**

UNIT - I

Introduction : OSI, TCP/IP and other networks models, Examples of Networks: Arpanet, Internet, Network Topologies WAN, LAN, MAN.

UNIT-II

Physical Layer : Transmission media copper, twisted pair wireless, switching and encoding , Narrow band, broad band ISDN and ATM.

UNIT-III

Data link layer : Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Slip, Data link layer in HDLC, Internet, ATM.

UNIT-IV

Medium Access sub layer : A LOHA, MAC addresses, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS. Bridges

UNIT-V

Network Layer : Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

UNIT - VI

Transport Layer : Transport Services, Connection management, TCP and UDP protocols; Application Layer - Network Security, Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

TEXT BOOKS :

1. Computer Networks - Andrew S Tanenbaum,4th Edition. Pearson Education/PHI
2. Data Communications and Networking - Behrouz A. Forouzan.Third EditionTMH.

REFERENCES:

1. An Engineering Approach to Computer Networks-S.Keshav,2nd Edition, Pearson Education
2. Understanding communications and Networks,3rd Edition, W.A.Shay,Thomson

SEMESTER -V	**L**	**T**	**P**	**C**
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UNIX PROGRAMMING LAB (BTIT5L01)				

COURSE OBJECTIVES:

1. Understand the use of UNIX commands.

2. Write shell scripts for solving problems.

3. Understand the file management in UNIX.

4. Understand the process management in UNIX.

5. Understand and use IPC mechanisms like pipes, sockets, shared memory, and semaphores.

   Course Outcomes:

6. An ability to use commands for solving problems.

7. An ability to write shell scripts for solving problems that can't be solving by simple commands.

8. An ability to use system calls for process management.

9. An ability to manipulate the file system.

10. AnabilitytousesignalsinUNIXanduseinterprocesscommunicationinUNIX List of Programs:

11. Write a shell script tp generate a multiplication table.

12. Write a shell script that copies multiple files to directory.

13. Write a shell script which counts the number of lines and words present in a givenfile.

14. Write a shell script which displays the list of all files in the given directory.

15. Write a shell script(small calculator) that adds, subtracts, multiplies and divides the given two integers. There are two division options: one returns the quotient and the other returns reminder. The script requires 3 arguments: The operation to be used and two integer numbers. The options are add(-a), subtract(-s), multiply(- m), quotient(-c) and reminder(-r).

16. Write a shell script to reverse the rows and columns of matrix.

17. Write a C program that counts the number of blanks in a textile.

a) Using standard I/O b) using system calls.

1. Implement in C the following Unix commands using system calls.

a) Cat b) ls c) mv

1. Write a program that takes one or more file/directory names as command line input and reports the following information on the file:

   a) Filetype. b) Number of links c) Time of last access. df) Read, Write and Execute permissions.

2.   Write a C program that illustrates how to execute two commands concurrently with a command pipe.

Write a C program that illustrates the creation of child process using fork system call

1. Write a C program that displays the real time of a day every 60seconds.

2. Write a C program that illustrates file locking using semaphores.

3. Write a C program that illustrates the following.

    a) Creating a message queue.

    b) Writing to a message queue.

Reading from a message queue

SEMESTER -V	**L**	**T**	**P**	**C**
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COMPUTER NETWORKS LAB (BTCS5L02)				

OBJECTIVE:

To Study and simulation of various data link layer and network layer concepts

OUTCOMES:

- An ability to understand the simulation of various data link layer farming methods such as character stuffing and bit stuffing and error detection codes

- Ability to implement shortest path network routing algorithms

- Ability to analyze various network layer routing algorithms

- An ability to implement RSA security algorithm

LIST OF PROGRAMS:

1. **Implement the data link layer farming methods such as character, character stuffing and bit stuffing.**

2. **Implement on a data set of characters the three CRC polynomials -CRC 12, CRC 16 and CRC CCIP.**

3. **Implement Dijkstra's algorithm to compute the shortest path thru graph.**

4. **Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm**

5. **Take an example subnet of hosts. Obtain broadcast tree forit.**

6. **Take an example subnet Implement Hierarchical Routing Algorithm.**

7. **Using RSA algorithm encrypts a text data and Decrypt the same**

SEMESTER -V	**L**	**T**	**P**	**C**
	3	**1**	**-**	**3**
ADVANCED JAVA AND WEB TECHNOLOGIES LAB (BTIT5L02)				

COURSE OVERVIEW: Presenting information over the internet in form of web pages is the best way of reaching to all corners of world. This laboratory aims at giving knowledge about creating web pages and also about different web programming concepts, technologies.

COURSE OBJECTIVES:

1. Creation of static web pages with HTML & dynamic web pages with HTML, JavaScript & CSS,XML, PHP.

2. Design and develop various types of websites using various client side , server side components using Servlets andJSP

3. Design and develop 3 tier applications and various web components and Database accessing withJDBC Concepts

4. Have knowledge in Framework like struts.

COURSE OUTCOMES:

1. Understand, Analyze and create web pages using languages like HTML, DHTML, CSS, PHP and JavaScript.

2. Understand, Analyze XML Schema and create XML documents and JavaBeans.

3. Use server side components like servlets to build dynamic websites.

4. Create websites using server-side components like JSP and differentiate Servlets andJSP.

5. Design and construct various data base tables using JDBC and produce various results based on givenquery.

Lab Syllabus

1. Develop static web pages (using only HTML) of an online products store. The pages should resemble:www.apple.com. The website consist the following pages. Home, Registration, Login, Profile, Products, Catalogue, Shopping cart, Payment mode, Order confirmation.

2. Validate the registration, user login , user profile and payment mode using JavaScript (Use PHP to connect with the database for storing the above details)

   1. Redesign the catalogue page using all CSS properties (like font-styles, background image etc.

   2. Create and save an XML document, which contains 10 students information. Display the information by using html tables.

3. Write a served code for User authentication of login form in experiment1 and display whether the user is valid or not using http sessions.

4. Create tables for user details in the registration form and catalogue page store data in the database using JDBC Connectivity.

Write JSP code to insert the details of 3 or 4 users who register with the website by Using registration form. Authenticate the user name and password from the database.

SEMESTER -V	L	T	P	C
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COMPUTER VISION AND GRAPHICS (BTIT5TE1)				

COURSE OBJECTIVES:

- To introduce the fundamental problems of 3D computer vision.

- To introduce the main concepts and techniques used to solve those.

- To enable participants to implement solutions for reasonably complex problems.

- To enable participants to understand basic methodology that is discussed in the computer vision literature.

COURSE OUTCOMES:

1. Apply image processing techniques in both the spatial and frequency (Fourier)domains

2. Understand various image segmentation approaches.

3. Apply image compression and restoration techniques.

4. Understand morphological algorithms and Motion analysis.

5. Get understanding of various pattern recognition and object recognition algorithms

UNIT -1

Raster scan Graphics displays: basics, DDA line derivation and algorithm, Bresenhams line derivation and algorithm. Bresenhams Circle and ellipse derivations and algorithm. Frame buffers, addressing the raster and character display.

Polygons and 2D transformations: generation of polygons, filling routines: edge list, edge fill, flag and seed fill algorithms. Scaling, rotation, Translation, homogenous coordinates and rotation about an arbitrary point.

UNIT-2

Segments and windowing and clipping: segment tables-segmented display file-other data structures for files. Window, view port, viewing transformations, clipping, polygon and line clipping algorithms.

UNIT -3

3-D graphics: 3-D primitives, 3-D transformations, projections-parallel, isometric, and perspective projections.

3-D graphics-II: 3-D clipping, hidden surface removal, painters algorithm, overlapping edges, shading algorithms.

UNIT-4

Image analysis and computer vision: representation of binary and gray level images. Introduction, spatial features, edge detection techniques.

UNIT-5

Image Enhancement: Enhancement by point processing: some simple intensity transformations, histogram processing, histogram equalization, image subtraction, image averaging, spatial filtering.

UNIT-6

Morphological structure: skeleton algorithm, thinning algorithm, Morphological processing and transforms. Image segmentation-window slicing, component labeling, boundary based approaches, region based approaches.

Text Books:

1) Procedural elements for Computer Graphics: David F. Rogers. McGraw-Hill International editions.

2) Digital Image processing: Addison-Wesley publishing company – Rafel C. Gonzalez Richard E. Woods.

3) Fundamentals of digital image processing – Anil K. Jain-Prentice – Hall of India – Private Limited

SEMESTER -V	L	T	P	C
	3	1	-	3
SOFTWARE QUALITY ASSURANCE (BTIT5TE2)				

ELECTIVE-I

COURSE OBJECTIVES:

- Introduces the concepts and methods required for effective and efficientSQA.
- Understand quality management processes.
- Distinguish between the various activities of quality assurance, quality planning and quality control.
- Understand the importance of standards in the quality management process and their impact on the final product.

COURSE OUTCOMES:

- Apply the techniques learned to improve the quality of their own software development.
- Prepare a software quality plan for a software project - to include sections on change management, configuration management, defect elimination, validation and verification and measurement.
- Discuss the role of software quality assurance in improving the software development process.
- Explain the requirements of ISO 9000 Certification and other process evaluation models.

UNIT-I-Fundamentals of Software Quality Assurance

The Role of SQA – SQA Plan – SQA considerations – SQA people – Quality Management – Software Configuration Management.

UNIT-II- Managing Software Quality

Managing Software Organizations – Managing Software Quality – Defect Prevention –Software Quality Assurance Management.

UNIT-III- Software Quality Assurance Metrics

Software Quality – Total Quality Management (TQM) – Quality Metrics – Software Quality Metrics Analysis.

UNIT-IV-Software Quality Program

Software Quality Program Concepts – Establishment of a Software Quality Program – Software Quality Assurance Planning – An Overview – Purpose & Scope.

UNIT-V- Software Quality Assurance Standardization -1

Five Views of Software Quality-McCall's Quality Factors and Criteria - Quality Factors-Quality Criteria- Relationship between Quality Factors and Criteria-Quality Metrics-ISO 9126 Quality Characteristics-ISO 9000:2000.

UNIT-VI -Software Quality Assurance Standardization-2

Software Standards–ISO 9000 Quality System Standards, Fundamentals-ISO 9001:2000 Requirements - Capability Maturity Model and the Role of SQA in Software Development Maturity - SEI CMM Level -5 - Comparison of ISO 9000 Model with SEI's CMM.

Text Books

1. Mordechai Ben-Menachem / Garry S Marliss, "Software Quality", Vikas Publishing House, Pvt, Ltd.,New Delhi (UNIT III toVI).

2. Watts S Humphrey, "Managing the Software Process", Pearson Education Inc (UNIT I andII).

References:

1. Gordon G Schulmeyer, "Handbook of Software Quality Assurance", Third Edition, Artech House Publishers 2007.

2. Nina S God bole, "Software Quality Assurance: Principles and Practice", Alpha Science International, Ltd, 2004.

SEMESTER -V	**L**	**T**	**P**	**C**
	3	**1**	**-**	**3**
NEURAL NETWORKS (BTIT5TE3)				

ELECTIVE-I

COURSE OBJECTIVES:

• To introduce the fundamentals of Neural Networks and their applications.

• To introduce the supervised and unsupervised learning models ofNN.

• To introduce the concept of Evolutionary Optimization.

COURSE OUTCOMES:

• Be able to understand the significance of NNs to solve non linear problems.

• be able to use ANNs for different applications

UNIT I Introduction: History of Neural Networks, Structure and Function of a Single Neuron, Neural Net Architectures, Neural Learning, Application of Neural Networks, Evaluation of Networks, Implementation.

UNIT –II Supervised Learning – Single Layer Networks: Perceptrons, Linear Separability, Perception Training Algorithm, Guarantee of Success, Modifications.

UNIT III Supervised Learning: Multilayer Networks : Multi-level Discrimination, Preliminaries, Back propagation Algorithm, Classification using Back propagation Algorithm, Setting the Parameter Values, Applications. Adaptive Multilayer Networks, Boosting, Prediction Networks, Radial Basis Functions, Polynomial Networks.

UNIT IV Unsupervised Learning: Winner-Take-All Networks, Learning Vector Quantizes, Counter propagation Networks, Adaptive Resonance Theory, Topologically Organized Networks, Distance-based Learning, Principal Component Analysis Networks.

UNIT V Associative Learning: Non-iterative Procedures for Association, Hopfield Networks, Optimization Using Hopfield Networks, Brain-State-in-a-Box Network, Boltzmann Machines.

UNIT VI Evolutionary Optimization: Optimization and Search, Evolutionary Computation, Evolutionary Algorithms for Training Neural Networks.

Reference Books:

1. J.M. Zurada, "Introduction to Artificial Neural Systems", 3rd Edition JaicoPublications.

2. B. Yegnanarayana, "Artificial Neural Networks", 2001,

PHI, New Delhi. Web Resources:

1.http://en.wikipedia.org/wiki/Artificial_neural_network

2. http://machine-learning.martinsewell.com/ann/

http://neurosci.wikidot.com/artificial-neural-network

	L	P	C
SEMESTER - VI	**3+1**	**-**	**3**
CLOUD COMPUTING (BTIT6T01)			

COURSE OBJECTIVES:

1. To understand the concepts of Cloud Computing.

2. To learn Taxonomy of Virtualization Techniques.

3. To learn Cloud Computing Architecture.

4. To acquire knowledge on Aneka Cloud Application Platform.

5. To learn Industry Cloud Platforms.

COURSE OUTCOMES:

Understand the concept of virtualization and how this has enabled the development of Cloud Computing.

Know the fundamentals of Cloud; cloud Architectures and types of services in cloud. Understand scaling, cloud security and disaster management Design different Applications in cloud.

Explore some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications.

SYLLUBUS

UNIT.1

INTRODUCTION TO CLOUD: Cloud Computing at a Glance, The Vision of Cloud Computing, Defining a Cloud, A Closer Look, Cloud Computing Reference Model. Characteristics and Benefits, Challenges Ahead, Historical Developments.

UNIT 2

VIRTUALIZATION: Introduction, Characteristics of Virtualized Environment, Taxonomy of Virtualization Techniques, Virtualization and Cloud computing, Pros and Cons of Virtualization, Technology Examples- VMware and Microsoft Hyper-V.

Before the Move into the Cloud: Know Your Software Licenses, The Shift to a Cloud Cost Model, Service Levels for Cloud Applications.

UNIT 3

Cloud Computing Architecture : Introduction, Cloud Reference Model, Architecture, Infrastructure / Hardware as a Service, Platform as a Service, Software as a Service, Types of

Clouds, Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds, Economics of the Cloud, Open Challenges, Cloud Interoperability and Standards, Scalability and Fault Tolerance.

UNIT 4

Defining the Clouds for Enterprise: Storage as a service, Database as a service, Process as a service, Information as a service, and Integration as a service and Testing as a service.

Scaling a cloud infrastructure - Capacity Planning, Cloud Scale.

Disaster Recovery: Disaster Recovery Planning, Disasters in the Cloud, Disaster Management.

UNIT 5

Aneka: Cloud Application Platform Framework Overview, Anatomy of the Aneka Container, From the Ground Up: Platform Abstraction Layer, Fabric Services, Foundation Services, Application Services, Building Aneka Clouds, Infrastructure Organization, Logical Organization, Private Cloud Deployment Mode, Public Cloud Deployment Mode ,Hybrid Cloud Deployment Mode, Cloud

Programming and Management, Aneka SDK, Management Tools.

UNIT 6

Cloud Applications: Scientific Applications – Health care, Geo science and Biology. Business and Consumer Applications- CRM and ERP, Social Networking, Media Applications and Multiplayer Online Gaming.

Cloud Platforms in Industry: Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life-Cycle, cost model. Microsoft Azure- Azure Core Concepts, SQL Azure.

TEXT BOOKS

1. "Mastering Cloud Computing" by RajkumarBuyya,

   ChristianVecchiola, S.ThamaraiSelvi from TMH 2013.

2. George Reese "Cloud Application Architectures", First

   Edition, O'Reilly Media2009.

REFERENCES

1. "Cloud Computing and SOA Convergence in Your Enterprise" A Step-by-Step Guide by David S. Linthicum from Pearson 2010.

2. "Cloud Computing" 2ndEdition by Dr. Kumar Saurabh from Wiley India2012.

3. "Cloud Computing" – web based Applications that change the way you work and collaborate Online – Michel lMiller.Pearson Education.

SEMESTER - VI	**L**	**L**	**P**	**C**
	3	**1**	**-**	**3**
UML AND DESIGN PATTERNS (BTIT6T02)				

COURSE OBJECTIVES:

1. Master the main features of the Unified Modeling Language(UML)

2. Understand how UML supports the entire OOADprocess

3. Develop the ability to analyse and solve challenging Problem Domains

4. To become familiar with Design pattern in the software development process.

COURSE OUTCOMES:

1. A student with training in UML and Design pattern would be able to design any Project.

2. Gain a comfortable level of using UML notation to describeOOAD.

3. Apply design patterns to develop sound object oriented architecture and design models.

4. How to select a design pattern and How to use a design pattern.

UNIT-I:

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, and Software Development Life Cycle.

UNIT-II:

Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Advanced classes, advanced relationships, Object diagrams: common modeling techniques.

UNIT-III:

Behavioral Modeling: Interactions, Interaction diagrams.Usecases, Usecase Diagrams, Activity Diagrams., Events and signals, state machines, state chart diagrams.

UNIT-IV:

Advanced Behavioral Modeling: Architectural Modeling: Components, Deployment, Component diagrams and Deployment diagrams, Common modeling techniques for component and deployment diagrams

UNIT-V:

Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT-VI:

Creational Patterns: Abstract Factory, Builder,

Factory Method Structural Patterns: Adapter,

Bridge, Composite, Decorator

TEXT BOOKS:

1. The unified Modeling language user guide by Grady Brooch, James Rumbaugh , Ivar Jacobson, PEA
2. Design Patterns By Erich Gamma, Pearson Education

REFERENCE BOOK:

1. Sat zinger: Object Oriented Analysis and Design, ENGAGE

SEMESTER - VI	L	T	P	C
	3	1	-	3
MICROPROCESSOR & ITS APPLICATIONS (BTEC6T05)				

COURSE OBJECTIVES:

1   To impart the basic concepts of microprocessors and interfacing.

2   To give an understanding about the assembly level programming.

3   To introduce microcontrollers & advanced processors.

COURSE OUTCOMES:

1   Ability to recall details about various microprocessors/microcontrollers architecture

2   Ability to interface various peripherals to microprocessors/microcontrollers.

3   Ability to write assembly language programs.

4   Ability to build basic systems using microprocessor/microcontroller.

UNIT-1

Introduction and 8085 microprocessor:

Introduction to Microprocessors and Microcomputers, Family of Intel processors.8085 microprocessor – Features, Architecture, Register organization, Timing diagrams.

UNIT-2

8086 Microprocessor:

Features, Architecture, Memory organization, Pin diagram, Minimum mode and Maximum mode of operations.

UNIT-3

8086 Programming:

Addressing modes, Instruction set, Assembler directives, Procedures and Macros, Assembly language programming, Example programs.

UNIT-4

Interfacing:

8255 PPI, Interfacing with 8086 – ADC, DAC, DC motor and stepper motor.

UNIT-5

8051 Microcontroller:

Microprocessor Vs Microcontroller, 8051 – Features, Architecture, Pin diagram, Ports, Memory organization.

UNIT-6

ARM Processor:

ARM processors – introduction to 16/32 bit processors, ARM architecture and organization, Thumb programming model, thumb instruction set and development tools.

TEXT BOOKS:

1. Microprocessor Architecture, Programming, and Applications with the 8085 Ramesh S. Gaonkar, 4th Edition, Penram International, 1999

2. Advanced microprocessor & Peripherals – A K Ray and K M Bhurchand TMH,2000

SEMESTER -VI	L	T	P	C
	3	1	-	3
CRYPTOGRAPHY AND NETWORK SECURITY (BTCS6T04)				

COURSE OBJECTIVES:

1   To impart an essential study of computer security issues

2   To develop basic knowledge on cryptography

3   To study of various security mechanisms

4   To illustrate how network security and message Authentication codes

COURSE OUTCOMES:

1   Ability to have basic knowledge of different types of Security attacks

2   Ability to analyze and compare different security mechanisms and services

3   Ability to distinguish different modern encryption Algorithms

4   Ability to use the basic knowledge in different Authentication Mechanisms

5   Ability to justify latest techniques used in different Security aspects (e.g. network Security, web security etc.)

UNIT-I: Introduction: Security Attacks, Security Services, Security Mechanisms, and a Model for Network Security, Basics of Cryptography - Symmetric Cipher Model, Substitution Techniques, and Transportation Techniques.

UNIT-II: Secret Key Cryptography: Data Encryption Standard(DES), Strength of DES, Block Cipher Design Principles and Modes of Operations, Triple DES, Blowfish, AES.

UNIT-III Number Theory: Prime and Relatively Prime Numbers, Modular Arithmetic, Fermat's and Euler's Theorems, the Chinese Remainder Theorem, Discrete Logarithms.

UNIT-IV Public Key Cryptography: Principles of Public Key Cryptosystems, RSA Algorithm, Diffie- Hellman Key Exchange, Introduction to Elliptic Curve Cryptography.

UNIT-V: Cryptographic Hash Functions: Applications of Cryptographic Hash Functions, Secure Hash Algorithm, Message Authentication Codes - Message Authentication Requirements and Functions, HMAC, Digital signatures, Digital Signature Schemes, Authentication Protocols, Digital Signature Standards.

UNIT-VI: IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining security Associations, Internet Key Exchange, Web Security: Web Security Considerations, Secure Sockets Layer and Transport Layer Security, Electronic Payment.

System Security: Intruders, Intrusion Detection, Password Management, Malicious Software - Types, Viruses, Virus Countermeasures, Worms, Firewalls - Characteristics, Types of Firewalls.

Text Books:

1. Cryptography and Network Security: Principles and Practice, 5th Edition, William Stallings, Pearson Education, 2011.

2. Network Security and Cryptography, Bernard Menezes, Engage Learning, 2011.

3. Cryptography and Network, 2ndEdition, Behrouz A. Fourouzan and Deb deep Mukhopadhyay, McGraw- Hill, 2010.

Reference Books:

1. Fundamentals of Network Security by Eric Maiwald (Dreamtechpress)

2. Principles of Information Security, Whitman, Thomson.

3. Introduction to Cryptography, Buchmann, Springer.

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SEMESTER -VI	**3**	**1**	**-**	**2**
CLOUD COMPUTING LAB (BTIT6L01)				

COURSE OUTCOMES

1. Understanding the systems, protocols and mechanisms to support cloud computing

2. Develop applications for cloud computing

3. Understanding the hardware necessary for cloud computing

4. Design and implement a novel cloud computing application

List of Programs:

1. Study on cloud Google App engine and its installations.

2. Write a program to display "Hello World" using Goggle Appending.

3. Write a program to receive "Greetings" using Goggle AppEngine.

4. Write a program to Handling Email Serve using Goggle AppEngine.

5. Write a program to confirm Friend Server using Goggle AppEngine.

6. Write a program to Handling URL Serve using Goggle AppEngine.

7. Write a program to create and read employee data in cloud using Goggle AppEngine.

8. Write a program to delete and update employee data in cloud using Goggle AppEngine.

9. Write a program to display customer Servlet using Goggle AppEngine.

10. Write a program to display Items Server using Goggle AppEngine

SEMESTER - VI	L	T	P	C
	3	1	-	2
UML & DESIGN PATTERNS LAB (BTIT6L02)				

COURSE OUTCOMES:

1) Ability to construct various UML models and Design patterns.

2) Ability to perform a System Analyst role and identify the functionality of each UML model and Design Pattern in developing object-oriented software.

3) Capability to understand the importance of systems analysis and design in solving computer Based problems.

4) Ability to give software architecture for a mini project problem

List of Programs:

1. To create a UML diagram of ATMAPPLICATION.
2. To create a UML diagram of LIBRARY MANAGEMENTSYSTEM.
3. To create a UML diagram of ONLINE BOOKSHOP
4. To create a UML diagram of RAILWAY RESERVATIONSYSTEM
5. Using UML design Abstract factory design pattern
6. Using UML design Builder Design pattern
7. Using UML design Factory method Design pattern
8. Using UML design Adapter Design pattern
9. Using UML design Bridge Design pattern

SEMESTER – VI	L	T	P	C
	3	1	-	3
MICROPROCESSOR AND ITS APPLICATIONS LAB (BTEC6L03)				

COURSE OUTCOMES:

An ability to understand MASM / TASM.

An ability to develop microprocessor based programs for various problems.

An ability to interface microprocessor to external devices like keyboard, DAC, Stepper motor.

List of Programs:

1. Microprocessor 8086:

2. Introduction toMASM/TASM.

3. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.

4. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCIIconversion.

5. By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, and String comparison.

6. DOS/BIOS programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.

I. Interfacing8086:

1. Interfacing DAC to generate various waveforms using8255

2. Interfacing Stepper motor using8255

II. Microcontroller8051

1. Introduction to Embedded C and Keil IDE.

2. Reading and Writing parallel ports

3. Interfacing Switches

and LEDs/Display

Equipment required for

Laboratories:

1. 8086 µPKits

2. 8051 Micro Controller kits

3. Interfaces/peripheral subsystems

i) 8255 PPI

ii) Stepper motor

iii) DAC

Software Tools: TASM/MASM Keil IDE

ELECTIVE-2

SEMESTER - VI	**L**	**T**	**P**	**C**
	3	**2**	**-**	**3**
IMAGE PROCESSING (BTIT6TE1)				

COURSE OBJECTIVES:

To make the students to understand

1. The fundamentals of Computer Graphics and Image Processing

2. The concepts relabeled redetection, segmentation, morphology and image compression methods.

COURSE OUTCOMES:

1. Understanding of digital image processing fundamentals: hardware and software, digitization, enhancement and restoration, encoding, segmentation, feature detection

2. Ability to apply image processing techniques in both the spatial and frequency (Fourier)domains

3. Ability to understand (i.e., be able to describe, analyse and reason about) how digital images are represented, manipulated, encoded and processed, with emphasis on algorithm design, implementation and performance evaluation.

UNIT – I

Fundamental steps of image processing, components of an image processing of system. The image model and image acquisition, sampling and quantization, relationship between pixels, distance functions, scanner. Statistical and spatial operations, Intensity functions transformations, histogram processing, smoothing & sharpening – spatial filters Frequency domain filters, homomorphic filtering, image filtering & restoration. Inverse and weiner filtering, FIR weiner filter, Filtering using image transforms, smoothing splines and interpolation.

UNIT – II

Morphological and other area operations, basic morphological operations, opening and closing operations, dilation erosion, Hit or Miss transform, morphological algorithms, extension to grey scale images.

UNIT- III

Segmentation and Edge detection region operations, basic edge detection, second order detection, crack edge detection, gradient operators, compass and laplace operators, edge linking and boundary detection, thresholding, region based segmentation, segmentation by morphological watersheds.

UNIT –IV

Image compression: Types and requirements, statistical compression, spatial compression, contour coding, quantizing compression, image data compression-predictive technique, pixel coding, transfer coding theory, lossy and lossless predictive type coding, Digital Image Water marking.

UNIT V

Representation and Description

Chain codes, Polygonal approximation, Signature Boundary Segments, Skeletons, Boundary Descriptors, Regional Descriptors, Relational Descriptors, Principal components for Description, Relational Descriptors

UNIT VI

Pattern Recognition Fundamentals: Basic Concepts of pattern recognition, Fundamental problems in pattern recognition system, design concepts and methodologies, example of **automatic** pattern recognition systems, a simple automatic pattern recognition model

Pattern classification:

Pattern classification by distance function: Measures of similarity, Clustering criteria, K-means algorithm, and Pattern classification by likelihood function: Pattern classification as a Statistical decision problem, Bays classifier for normal patterns.

TEXT BOOKS:

1. Digital Image Processing Third edition, Pearson Education, Rafael C. Gonzalez, Richard Elwood's

Pattern recognition Principles: Jules T. Too, and Raffle C. Gonzalez, Addision-Wesly Publishing Company

SEMESTER - VI	**L**	**T**	**P**	**C**
	3	**1**	**-**	**3**
SOFTWARE RELIABILITY ENGINEERING (BTIT6TE2)				

ELECTIVE-2

SOFTWARE RELIABILITY ENGINEERING (BTIT6TE2)

COURSE OBJECTIVES:

- To study the importance, software reliability and hardware reliability and difficulties in achieving software reliability.

- To Study the various metrics used to measure the quality factors of software reliability.

- To understand the software reliability growth model.

- To understand the responsibility of organization and staffing in achieving software reliability, and computer architecture and program correctness.

COURSE OUTCOMES:

- To understand the software reliability and its various model.

- To understand the metrics used for software reliability and maintainability.

- To understand the fault detection and correction approaches used in developing a quality software.

- To understand the design principles for achieving higher reliable software system.

UNIT-I

Introduction: The Need for Software Reliability, Software Reliability Engineering, Why Does Software Cost So Much? Basic Definitions and Terminologies. Reliability Engineering Measures: Reliability Definitions, System Mean Time to Failure, Failure Rate Function, Reliability function for Common Distributions, Maintainability and Availability.

UNIT-II

Software Engineering Assessment: Introduction, Software Versus Hardware Reliability, Software Reliability and Testing Concepts, Software Lifecycle, Software Development Process and Its Applications, Software Verification and Validation, Data Collection and Analysis.

UNIT-III

Software Reliability Modeling: Introduction, Halstead's Software Metric, McCabe's Cyclomatic Complexity Metric, Error Seeding Models, Failure Rate Models, Curve Fitting Models, Reliability Growth Models, Non- Homogeneous Poisson Process Models, Markov Structure Models.

UNIT-IV

NHPP Software Reliability Models: Introduction, Parameter Estimation, NHPP Models, Applications, Imperfect Debugging Versus Perfect Debugging, A Generalized NHPP Software Reliability Model, Mean Time Between Failures for NHPP.

UNIT-V

Software Cost Models: Introduction, A Software Cost Model with Risk Factor, A Generalized Software Cost Model, A Cost Model with Multiple Failure Errors, Applications. Fault- Tolerant Software: Introduction, Basic Fault- Tolerant Software Techniques, Self- Checking Duplex Scheme, Reliability Modeling, Reduction of Common- Cause Failures.

UNIT-VI

Software Reliability Models With Environment Factors: Introduction, Definition of Environmental Factors, Environmental Factors Analysis, A Generalized Model With Environmental Factors, Enhanced Proportional Hazard Jelinski- Moranda, An Application With Environmental Factors.

TEXT BOOK:

H.Pham- Software Reliability Springer- Verlag, Singapore, 2000.

REFERENCE BOOKS:

1. J.D. Musa ET. Al- Software Reliability Measurement, Prediction and Application, McGraw-Hill, New York1987.
2. J.D. Musa ET. Al- Software Reliability Engineering, TMH, New Delhi2005.

SEMESTER - VI	L	T	P	C
	3	1	-	3
GENETIC ALGORITHM (BTIT6TE3)				

Elective-2

PURPOSE: This course gives a sufficient understanding of the concepts of Genetic algorithm and helps to identify the potential utilization of the genetic algorithm.

OBJECTIVES

1. To be familiar with the basic concept of genetic algorithm and machine learning.

2. To learn and analyze the mathematical foundations for Genetic algorithm.

3. To study the various genetic algorithm operators and their utilization.

4. To study and develop applications based on Genetic Algorithms

5. To understand the genetic based machine learning and applications

UNIT-I

INTRODUCTION TO GENETIC ALGORITHM: Genetic Operators and Parameters, Genetic Algorithms in Problem Solving, Theoretical Foundations of Genetic Algorithms, Implementation Issues.

UNIT-II

INTRODUCTION TO GENETIC ALGORITHM AND MACHINE LEARNING: genetic algorithm versus Traditional methods – Simple genetic algorithm; Machine learning explanation-machine learning vs. artificial intelligence-supervised and unsupervised machine learning-examples of machine learning.

UNIT III

MATHEMATICAL FOUNDATIONS OF GENETIC ALGORITHM: The fundamental theorem - Schema processing at work. – The 2-armed & k armed Bandit problem. –The building Block Hypothesis. – Minimal deceptive problem.

UNIT IV

GA OPERATORS: Data structures – Reproduction- Roulette-wheel Selection – Boltzmann Selection – Tournament Selection-Rank Selection – Steady –state selection –Crossover & Mutation – Mapping objective functions to fitness forum. – Fitness scaling.

UNIT V

APPLICATIONS OF GA: The rise of GA – GA application of Historical Interaction. – Dejung& Function optimization – Current applications of GA - Advanced operators & techniques in genetic search: Dominance, Diploidy& abeyance.

UNIT VI

EVOLUTIONARY ALGORITHMS: Evolutionary paradigms, genetic algorithms and genetic programming, Ant colonies & optimization, evolutionary search strategies.

TEXT BOOK 1.David E. Gold Berg, "Genetic Algorithms in Search, Optimization & Machine Learning", Pearson Education, 2013.

2. M. Mitchell, an Introduction to Genetic Algorithms,

Prentice-Hall. REFERENCES

1. Rajasekaran S., VijayalakshmiPai G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms ",PHI, 2003.

2. Kalyanmoy Deb, "Optimization for Engineering Design, algorithms and examples", PHI1995.

3. D. E. Goldberg, Genetic Algorithms in Search, Optimization, and Machine Learning,Addison-Wesley.

4. Z. Michalewicz, Genetic Algorithms + Data Structures = Evolution Programs, SpringerVerlag.

	L	**T**	**P**	**C**
SEMESTER -VII	**3**	**1**	**-**	**3**
ANDROID PROGRAMMING (BTIT7T01)				

PURPOSE: To study how to develop an own android application and how to publish that Android application for use.

COURSE OUTCOMES

1. Ability to learn about the android architecture and the tools for developing android applications

2. Ability to create an android application

3. Ability to learn about the user interfaces used in android applications

4. Ability to learn about how to handle and share android data

UNIT I - INTRODUCTION

Android - Android History - Features of Android - Architecture of Android -Obtaining the Required Tools - Android SDK - Installing the Android SDK Tools -Configuring the Android SDK Manager – Eclipse - Android Development Tools(ADT) - Creating Android Virtual Devices (AVDs) - Creating Your First Android Application – Types of Android Application - Anatomy of an Android Application.

UNIT II-ACTIVITIES, FRAGMENTS AND INTENTS

Understanding Activities - Creating Activities - Linking Activities Using Intents –Resolving Intent Filter Collision - Returning Results from an Intent - Passing Data Using an Intent Object - Fragments - Adding Fragments Dynamically - Life Cycle of a Fragment - Interactions between Fragments - Calling Built-In Applications Using Intents - Understanding the Intent Object - Using Intent Filters - Adding

Categories - Displaying Notifications.

UNIT III-ANDROID USER INTERFACE

Understanding the Components of a Screen - Adapting to Display Orientation -Managing Changes to Screen Orientation - Utilizing the Action Bar - Creating the User Interface Programmatically - Listening for UI Notifications - Designing Your User Interface With Views - Using Basic Views - Using Picker Views - Using List Views to Display Long Lists - Understanding Specialized Fragments – Displaying Pictures And Menus With Views - Using Image Views to Display Pictures – Using Menus with Views - Additional Views.

UNIT IV-DATABASES AND CONTENT PROVIDERS

Saving and Loading User Preferences - Persisting Data to Files - Creating and Using Databases - Content Providers - Sharing Data in Android - Using a Content Provider - Creating Your Own Content Providers - Using the Content Provider.

UNIT V- MESSAGING AND LOCATION BASED SERVICES

Messaging - SMS Messaging - Sending E-mail, Location-Based Services - Displaying Maps - Getting Location Data - Monitoring a Location.

UNIT VI-NETWORKING AND ANDROID SERVICES

Networking - Consuming Web Services Using HTTP - Consuming JSON Services Sockets Programming - Developing Android Services - Creating Your Own Services – Establishing Communication between a Service and an Activity - Binding Activities to Services - Understanding Threading - Publishing Android Applications - Preparing for Publishing - Deploying APK Files.

TEXT BOOKS

1. Wei - Meng Lee, "Beginning Android 4 Application Development" , John Wiley & Sons, Inc,2012.

2. Reto Meier, "Professional Android 4 Application Development" , John Wiley & Sons, Inc,2012.

REFERENCES: ZigurdMednieks, Laird Dornin, Blake Meike G, and Masumi Nakamura,"Programming Android", O'Reilly books, 2011.

SEMESTER - VII	**L**	**T**	**P**	**C**
	3	**1**	**-**	**3**
DATA MINING AND DATA WAREHOUSING (BTIT7T02)				

COURSE OBJECTIVES:

Students will be enabled to understand and implement classical models and algorithms in data warehousing and data mining. They will learn how to analyze the data, identify the problems, and choose the relevant models and algorithms to apply. They will further be able to assess the strengths and weaknesses of various methods and algorithms and to analyze theirbehavior.

COURSE OUTCOMES:

1. Understand why there is a need for data warehouse in addition to traditional operational database systems;

2. identify components in typical data warehouse architectures;

3. design a data warehouse and understand the process required to construct one;

4. solve real data mining problems by using the right tools to find interesting patterns

UNIT –I:

Introduction: What Motivated Data Mining? Why Is It Important, Data Mining—On What Kind of Data, Data Mining Functionalities—What Kinds of Patterns Can Be Mined? Are All of the Patterns Interesting? Classification of Data Mining Systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major Issues in Data Mining. (Han &Kamber)

UNIT –II:

Data Pre-processing: Why Pre-process the Data? Descriptive Data Summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.(Han & Kamber)

UNIT –III:

Data Warehouse and OLAP Technology: An Overview: What Is a Data Warehouse? A Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining. *(Han &Kamber)*

UNIT –IV:

Classification: Basic Concepts, General Approach to solving a classification problem, Decision Tree Induction: Working of Decision Tree, building a decision tree, methods for expressing an attribute test conditions, measures for selecting the best split, Algorithm for decision tree induction.

Model Over fitting: Due to presence of noise, due to lack of representation samples, evaluating the performance of classifier: holdout method, random sub sampling, cross-validation, bootstrap. (Tan &Vipin)

UNIT –V

Association Analysis: Basic Concepts and Algorithms :Introduction, Frequent Item Set generation, Rule generation, compact representation of frequent item sets, FP-Growth Algorithm. (Tan &Vipin)

UNIT –VI

Cluster Analysis: Basic Concepts and Algorithms :What Is Cluster Analysis? Different Types of Clustering, Different Types of Clusters, K-means, The Basic K-means Algorithm, K-means: Additional Issues, Bisecting K-means, K-means and Different Types of Clusters, Strengths and Weaknesses, K-means as an

Optimization Problem, Agglomerative Hierarchical Clustering, Basic Agglomerative Hierarchical Clustering Algorithm, Specific Techniques, DBSCAN, and Traditional Density: Center-Based Approach, The DBSCAN Algorithm, Strengths and Weaknesses. **(Tan &Vipin)**

TEXT BOOKS:

1.   Introduction to Data Mining: Pang-Ning Tan & Michael Steinbach, Vipin Kumar, Pearson.

2.   Data Mining concepts and Techniques, 3/e, Jiawei Han, Michel Kamber, Elsevier.

REFERENCE BOOKS:

1.   Data Mining Techniques and Applications: An Introduction, Hongbo Du, Cengage Learning.

2.   Data Mining: Introductory and Advanced topics : Dunham, Pearson.

3.   Data Warehousing Data Mining & OLAP, Alex Berson, Stephen Smith,TMH.

4.   Data Mining Techniques, Arun K Pujari, Universities Press.

B. TECH VII SEMESTER	L	T	P	C
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OPEN SOURCE SOFTWARE (BTCS7T03)				

COURSE OBJECTIVES:

1 Describes the fundamentals of free open source software and open source operating system like Linux.

2 Acquire background knowledge on My SQL database with p h p.

3 Understands the basic knowledge of Perl and python.

COURSE OUTCOMES:

1 An ability to distinguish various open source and closed source software's.

2 An ability to review on open source operating system like Linux.

3 An ability to describe applications using My SQL database.

4 An ability to analyze My SQL p h p connectivity and Perl programming

UNIT I: INTRODUCTION: Introduction to Open sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources. Open source operating systems: LINUX: Introduction – General Overview – Kernel Mode and user mode Process – Advanced Concepts – Scheduling – Personalities – Cloning

– Signals – Development with Linux.

UNIT II: OPEN SOURCE DATABASE: My SQL: Introduction – Setting up account – Starting, terminating and writing your own SQL programs – Record selection Technology – Working with strings – Date and Time– Sorting Query Results – Generating Summary – Working with metadata – Using sequences – My SQL and Web.

UNIT III: OPEN SOURCE PROGRAMMING LANGUAGES : PHP: Introduction –variables – constants – data types – operators – Statements – Functions – Arrays –String Manipulation and regular expression – File handling and data storage PHP and SQL database –PHP and LDAP – PHP Connectivity – Sending and receiving-mails

UNITIV: **PYTHON :** Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – Dictionaries – Conditionals and Loops

UNIT Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

UNIT VI: PERL : Perl backgrounder – Perl overview – Perl parsing rules – Variables and Data – Statements and Control structures – Subroutines, Packages, and Modules- Working with Files – Data Manipulation.

Text Books:

1. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications,2003

2. Fundamentals of Open Source Software by M.N Rao, PHI publications.

3. Steve Such ring, "My SQL Bible", John Wiley, 2002

   References:

4. Rasmus Lord orf and Levin Tatroe, "Programming PHP", O'Reilly, 2002

5. Wesley J. Chun, "Core Phython Programming", Prentice Hall,2001

6. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

7. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

8. VikramVaswani, "MYSQL: The Complete Reference", 2nd Edition, Tata McGraw -Hill Publishing Company Limited, Indian Reprint2009.

B. TECH VII SEMESTER	L	T	P	C
	3	1	-	3
BUSINESS INTELLIGENCE (BTIT7T03)				

Pre-requisites

Relational database concepts, database design and entity-relationship (E-R) modeling, data normalization, and Structured Query Language (SQL).

Data Mining techniques

Objectives

Understand the role of BI in enterprise performance management and decision support.

Understand the applications of data mining and intelligent systems in managerial work.

Understand data warehousing and online analytical processing (OLAP) concepts, including dimensional modeling, star and snowflake schemas attribute hierarchies, Metrics and cubes.

· Learn data analysis and reporting using available BIsoftware.

UNIT-I: Introduction to Business intelligence

Definition and History of BI, Transaction processing versus analytical processing, BI implementation, Major tools and techniques of BI

UNIT-II: Data warehousing

Definition and concepts, Data warehouse architecture, ETL process, data warehouse development, Top down vs. Bottom up, Data Mart vs. EDW, Implementation issues, Real-time data warehousing.

UNIT-III: Business performance management

Key performance indicators and operational metrics, balanced scorecard, Six Sigma, Dashboards and scorecards

UNIT-IV: Data Mining for Business Intelligence

Data mining process, Data mining methods, ANN for Data Mining

UNIT-V- Text and Web mining for Business intelligence

Text mining Applications, Process and Tools, Web content, structure and usage mining

UNIT-VI: BI implementation, Integration and emerging trends Implementing BI, BI Application Life Cycle, Connecting BI to Enterprise systems, on demand

BI, Issues of legality, privacy and Ethics, Emerging topics in BI, Social Networking and BI, RFID and BI

REFERENCE BOOKS

1. Business Intelligence: A Managerial Approach, 2nd Edition, PEARSON 2012

Authors: EfraimTurban, Ramesh Sharda, DursunDelen, and David King.

2. Oracle Business Intelligence Applications, McGraw Hill Education 2013

Authors: Simon Miller, William Hutchinson.

SEMESTER - VII	L	T	P	C
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PROFESSIONAL ETHICS & INTELLECTUAL PROPERTY RIGHTS(BTBM7T01)				

UNIT I: Engineering Ethics: Purposes for Engineering Ethics-Engineering Ethics Consensus and Controversy – Professional and Professionalism –Professional Roles to be played by an Engineer –Professional Ethics- Engineering and Ethics-Kohlberg's Theory – Gilligan's Argument –Heinz's Dilemma.

UNIT II: Engineering as Social Experimentation: Comparison with Standard Experiments – Knowledge gained – Conscientiousness – Relevant Information –Engineers as Managers, Consultants, and Leaders.

Engineers' Responsibility for Safety and Risk: Safety and Risk, Concept of Safety – Types of Risks – Expected Probability- Reversible Effects- Threshold Levels for Risk- Delayed v/s Immediate Risk- Safety and the Engineer – Designing for Safety – Risk Benefit Analysis-Accidents.

UNIT III : Engineers' Responsibilities and Rights: Collegiality-Techniques for Achieving Collegiality- obligations of Loyalty- professionalism–Professional Responsibilities – confidential and proprietary information-Conflict of Interest-solving conflict problems – Ethical egoism-Collective bargaining - Confidentiality-Acceptance of Bribes/Gifts--Occupational Crimes-industrial espionage-Whistle Blowing-types of whistle blowing-when should it be attempted-preventing whistle blowing.

Unit IV: Introduction to Intellectual property:

Introduction to Intellectual Property Law - Types of Intellectual Property -TRIPS-Infringement

Copyrights: Introduction to Copyrights – Principles of Copyright – Subject Matters of Copyright – Rights Afforded by Copyright Law –Copyright Formalities and Registration.

Unit V: Patents

Introduction to Patent Law –Rights under Patent Law – Patent Requirements – Patent Application Process and Granting of Patent – Double Patenting – Patent Searching – Patent Cooperation Treaty.

TRADEMARKS: Introduction to Trade Mark – Trade Mark Registration Process – Trade Mark maintenance – Transfer of rights – Dilution of Ownership of Trade Mark – Likelihood of confusion

UNIT VI: TRADE SECRETS

Introduction to Trade Secrets – Maintaining Trade Secret – Physical Security – Employee Access Limitation– Employee Confidentiality Agreement – Trade Secret Law – Unfair Competition –Breach of Contract .**Cyber law:** Introduction to Cyber Law – Information Technology Act - Cyber Crime and E-commerce – Data Security

.

REFERENCE BOOKS:
1. "Engineering Ethics and Human Values" by M.Govindarajan, S.Natarajan and V.S.SenthilKumar-PHI Learning Pvt.Ltd-2009.
2. "Professional Ethics and Morals" by Prof.A.R.Aryasri, DharanikotaSuyodhana-MaruthiPublications.
3. "Professional Ethics and Human Values" by A.Alavudeen, R.KalilRahman and M.Jayakumaran- Laxmi Publications.
4. "Engineering Ethics" by Harris, Pritchard and Rabins, CENGAGE Learning, India Edition,2009
5. Deborah E.Bouchoux: "Intellectual Property". Cengagelearning , New Delhi, BS Publications(Press)
6. PrabhuddhaGanguli: ' Intellectual Property Rights" Tata Mc-Graw –Hill, New Delhi
7. Richard Stim: "Intellectual Property", Cengage Learning, New Delhi.
8. R. Radha Krishnan, S. Balasubramanian: "Intellectual Property Rights", Excel Books. New Delhi.

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SEMESTER - VII	**3**	**1**	**-**	**3**
ANDROID PROGRAMMING LAB (BTIT7L01)				

COURSE OUTCOMES:

- Understand the existing state of mobile app development with existing apps, and formulating new ideas.
- Display proficiency in coding on a mobile programming platform.
- Understand the limitations and features of developing for mobile devices.
- Create a complete Mobile app with a significant programming component, involving the sensors and hardware features of the phone.

LIST OF PROGRAMS:

1. Hello world program

2. Displaying Image

3. Displaying Button, on clicking button image will be displayed

4. Multi resolution

5. To display Time

6. To display Time &date on the image

7. Video streaming

8. Usage of both Text View and Button

9. Intents

10. On clicking button, connects to browser

11. Basic Theme Application.

SEMESTER – VII	L	T	P	C
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DATA MINING AND DATA WAREHOUSING LAB (BTIT7L02)				

The objective of the lab exercises is to use data mining techniques to identify customer segments and to extract knowledge from various datasets using WEKA tool.

Course outcomes:

• Synthesize the data mining fundamental concepts and techniques from multiple perspectives.

 • Develop skills and apply data mining tools for solving practical problems

• Advance relevant programming skills.

 • Gain experience and develop research skills by reading the data

mining literature. List of Programs:

1. Demonstration of pre-processing on data set student. Art ff

2. Demonstration of pre-processing on data set labor .arff.

3. Demonstration of Association rule process on dataset contact lenses. raffs using Apri or algorithm.

4. Demonstration of Association rule process on dataset weather.arff using Aprior algorithm.

5. Demonstration of classification rule process on dataset student. Arff using Id3algorithm.

6. Demonstration of classification rule process on dataset employee. Arff using Id3algorithm.

7. Demonstration of classification rule process on dataset labor. Arff using Id3algorithm.

8. Demonstration of clustering rule process on dataset iris. Arff using simple K-Means.

9. Demonstration of clustering rule process on dataset student. Arff using simple K-Means.

SEMESTER - VII	L	T	P	C
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FOG COMPUTING((BTIT7TE1))				

COURSE OUTCOMES:

- The Internet of Things (IoT) is generating an unprecedented volume and variety of data. But by the time the data makes its way to the cloud for analysis, the opportunity to act on it might be gone. So, a new model coming into the picture for analyzing and acting on IoT data. It is called either edge computing or Fog computing.

- It is a decentralized computing infrastructure, which computing resources and application services are distributed in the most logical, efficient place at any point along the continuum from the data source to the cloud.

- It improves efficiency and reduces the amount of data that needs to be transported to the cloud for data processing, analysis and storage, but it may also be carried out for security and compliance reasons.

UNIT-I

CLOUD COMPUTING: Introduction to Cloud Computing, Cloud Architecture, Service Models, Cloud Security, Limitations in Cloud Computing.

UNIT-II

INTERNET OF THING: Introduction to IoT, Features of IoT, Data and Knowledge Management in IoT, Use of Devices in IoT Technology, and IoT from Cloud to Fog.

UNIT-III

FOG COMPUTING: Introduction, History of Fog, Why Fogging, Limitations overcome in Fog, Role of Fog Computing, Architecture, Characteristics, Applications of Fog Computing, Cloud Computing vs Fog Computing.

UNIT-IV

FOG NETWORKING: Principles of Edge and Peer-to-Peer Networking, Smart data pricing for new Network Services, Client side control and configuration, Client-side measurement and Control Signaling, Edge Resource Pooling and Caching.

UNIT-V

Quality of Service (QoS): Quality of Services using Fog Computing, Issues, Benefits.

Unit-VI

Security and Privacy in Fog Computing: Issues, Methods, Limitations, Implementation,

Additional Features, Example of Decoy System, Features and Advantages.

SEMESTER - VII	L	T	P	C
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MACHINE LEARNING (BTIT7TE2)				

ELECTIVE-3

COURSE OBJECTIVES:

The main objective of this course is for the students to achieve basic knowledge of artificial intelligence, a deepened technical understanding of machine learning research and theories, as well as practical experience of the use and design of machine learning and data mining algorithms for applications and experiments.

COURSE OUTCOMES:

1. The student will be able evaluate and compare the performance or, other qualities, of algorithms for typical learning problems.

2. The student will be able to design a supervised or unsupervised learning system.

UNIT I: Introduction: Well-posed learning problems, designing a learning system, Perspectives and issues in machine learning.

UNIT II: Concept Learning: Concept learning and the general to specific ordering, Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias.

UNIT III: Decision Tree learning: Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

UNIT IV: Bayesian learning: Bayes theorem, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Bayes optimal classifier, Naïve bayes classifier, An example learning to classify text, Bayesian belief networks.

UNIT V: Computational learning theory-1: Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning - Instance-Based Learning-Introduction.

UNIT VI: Computational learning theory-2: k -Nearest Neighbor Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning

TEXT BOOK:

1. Machine Learning, Tom M.

Mitchell, MGH

REFERENCEBOOKS:

Introduction to machine learning, 2nd ed, EthemAlpaydin, PHI

SEMESTER - VII	L	T	P	C
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MOBILE COMPUTING (BTIT7TE3)				

ELECTIVE-3

COURSE OBJECTIVE:

1) To make the student understand the concept of mobile computing paradigm, its novel applications and limitations.

2) To understand the typical mobile networking infrastructure through a popular GSM protocol

3) To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer

4) To understand the ad hoc networks and related concepts.

COURSE OUTCOMES:

1) Able to think and develop new mobile application.

2) Able to take any new technical issue related to this new paradigm and come up with absolution(s).

3) Able to develop new ad hoc network applications and/or algorithms/protocols.

4) Able to understand & develop any existing or new protocol related to mobile environment.

UNIT I: Introduction about J2ME: J2ME, Java Card.

Mobile Communications: Mobile Communication, Guided and Unguided media, Mobile Computing, Architecture, Limitations and Novel Applications, Mobile Devices, Mobile System Networks.

UNIT II: Mobile Devices and Systems: Cellular Networks and Frequency Reuse, Mobile Smart Phones, Smart Mobiles and Systems, Handheld Pocket Computers, Handheld Devices, Smart Systems.

UNIT III: GSM, CDMA, 2G, 3G and 4G Communications: GSM Services and System Architecture, Radio Interface of GSM, Protocols of GSM, Localizations, Call Handling, Handover, Security, New Data Services, General Packet Radio Service, High Speed Circuit Switched Data, Code Division Multiple Access, 3G Wireless Communication Standards, OFDM, High Speed Packet Access 3G Network, Wi Max IEEE 802.16e, Broadband Wireless Access, 4G Networks.

UNIT IV: Mobile IP Network Layer: IP and Mobile IP Network Layers,OSI layer functions,TCP/IP internet protocol, Mobile internet protocol, Packet Delivery and Handover Management, Location Management, Registration, Agent discovery and Mobile TCP,DHCP.

UNIT V: Synchronization: Synchronization in mobile computing system, usage models for synchronization , *Domain dependent specific rules, Personal Information manager(PIM), Synchronization and conflict resolution strategies, synchronizer, mobile agent.*

UNIT VI: MOBILE AD-HOC AND WIRELESS SENSOR NETWORKS: introduction to mobile adhoc network(MANET),SECURITY IN ADHOC NETWORK,WIRELESS SENSOR NETWORKS.

Mobile wireless short range networks: WIRELESS LAN, IEEE 802.11 protocol layers, WAP architecture, WAE.

TEXT BOOKS:

1. Mobile Computing, Raj Kamal, 2nd Edition, Oxford University Press, 2012.

2. Mobile Computing: Technology, Applications and Service Creation, 2nd Edition, Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal, Tata McGraw Hill, 2010.

3. Mobile Computing: Theory and Practice, Kumkum Garg, Pearson Education, 2010.

REFERENCE BOOKS:

1. Mobile Communications, Jochen Schiller, Pearson Education, Second Edition, 2008.

2. Wireless Communications and Networks, 2nd Edition, William Stallings, Person Education, 2007.

3. Handbook of Wireless Networks and Mobile Computing, Ivan Stojmenovic, Wiley, 2007.Wireless and Mobile Networks: Concepts and Protocols, Dr. Sunilkumar, et al, Wiley India

SEMESTER - VIII	L	T	P	C
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INFORMATION RETRIEVAL SYSTEMS (BTCS8T01)				

COURSE OBJECTIVES:

1   Become familiar with difference between Information retrieval and data Base Management Systems

2   Students will be able to learn different indexing techniques to apply data Base systems

3   students will be able to understand various searching techniques to retrieve data from databases and ware houses.

COURSE OUTCOMES:

1   Ability to **identify** Data Base Management systems and data ware houses

2   Ability to **use** knowledge of data structures and indexing methods in information retrieval Systems

3   Ability to **choose** clustering and searching techniques for different data base systems

4   Ability to **Explain** different types of search algorithms like Hardware text search systems and software text search systems.

UNIT-I: Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses. Information Retrieval System Capabilities Search, Browse, Miscellaneous

UNIT-II : Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure.

UNIT-III: Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-IV: User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext.

UNIT-V: Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT-VI : Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems. Information System Evaluation: Introduction, Measures used in system evaluation.

Tex Books:

1.   Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation,Kluwer Academic Press,1997.

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SEMESTER – V11	**3**	**1**	**-**	**3**
BIG DATA ANALYTICS(BTIT8T01)				

COURSE OBJECTIVES:

- Optimize business decisions and create competitive advantage with Big Data analytics

- Introducing Java concepts required for developing map reduce programs

- Derive business benefit from unstructured data

- Imparting the architectural concepts of Hadoop and introducing map reduce paradigm

- To introduce programming tools PIG & HIVE in

Hadoop ecosystem. Course Outcomes

- Preparing for data summarization, query, and analysis.

- Applying data modeling techniques to large datasets

- Creating applications for Big Data analytics

- Building a complete business data analytic solution

UNIT 1: Data structures in Java: Linked List, Stacks, Queues, Sets, Maps; Generics: Generic classes and Type parameters, Implementing Generic Types, Generic Methods, Wrapper Classes, Concept of Serialization.

Reference: Big Java 4th Edition, Cay Horseman, Wiley John Wiley & Sons, INC

UNIT 2: Working with Big Data: Google File System, Hadoop Distributed File System (HDFS) – Building blocks of Hadoop (Name node, Data node, Secondary Name node, Job Tracker, Task Tracker), Introducing and Configuring Hadoop cluster (Local, Pseudo-distributed mode, Fully Distributed mode), Configuring XML files.

REFERENCES: Hadoop: The Definitive Guide by Tom White, 3rd Edition, O'reilly Hadoop in Action by Chuck Lam, MANNING Publ.

UNIT 3: Writing MapReduce Programs: A Weather Dataset, Understanding Hadoop API for MapReduce Framework (Old and New), Basic programs of Hadoop MapReduce: Driver code, Mapper code, Reducer code, Record Reader, Combiner, Partitioner

REFERENCE: Hadoop: The Definitive Guide by Tom White, 3rd Edition, O'reilly

UNIT 4: Hadoop I/O: The Writable Interface, Writable Comparable and comparators, Writable Classes: Writable wrappers for Java primitives, Text, Bytes Writable, Null Writable, Object Writable and Generic Writable, Writable collections, Implementing a Custom Writable: Implementing a Raw Comparator for speed, Custom comparators

REFERENCE: Hadoop: The Definitive Guide by Tom White, 3rd Edition, O'reilly

UNIT 5: Pig: Hadoop Programming Made Easier Admiring the Pig Architecture, Going with the Pig Latin Application Flow, Working through the ABCs of Pig Latin, Evaluating Local and Distributed Modes of Running Pig Scripts, Checking out the Pig Script Interfaces, Scripting with PigLatin

REFERENCE: Hadoop for Dummies by Dirk dross, Paul C.Zikopoulos, Roman B.Melnyk,Bruce Brown, Rafael Coss

UNIT 6: Applying Structure to Hadoop Data with Hive: Saying Hello to Hive, Seeing How the Hive is Put Together, Getting Started with Apache Hive, Examining the Hive Clients, Working with Hive Data Types, Creating and Managing Databases and Tables, Seeing How the Hive Data Manipulation Language Works, Querying and Analyzing Data

REFERENCES: Hadoop for Dummies by Dirk deRoos, Paul C.Zikopoulos, Roman B.Melnyk,Bruce Brown, Rafael Coss.

TEXT BOOKS

Big Java 4th Edition, Cay Horstmann, Wiley John Wiley

& Sons, INC Hadoop: The Definitive Guide by Tom

White, 3rd Edition, O'reilly Hadoop in Action by Chuck

Lam, MANNING Publ.

Hadoop for Dummies by Dirk deRoos, Paul C.Zikopoulos, Roman B.Melnyk,Bruce Brown, Rafael Coss

REFERENCES

Hadoop in Practice by Alex Holmes, MANNING Publ.

Hadoop MapReduce Cookbook, SrinathPerera,

ThilinaGunarathne Software Links:

Hadoop:http://hadoop.apache.org/

Hive:

https://cwiki.apache.org/confluence/display/Hive/

Home Piglatin:

http://pig.apache.org/docs/r0.7.0/tutorial.html

SEMESTER - VIII	L	T	P	C
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SOFTWARE PROJECT MANAGEMENT (BTIT8TE1)				

ELECTIVE-4

COURSE OBJECTIVES:

1. To study how to plan and manage projects at each stage of the software development life cycle(SDLC)
2. To train software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process.
3. To understand successful software projects the support   organization's strategic goals

COURSE OUTCOMES:

1. To match organizational needs to the most effective software development model
2. To understand the basic concepts and issues of software project management
3. To implement the project plans through managing people, communications and change
4. To select and employ mechanisms for tracking the software projects
5. To develop the skills for tracking and controlling software deliverables
6. To create project plans that address real-world management challenges

UNIT I: INTRODUCTION

Project, Management, Software Project Management activities, Challenges in software projects, Stakeholders, Objectives & goals

Project Planning: Step-wise planning, Project Scope, Project Products & deliverables, Project activities, Effort estimation, Infrastructure

UNIT II: PROJECT APPROACH

Lifecycle models, Choosing Technology, Prototyping

Iterative & incremental Process Framework: Lifecycle phases, Process Artifacts, Process workflows (Book 2)

UNIT III: EFFORT ESTIMATION & ACTIVITY PLANNING

Estimation techniques, Function Point analysis, SLOC, COCOMO, Use case-based estimation , Activity Identification Approaches, Network planning models, Critical path analysis

UNIT IV: RISK MANAGEMENT

Risk categories, Identification, Assessment, Planning and management, PERT technique, Monte Carlo approach

UNIT V: PROJECT MONITORING &CONTROL , RESOURCE ALLOCATION

Creating a framework for monitoring & control, Progress monitoring, Cost monitoring, Earned value Analysis, Defects Tracking, Issues Tracking, Status reports, Types of Resources, Identifying resource requirements, Resource scheduling

UNIT VI: SOFTWARE QUALITY

Planning Quality, Defining Quality - ISO 9016, Quality Measures, Quantitative Quality Management Planning, Product Quality & Process Quality

Metrics, Statistical Process Control Capability Maturity Model, Enhancing software Quality (Book3)

TEXT BOOKS:

1. Software Project Management, Bob Hughes & Mike Cottrell, TATA McGraw-Hill
2. Software Project Management, Walker Royce: Pearson Education, 2005.
3. Software Project Management in practice, Pankaj Jalote,Pearson.

REFERENCE BOOK:

Software Project Management, Joel Henry, Pearson Education

SEMESTER - VIII	**L**	**T**	**P**	**C**
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PATTERN RECOGNITION(BTCS8TE4)				

ELECTIVE-4 COURSE

 OBJECTIVES

The course is designed to introduce students to theoretical concepts and practical issues associated with pattern recognition

COURSE OUTCOMES:

1. Design systems and algorithms for pattern recognition (signal classification), with focus on sequences of patterns that are analyzed using, e.g., hidden Markov models(HMM),

2. Analyse classification problems probabilistically and estimate classifier performance,

3. Understand and analyse methods for automatic training of classification systems,

4. Apply Maximum-likelihood parameter estimation in relatively complex probabilistic models, such as mixture density models and hidden Markovmodels,

5. Understand the principles of Bayesian parameter estimation and apply them in relatively simple probabilistic models

UNIT-I : Introduction: Is Pattern Recognition Important; features, feature vectors, and classifiers; supervised, unsupervised and semi supervised learning; Mat lab programs.

UNIT-II : Classifiers based on Bayes Decision Theory: Introduction, Bayes Decision Theory; discriminant functions and decision surfaces; Bayesian classification for normal distributions- the Gaussian probability density function, the Bayesian classifier for normally distributed classes;

UNIT-III : Linear &Non linear Classifiers: Introduction; linear discriminant functions and decision hyper planes, the perceptron algorithm, Nonlinear Classifiers: introduction, the xor problem, the two-layer perception- classification capabilities of the two-layer perceptron; three-layer perception.

UNIT-IV : Feature Selection: Introduction, Preprocessing- outlier removal, data normalization, missing data; the peaking phenomenon; class separability measures- divergence, chernoff bound and Bhattacharya distance, scatter matrices.

UNIT-V : Supervised Learning: introduction, error-counting approach, exploiting the finite size of the data set; a case study from medical imaging; semi supervised learning- generative models, graph-based methods, trans ductive support vector machines.

UNIT-VI : Skin based Pattern Extraction And Recognition -Introduction, Neural color Constancy based skin detection, Image segmentation, Local region graph Pattern, Skin region Synthesis pattern, Matching multiple regions with Local Global Graph Method.

Graph-based methods Introduction, Hyper graph matching and Algorithms, Parquet graphs-similarity function, Local Feature Detectors.

Text Book(s)

1. SergiosTheodoridis, Konstantin's Koutroumbas, "Pattern Recognition"FourthEdition,

2. (Unit I –V) Elsevier

3. Horst Bunke, Abrahmkadel, MarksLast, "Applied Pattern Recognition" 2008

    Springer –Verlag Berlin Heidelberg.(UnitVI-VIII)

SEMESTER - VII	L	T	P	C
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INTERNET OF THINGS(BTIT8TE2)				

ELECTIVE-4

COURSE OBJECTIVES:

1. Vision and Introduction toIoT.
2. Understand IoT Market perspective.
3. Data and Knowledge Management and use of Devices in IoTTechnology.
4. Understand State of the Art – IoTArchitecture.
5. Real World IoT Design Constraints, Industrial Automation and Commercial Building Automation inIoT.

COURSE OUTCOMES:

At the end of the course the student will be able to:

1. Understand the vision of IoT from a globalcontext.
2. Determine the Market perspective of IoT.
3. Use of Devices, Gateways and Data Management inIoT.
4. Building state of the art architecture inIoT.
5. Application of IoT in Industrial and Commercial Building Automation and Real World Design Constraints.

UNIT-I

M2M TO IOT-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, a use case example, Differing Characteristics.

UNIT-II

M2M TO IOT – A MARKET PERSPECTIVE– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.**M2M to IoT-An Architectural Overview**– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

UNIT-III

M2M and IoT Technology Fundamentals-Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service (XaaS), M2M and IoT Analytics, Knowledge Management.

UNIT-IV

IOT ARCHITECTURE-STATE OF THE ART – Introduction, State of the art, **Architecture Reference Model-** Introduction, Reference Model and architecture, IoT reference Model.

UNIT-V

IOT REFERENCE ARCHITECTURE- Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views. **Real-World Design Constraints-** Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control.

UNIT-VI

INDUSTRIAL AUTOMATION-Service-oriented architecture-based device integration, Socrade realizing the enterprise integrated Web of Things, IMC-AESOP: from the Web of Things to the Cloud of Things.

TEXTBOOK:

1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, "From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1stEdition, Academic Press, 2014.

REFERENCE BOOKS:

- Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-on-Approach)", 1stEdition, VPT, 2014.

    Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1stEdition, Apress Publications, 2013

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	Imprisonment up to	**Fine up to**
Teasing, Embarrassing and Humiliation	6 Months +	Rs.1, 000/-
Assaulting or Using criminal Force criminal	1 Year +	Rs.2, 000/-
Wrongfully Restraining or Confining or causing	2 Years +	Rs.5000/-
Causing grievous Hurt, kidnapping Or abducts or rape Committing Unnatural offence	5 Years +	Rs.10, 000/-
Causing death or Abetting suicide	10 Years +	Rs. 50,000/-
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B.TECH/IT/2014

ABSOLUTELY NO TO RAGGING

1. **Ragging is prohibited as per Act 26 of A.P. Legislative Assembly, 1997.**

2. **Ragging entails heavy fines and/or imprisonment.**

3. **Ragging invokes suspension and dismissal from the College.**

4. **Outsiders are prohibited from entering the College and Hostel without permission.**

5. **Girl students must be in their hostel rooms by 7.00p.m.**

6. **All the students must carry their Identity Card and show them when demanded.**

7. **The Principal and the Wardens may visit the Hostels and inspect the rooms anytime.**