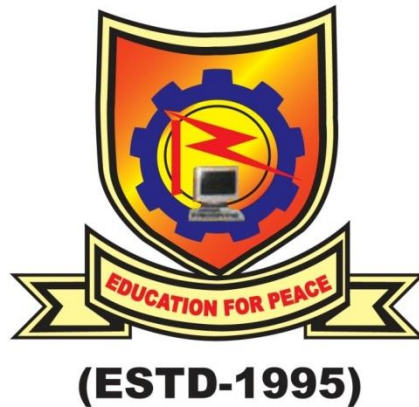


**R G M COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
NANDYAL-518501, KURNOOL DIST., A.P., INDIA**

**DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING (CSE)**



B.TECH SYLLABUS 2019

**Applicable for students admitted into
B.Tech (Regular) from 2019-20
B.Tech (Lateral Entry Scheme) from 2020-21
REGULATIONS, Course Structure & Detailed Syllabus**

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Affiliated to J.N.T.U.A, Anantapuramu)

ACADEMIC REGULATIONS, COURSE STRUCTURE AND DETAILED SYLLABI

B.Tech. (Regular) from 2019-20 and B.Tech. (Lateral Entry Scheme) from 2020-21

For pursuing four year Bachelor Degree Program (under graduate) of study in Engineering (B.Tech.), Two year Master (post graduate) Degree of study in Engineering (M.Tech.), Two year Master (post graduate) degree of study in Business Administration (MBA), Three-year Master (post graduate) Degree of study in Computer Applications (MCA) offered by Rajeev Gandhi Memorial College of Engineering and Technology, Nandyal -518501 under Autonomous status and herein referred to as RGM CET (Autonomous).

All the rules specified herein approved by the Academic Council will be in force and applicable to students admitted from the Academic Year 2019-20 onwards. Any reference to “Institute” or “College” in these rules and regulations shall stand for Rajeev Gandhi Memorial College of Engineering and Technology (Autonomous).

All the rules and regulations, specified hereafter shall be read as a whole for the purpose of interpretation. As and when a doubt arises, the interpretation of the Chairman, Academic Council is final. As per the requirements of statutory bodies, the Principal, Rajeev Gandhi Memorial College of Engineering and Technology shall be the Chairman, Academic Council.

The candidate seeking admission into the first year of study of four year B.Tech degree Program should have:

- i) Passed either Intermediate Public Examination (IPE) conducted by the Board of Intermediate Education, Andhra Pradesh with Mathematics, Physics and Chemistry as optional subjects (or any equivalent examination certified by Board of Intermediate Education) or a Diploma in Engineering in the relevant branch conducted by the Board of Technical Education, Andhra Pradesh (or any equivalent examination certified by State Board of Technical Education) for admission.
- ii) Secured a rank in the EAMCET examination conducted by AP State Council for Higher Education (APSCHE) for allotment of a seat by the Convener, EAMCET, for admission.

Admission Procedure:

As per the norms of A.P. State Council of Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made to the first year of Four year B.Tech. Degree program as follows:-

- a) As per the norms of Government of Andhra Pradesh, A-Category (based on the rank obtained in EAMCET) seats will be filled by the Convener, EAMCET.
- b) As per the norms of Government of Andhra Pradesh, B-Category seats will be filled by the management.

Admission to the Second year of Four year B.Tech. Degree Program in Engineering:

- i) Candidates qualified in ECET and admitted by the Convener, ECET, in such cases for admission, when needed permission from the statutory bodies is to be obtained.
- ii) 10% of the sanctioned strength in each program of study (of RGM CET) shall be filled by the Convener, ECET as lateral entry.

List of Programs offered

1. B.Tech – Regular & Lateral Entry
2. M.Tech – Regular
3. MBA – Regular
4. MCA – Regular

Academic Regulations for 2019 B. Tech. (Regular)

(Effective for the students admitted into the I year from the Academic Year 2019-2020)

The B.Tech. Degree be conferred by the Jawaharlal Nehru Technological University Anantapur, Anantapuramu, students who are admitted to the program and fulfill all the requirements for the award of the Degree as specified below:

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1.0 Award of B.Tech. Degree

- 1.1 The student will be declared eligible for the award of the B. Tech. degree if he fulfils the following academic regulations:
- 1.2 Pursued a course of study for not less than prescribed course work duration and not more than double the prescribed course work duration.
- 1.3 Registered for 160 credits and secured 160 credits with compulsory subjects as listed in Table-1.

Table 1: Compulsory Subjects

| S.No | SUBJECT PARTICULARS |
|------|---|
| 1 | All the subjects offered in B.Tech course / MOOCs |
| 2 | Mandatory Learning Courses [Environmental Science, Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge] |
| 3 | All practical subjects |
| 4 | All Skill Development Courses/ value added courses |
| 5 | Mini projects |
| 6 | Comprehensive Viva-Voce |
| 7 | Seminar |
| 8 | Internship |
| 9 | Extra Academic Activities-EAA |
| 10 | Life Science |
| 11 | Project work Phase-I |
| 12 | Project Work Phase-II |

2.0 Forfeit of seat

Students, who fail to fulfill all the academic requirements for the award of the degree within **eight academic years** from the year of their admission, shall forfeit their seat in B.Tech. course.

3.0 Courses of study

The following courses of study are offered at present as specializations for the B.Tech. Course: and any other course as approved by the authorities of the University from time to time.

1. **Civil Engineering**
2. **Computer Science and Engineering**
3. **Electrical and Electronics Engineering**
4. **Electronics and Communication Engineering**
5. **Mechanical Engineering**

Table 2: Credits

| Subject | Semester | | | |
|--|------------------|---------|------------------------|---------------------------------------|
| | Periods/ Week | Credits | Internal Marks (IM) | External Marks (EM) |
| Theory | 2+1* | 03 | 30 | 70 |
| English Theory | 2+1* | 02 | 30 | 70 |
| Life Science | 2 | 02 | 30 | 70 |
| Mandatory Learning Courses | 03 | 00 | 00 | 00 |
| Mini project/ Practical | 03 | 1.5 | 25 | 50 |
| Drawing | 03 | 03 | 30 | 70 |
| Skill Development Courses/Value Added Course | 1+2* | 0.5** | 30 | 70 |
| Comprehensive Viva (CV) | -- | 0.5 | 00 | 50 |
| Extra Academic Activities | 2 | 00 | 00 | 00 |
| Seminar | | 0.5 | 50 | 00 |
| Internship | | 1.0 | 00 | Certificate from Internship Agency |
| Project Phase-I | | 1.0 | 25 | 00 |
| Project Phase-II | -- | 06 | 25 | 100 |

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

*Tutorial

**[Skill Development / value Added Courses credits will not be considered for the award of division.

However, all these courses have to be cleared through internal evaluation by scoring minimum of 40% marks. The credits obtained in Skill development courses will be taken in to account for the award of degree.]

Note:- Mandatory Learning Courses /EAA will not carry any credits but attendance requirements of 75% should be fulfilled otherwise they have to reregister to fulfill academic requirements.

4.0 Distribution and Weightage of Marks

- 4.1 The performance of the student in each semester shall be evaluated subject –wise with a maximum of 100 marks for theory and 75 marks for practical subject. In addition, mini-project, Comprehensive Viva-Voce (CV) shall be evaluated for 50 marks each and the project work shall be evaluated for 150 marks.
- 4.2 For theory subjects, the distribution shall be 30 marks for Internal Evaluation (20 marks for internal test and 10 marks for assignment or field work/group task/Online test) and 70 marks for the End-Examination.
- 4.3 During the semester there shall be 2 tests for theory subjects. In each Internal test there shall be one compulsory (short answers) question and 3 descriptive questions are to be answered. The duration of internal test will be for 2 hours. First test to be conducted in 3 units and second test to be conducted in the remaining 3 units of each subject. For awarding of 20 Internal marks the performance of the student in two Internal examinations conducted one in the middle of the semester and the other towards the end of the semester giving a weightage of 0.75 for the better score and 0.25 for the other score will be considered. There shall be two assignments in each subject (problem based/ field work/group task/Online test) for award of 10 marks so that internal component (marks) will be 30 marks (20 marks for internal test+10 marks for assignments / field work/group task).

Table 3: Units for Internal Tests

| Semester | |
|----------|----------------------|
| 3 Units | First Internal test |
| 3 Units | Second Internal test |

- 4.4 In the case of Skill Development Courses, two Internal examinations shall be conducted one in the middle of the semester and the other at the end of the semester for 30 marks and the marks scored by the student in these exams with a weightage of 0.75 for better score and 0.25 for the other score will be awarded as Internal marks for 30. For the remaining 70 marks an end examination will be conducted along with other theory examinations. However skill development courses/Value added courses, end examination will be evaluated internally.
- 4.5 No makeup test for internal examination or assignments/group tasks will be conducted in any subject or practical. The student, who is absent for any test shall be deemed to have scored zero marks in that subject.
- 4.6 Open and Professional Electives will commence from 3rd year Second semester onwards. The open elective offered in 3-2 semester will be based on self-study/MOOCs. All the students have to opt for the MOOCs (Self Study) and should acquire the required credits. If the student fails to opt for MOOCs, (Under unavoidable circumstances) he/she has to write two internal tests besides the end examination conducted by the institute (Elective offered in place of MOOCs by the Dept.) like other subjects. However, he/she has to obtain the certificate from the organization in which he has registered. Any MOOCs course selected by the student should be of more than 45 hours duration /12 weeks course with minimum of 3 credits and also from the reputed organization. Attendance of the student who has opted for MOOCs will be taken from the remaining subjects and labs only in that semester while finalizing the attendance for fulfilling the minimum requirements of attendance for promotion to the next semester. Attendance will not be recorded for MOOCs.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

{Massive open online Courses (MOOCs')} B.Tech students can avail the facility of earning up to a maximum of 5% credits of their degree requirements through MOOCs. MOOC courses eligible for this purpose are the courses offered by NPTEL/ SWAYAM/EDX/Course by any other reputed organisation approved by the department only. The student shall obtain prior approval of the Head of the Department before registering for MOOC's. MOOC courses can be taken in lieu of Elective courses such as Open Electives & Professional Electives (pertaining to their branch only) and Employability Enhancement Courses. No Core, Lab or Project Course can be dropped in lieu of MOOC. The student shall submit course Title, institute which offered MOOC, Examination system and Credits of the Course, duration of course - After deciding on the MOOC and a course which is approved as its equivalent in the curriculum a student can enrol for it and clear it any time as per his/her convenience and obtain the assessment certificate.

If the assessment certificate is submitted

- (i) Before the commencement of the semester in which the equivalent course is offered, the student will be exempted from attending the regular class work and internal assessment exams of the equivalent subject.
- (ii) During the semester the student is permitted to withdraw from the remaining part of the course work and internal assessment tests.
- (iii) After the semester is over but before the results of that semester are declared the student can request for considering his performance in the MOOC in lieu of its equivalent.

The student shall submit to the HOD the original certificate issued by MOOC authorities along with a photocopy of the same. The original will be returned after verification and verification shall be certified by the Head of the Department on the photocopy which shall be kept in records. An equivalent Grade corresponding to grade/marks awarded by MOOC agency shall be determined by a committee consisting of Principal, Controller of Examinations, Dean Student affairs and HoD concerned. This equivalent Grade shall be shown in the grade sheet and accounted in the SGPA and CGPA calculations.

- 4.7 Gap Year – Concept of student Entrepreneur in Residence shall be introduced and the outstanding students who wish to pursue entrepreneurship are allowed to take a break of one year at any time after I/II/III year to pursue full time entrepreneurship. This period may be extended for another one year (two years in total) and this period would not be counted for the maximum duration for completion of graduation. An evaluation committee shall be constituted to evaluate the proposal submitted by the student and committee shall decide on permitting the student for having the Gap Year. The committee consists of Principal as Chairman and all HODs as members.
- 4.8 In the open electives offered from III year II Sem onwards Student has to select the subjects among the list of open elective subjects by the other departments (inter - department). Student has to clear the subject as per norms to get the required credits. At least minimum of 40 students should register for any open elective; otherwise that open elective will not be offered.
- 4.9 Out of the professional electives offered from III Year II Semester onwards again one Professional elective in IV Year I Sem will be a MOOCs (Self Study) and the student has to acquire the required credits to clear the subject as specified in 4.6.
- 4.10 The institute would like to offer **Honours** and **Minor** as optional feature of the B. Tech program aimed at providing additional learning opportunities for academically motivated and bright students. In order to earn Honours or Minor, student has to earn a minimum of 20 extra credits. For this in addition to the regular subjects, a student has to pursue (Self-study/MOOCs) five additional subjects from 3-1 semester onwards and acquire the required credits. The Minor is indicated by separate CGPA and is reflected in the degree certificate as for example, B.Tech. in ECE with Minor in Artificial Intelligence. Each department shall offer at least one Minor and also Honours. The student has to select the subjects which are not studied in their regular course and student should have cleared all the subjects up to and including 2-1 semester with above 8.5 CGPA (for SC/ST students 8.0 CGPA) to become eligible for registration for Honours/Minor. GPA and CGPA of 8.0 has to be maintained in the

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

subsequent semesters without any backlog subjects in order to keep the Minor/Honours discipline registration active else Minor/Honours registration will be cancelled. The breakup of the credits are 5 subjects which carry 15 credits @3 credits per subject and project work carries 5 credits. The evaluation pattern of subjects and project work will be similar to methods followed in regular course evaluation. No attendance minimum will be considered for Honours/Minor. Not more than two subjects are allowed for registration in any semester for Honours/ Minor. The student is eligible to receive B.Tech with Honours if he acquires the required additional credits in the same discipline in which he is pursuing his B.Tech. Degree. If the students acquire the additional credits from other disciplines then he is eligible to receive B.Tech along with Minor degree in the specified area. Minimum strength for offering Minor/Honours in a discipline is considered as One-Fifth (20% of the class) of the class size and Maximum size would be Four-Fifth of Class size (i.e 80% of the class).

4.11 Extra - Academic Activity (EAA)

Each of the following activities carries **0** credits and every student is required to register for **two** activities during second year of study (one in each semester) which is mandatory.

- a) *NSS/NCC*
- b) *Games and Sports*
- c) *Yoga/Meditation*
- d) *Extension Activities*
- e) *Literary/ Cultural Activities*

Any other which may be offered in future.

The activities shall be carried out in the allotted hours. The activities will be monitored by the respective faculty in charge, senior faculty member of the department and the Department HOD. Grades will be awarded on the basis of participation, attendance, performance and behavior. Grades shall be entered in the marks statement as GOOD, SATISFACTORY and UNSATISFACTORY and shall not be counted towards CGPA calculation. If any student gets an Unsatisfactory Grade, he/she has to repeat the activity in the immediate subsequent year.

- 4.12** The student has an option of going for internship in IV year–II Sem in a reputed organization (The finalization of the internship organization will be as per college guidelines (HOD, two Senior faculty members of the department and same will be recommended to the Principal for approval). In case any student opted for intern ship he need not attend the classes however he has to write internal and external examination of subjects when ever conducted in that semester and acquire the required credits. The project work in the final semester may be carried out during the internship and same may be submitted for evaluation. Student has to acquire 01 credit by going for internship (minimum of Two weeks) / carrying out internal project work/ study project report on any industry/ attending work shop in reputed institutions for two weeks. Certificate from the organization has to be submitted to this effect attested by Head of the Department and Internship in charge to the academic section before the commencement of 3-2 semester. Student is expected to carry out the activities mentioned here during the summer break before the commencement of 3-1 semester.

- 4.13** The medium of instruction for all Course work, Examination, Seminar Presentations, Project Reports and all academic activities shall be English

5.0 Question Paper Pattern

- 5.1** Each Internal Test question paper shall contain 5 questions, of which the First question is compulsory and three questions are to be answered from the remaining four. Compulsory question carries 5 marks (It contains 5 questions of one marks - no choice in first question). The remaining 3 questions carry 5 marks each. Each question shall have a,b,c.... parts.
- 5.2** The End Examination question paper will have 7 questions and students have to answer 5 questions. However, the first question is compulsory and it consists of 7 short answer questions, each carrying 2 marks. The next 4 questions are to be answered from the remaining 6 questions and each carries 14

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

marks. Each 14 marks question shall have a, b, c .parts. Evaluation of answer scripts shall be done by either Internal or External examiners appointed by the Principal. A minimum of 50% of subjects will be evaluated by external examiners.

- 5.3** For practical subjects, there shall be a continuous evaluation during the semester for 25 internal marks and End Examination carries 50 marks. Of the 25 marks for Internal, 15 marks shall be awarded for day-to-day work, 5 marks to be awarded by conducting an internal laboratory test and 05 marks will be allotted for any creativity/ innovation/ additional learning in lab beyond prescribed set of experiments etc. The End Examination shall be conducted by the teacher concerned and an external Examiner from other institutions.
- 5.4** For the subject having design and/or drawing, (such as Engineering Graphics, Machine Drawing etc.) and estimation, the distribution shall be 30 marks for Internal evaluation (15marks for day-to-day work and 5 marks for Internal tests and 10 marks for assignments) and 70 marks for End Examination. There shall be two internal tests in a Semester and the better of the two shall be considered for the award of marks for internal tests.
- 5.5** The Engineering drawing, wherever offered is to be treated as a theory subject. Evaluation method adopted for theory subjects shall be followed here as well.
- 5.6** There shall be two Mini-Projects, in collaboration with an industry/EPICS (Engineering Projects In Community Services) (wherever is possible) of their specialization, to be taken up during the vacation (data collection, components etc.) after II year II and III Year II Semester examination and implementation/simulation shall be carried out in III year I semester and IV Year I Semester during lab classes. Implementation or fabrication/simulation of mini projects will be treated as laboratory. However, the mini project and its report shall be evaluated in III year I Semester and IV Year I semester. The mini project shall be submitted in the report form and should be presented before the committee, which shall be evaluated for 50 marks. The committee consists of an external Examiner, Head of the Department and the supervisor of mini project. There shall be 25 internal marks for mini project which will be awarded based on the performance and involvement of the student during mini project period.
- 5.7** There shall be comprehensive Viva-Voce examination at the end of each semester.CV Examination shall be conducted by the committee consisting of Senior faculty (based on the recommendation of HOD), an external Examiner from other institutions and HOD and evaluated for 50 marks.
- 5.8** The project topic should be approved by Internal Department Committee (IDC). Out of total 150 marks for the project work, 50 marks shall be for Internal Evaluation (25 marks for Phase-I and 25 marks for Phase-II) and 100 marks for the End Semester Examination. The evaluation of project work phase-I shall be conducted at the end of the IV year I semester and Phase-II shall be conducted at the end of the IV year II semester. The project viva voce examination will be conducted by the committee consisting of an external Examiner from other institute, Head of the Department and the supervisor of the project. The Internal evaluation for 50 marks shall be on the basis of two seminars (25 marks for Phase-I and 25 marks for Phase-II) given by each student on the topic of the project. The Internal evaluation of the project work for 50 marks shall be conducted by the committee consisting of head of the Department or his nominee, senior faculty member and the supervisor of project.
- 5.9** For all practical/mini project/main project/CV etc. the HOD of the concerned dept. shall submit a panel of 4 external examiners from different institutes and one will be selected by the Chief Superintendent of the Examination for conducting of end examination.
- 5.10 Revaluation of End Examination Scripts:** Revaluation of End Examination scripts is allowed for theory subjects only by paying requisite fee. Procedure for Revaluation: The script will be revaluated by an examiner appointed by the Principal. The maximum of revaluation and regular end examination grade will be awarded for that subject. Student can apply for revaluation in a subject only once.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Table4: Distribution of weightages for examination and evaluation

| Sl. No. | Nature of subject | Marks | Type of examination and mode of assessment | | Scheme of Examination |
|---------|--|-------|--|--|---|
| 1 | Theory | 70 | End Examination. Both internal and external Evaluation(at least a minimum of 50% subjects will be sent for external evaluation) | | End Examination in theory subjects will be for 70 marks. |
| | | 30 | 20 | Internal Examinations (Internal evaluation) | These 20 marks are awarded to the students based on the performance in two (per semester) Internal examinations with a weightage of 0.75 for better score and 0.25 for the other score. |
| | | | 10 | Assignments/Field work/Group task/Online Test (Objective Type) (Internal evaluation) | Average of two assignments /Field work/group task in a semester each evaluated for 10 marks. |
| 2 | Practical | 50 | End lab examination (External evaluation) | | This End Examination in practical subjects will be for a maximum of 50 marks. |
| | | 25 | 15 | Internal evaluation | Day-to-day performance in lab experiments and record. |
| | | | 05 | Internal evaluation | Internal lab examination at the end of year/semester |
| | | | 05 | Internal evaluation | 05 marks will be allotted for any creativity/ innovation/ additional learning in lab beyond prescribed set of experiments etc. |
| 3 | Mini Project | 50 | End Examination (External evaluation) | | This End Examination in mini project will be for a maximum of 50 marks. |
| | | 25 | Internal evaluation | | Day-to-day performance in executing mini project. |
| 4 | Comprehensive Viva-Voce(CV) | 50 | External evaluation | | This end viva voce examinations in all the subjects for 50 marks. |
| 5 | Project work | 100 | External evaluation | | This end viva voce in project work for 100 marks |
| | | 50 | Internal evaluation 25 marks for Phase-I 25 Marks for Phase-II | | These 50 marks will be based on the performance of the student in the project reviews apart from attendance and regularity(25 marks for Phase-I and 25 marks for Phase-II) |
| 6 | Skill Development Courses/ Value Added Course/ Mock interviews and Group Discussion | 30 | Internal evaluation | | These 30 marks are awarded to the students based on the performance of two Internal examinations with a weightage of 0.75 for better score and 0.25 for the other score. |
| | | 70 | Internal Evaluation | | Based on the performance in the end examination. |
| 7 | Internship/Internal Project/Study Report/Work shop | 00 | - | | Certificate form Internship Agency |
| 8 | Life Science | 70 | External Evaluation | | End Examination in theory subjects will be for 70 marks. |
| | | 30 | 20 | Internal Examinations (Internal evaluation) | These 20 marks are awarded to the students based on the performance in two (per semester) Internal examinations with a weightage of 0.75 for better score and 0.25 for the other score. |
| | | | 10 | Assignments/Field work/Group task/Online Test (Objective Type) (Internal evaluation) | Average of two assignments /Field work/group task in a semester each evaluated for 10 marks. |
| 9 | EAA | 00 | Internal evaluation | | Based on performance and committee report. |
| 10 | Mandatory Learning Courses | 00 | Internal evaluation | | No examinations. Attendance minimum is required |

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

6.0 Attendance Requirements:

- 6.1** The student shall be eligible to appear for End examinations of the semester if he acquires a minimum of 75% of attendance in aggregate of all the subjects of that semester.
- 6.2** Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in a semester may be granted by the College Academic Committee.
- 6.3** The student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester. They may seek re-admission for that semester when offered next.
- 6.4** Shortage of Attendance below 65% in aggregate shall in **NO** case be condoned.
- 6.5** Students whose shortage of attendance is not condoned in any semester are not eligible to take their End Examination of that class and their registration shall stand cancelled.
- 6.6** The stipulated fee shall be payable towards condonation of shortage of attendance.

7.0 Minimum Academic Requirements:

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item No.6.0.

- 7.1** The student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical or design or CV or drawing subject or Skill Development Courses or project if he secures not less than 35% of marks in the End Examination and he has to score minimum of 40% marks from internal and external exam marks put together to clear the subject.
- 7.2** The student shall be promoted from II to III year only if he fulfils the academic requirement of securing a minimum of 40.5 credits out of 81 credits from all the exams conducted up to and including II year II semester regular examinations irrespective of whether the candidate takes the examination or not.
- 7.3** The student shall be promoted from third year to fourth year only if he fulfils the academic requirements of securing minimum of 61.5 credits out of 123 credits from all the exams conducted up to and including III year II semester regular examinations, whether the candidate takes the examinations or not.

Table 5: Promotion rules

| Promotion from | Total credits to register | Minimum credits to obtain for promotion |
|---------------------|---------------------------|---|
| II year to III year | 81 | 40.5 |
| III year to IV year | 123 | 61.5 |

- 7.4** The student shall register and put up minimum attendance in all 160 credits and earn 160 credits. Grades obtained in 157 credits (excluding the credits obtained in Skill Development Courses/Value added courses) shall be considered for the calculation of CGPA.
- 7.5** Students who fail to earn 160 credits as indicated in the course structure in Table-1 within eight academic years from the year of their admission shall forfeit their seat in B.Tech. Course and their admission shall stand cancelled.

8.0 Course pattern:

- 8.1** The entire course of study is of four academic years. Each academic year consists of two semesters
- 8.2** The student is eligible to appear for the End Examination in a subject, but absent at it or has failed in the End Examination may appear for that subject at the supplementary examination.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

9.0 Transitory Regulations:

Candidates who have been detained for want of attendance or not fulfilled academic requirements or who have failed after having undergone this course in earlier regulations or have discontinued and wish to continue the course are eligible for admission into the unfinished semester from the date of commencement of class work with the same or equivalent subjects as and when subjects are offered subject to section 2.0 and they continue to be in the academic regulations in which they were readmitted.

10.0 With-holding of results:

If the candidate has any dues not paid to the Institute or if any case of indiscipline or malpractice is pending against him, the result of the candidate shall be withheld and he will not be allowed / promoted into the next higher semester. The issue of degree is liable to be withheld in such cases.

11.0 Award of Class:

After the student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. degree he shall be placed in one of the following four classes:

Table 7: Award of Division

| Class Awarded | % of marks to be secured | Division/ Class | CGPA | CGPA secured from 157 Credits (Excluding the credits obtained in Skill Development Courses) |
|---------------------------------|------------------------------------|------------------------------------|---------------------------|---|
| First Class with Distinction | 70% and above | First class With Distinction | ≥ 7.5 | |
| First Class | Below 70% but not less than 60% | First Class | ≥ 6.5 and < 7.5 | |
| Second Class | Below 60% but not less than 50% | Second Class | ≥ 5.5 and < 6.5 | |
| Pass Class | Below 50% but not less than 40% | Pass | ≥ 4 and < 5.5 | |

12.0 Grading:

After each subject is evaluated for 100 marks, the marks obtained in each subject will be converted to a corresponding letter grade as given below, depending on the range in which the marks obtained by the student falls.

Table 8: Conversion into Grades and Grade points assigned

| Range in which the % of marks in the subject fall | Grade | Grade point Assigned | Performance |
|--|----------------|-------------------------|---------------|
| 90 to 100 | O | 10 | Out standing |
| 80 to 89.9 | A ⁺ | 09 | Excellent |
| 70 to 79.9 | A | 08 | Very Good |
| 60 to 69.9 | B ⁺ | 07 | Good |
| 50 to 59.9 | B | 06 | Above Average |
| 45 to 49.9 | C | 05 | Average |
| 40 to 44.9 | P | 04 | Pass |
| <40 | F | 00 | Fail |
| Ab | AB | 00 | Fail |

12.1 Requirement for clearing any subject: The students have to obtain a minimum of 35% in End Examination and they have to score minimum of 40% marks from Internal and external exam marks put together to clear the subject. Otherwise they will be awarded fail grade.

12.2 F is considered as a fail grade indicating that the student has to reappear for the end supplementary examination in that subject and obtain a non-fail grade for clearing that subject.

12.3 In case of skill development/ value added course / soft skill subjects, as there is no end exam, all 100 marks are for internal assessment only. Student has to score 40% in these courses to complete the subject which will be evaluated internally. Marks obtained in these courses shall not be considered for award of Division.

12.4 To become eligible for the award of degree the student must obtain a minimum CGPA of 4.0

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

13.0 Supplementary Examinations:

Apart from the regular End Examinations, the institute may also schedule and conduct supplementary examinations for all subjects for the benefit of students with backlogs. Such students writing supplementary examinations as supplementary candidates may have to write more than one examination per day. For eighth semester, special (Advance) supplementary examinations will be conducted in second week following the results publication date of regular examination of eighth semester only.

14.0 Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA)

The Grade Point Average (GPA) for each semester and Cumulative Grade Point Average (CGPA) up to any semester is calculated as follows:

- i) Semester Grade Point Average will be computed as follows:

$$GPA = \frac{\sum_1^n C_j \times GP_j}{\sum_1^n C_j}$$

Where, n is the number of subjects in that semester. C_j is Credits for the subjects. GP_j is the grade point obtained for the subject and the summation is over all the subjects in that semester.

- ii) A Cumulative Grade Point Average (CGPA) will be computed for every student at the end of each semester. The CGPA would give the cumulative performance of the student from the first semester up to the end of the semester to which it refers to and is calculated as follows:

$$CGPA = \frac{\sum_1^m GPA_j \times TC_j}{\sum_1^m TC_j}$$

Where 'm' is the number of semester under consideration. TC_j the total number of credits for a j^{th} semester and GPA_j is the Grade Point Average of the j^{th} semester. Both GPA and CGPA will be rounded off to the second digit after decimal and recorded as such.

While computing the GPA / CGPA, the subjects in which the student is awarded zero grade points will also be included.

For any academic/employment purpose the following formulae shall be used for conversion of CGPA to % of marks. % of marks = $(CGPA - 0.5) \times 10$.

15.0 Grade Sheet:

A grade sheet (Memorandum) will be issued to each student indicating his performance in all subjects of that semester in the form of grades and also indicating the GPA and CGPA.

16.0 Award of Degree

After having admitted into the program, B.Tech degree shall be conferred on a student who has satisfied the following conditions.

- (i) The student joining with Intermediate qualification must have, after admission into the Regular B.Tech programme of the college, pursued a regular course of study for not less than four academic years and not more than eight academic years.
- (ii) The student joining under lateral entry scheme with diploma qualification must have, after admission into III Semester B.Tech, pursued a regular course of study for not less than three academic years and not more than six academic years.
- (iii) The student must have satisfied the minimum academic requirements in appropriate branch of engineering in each semester of the program, herein after prescribed.
- (iv) Students must register for all the courses and earn the credits specified
- (v) Students who fail to fulfil all the academic requirements for the award of degree within the specified period from the year of their admission shall forfeit their seat in B.Tech course and their admission stands cancelled.
- (vi) The student shall successfully complete non-credit courses like EAA/MC/Internship.
- (vii) The student has no dues to the institution, library, hostels etc.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(viii) The student has no disciplinary action pending against him/her.

The Degree will be conferred and awarded by Jawaharlal Nehru Technological University Anantapur, Ananthapuramu on recommendations by the Academic council of RGM CET (Autonomous) basing on the eligibility as in clause 6.0 and 7.0.

17.0 Transcripts:

After successful completion of prerequisite credits for the award of degree, a Transcript containing performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued if required after the payment of requisite fee and also as per norms in vogue.

18.0 Rules of Discipline:

- 18.1** Any attempt by any student to influence the teachers, Examiners, faculty and staff of Examination section for undue favours in the exams, and bribing them either for marks or attendance will be treated as malpractice cases and the student can be debarred from the college.
- 18.2** When the student absents himself, he is treated as to have appeared and obtained zero marks in that subject(s) and grading is done accordingly.
- 18.3** When the performance of the student in any subject(s) is cancelled as a punishment for indiscipline, he is awarded zero marks in that subject(s).
- 18.4** When the student's answer book is confiscated for any kind of attempted or suspected malpractice, the decision of the Chief Superintendent is final.

19.0 Minimum Instruction Days:

The minimum instruction days for each semester shall be 95 clear instruction days excluding the days allotted for tests/examinations and preparation holidays declared if any.

20.0 Amendment of Regulations:

The college may, from time to time, revise, amend or change the regulations, scheme of examinations and syllabi. However the academic regulations of any student will be same throughout the course of study in which the student has been admitted. However students will continue to be in the academic regulations in which they were readmitted.

21.0 Transfers

There shall be no branch transfers after the completion of admission process.

22.0 General:

- 22.1** The Academic Regulations should be read as a whole for the purpose of any interpretation.
- 22.2** In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic Council is final.
- 22.3** The Institute may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the Institute.
- 22.4** Where the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Academic Regulations for B.Tech.
(Lateral Entry Scheme)

(Effective for the students getting admitted into II year from the Academic Year 2020-2021 onwards)

- 1.0** The Students have to acquire a minimum of 122 credits out of 122 from II to IV year of B.Tech. Program (Regular) for the award of the degree.
- 2.0** Students, who fail to fulfil the requirement for the award of the degree in 6 consecutive academic years from the year of admission, shall forfeit their seat.
- 3.0** The same attendance regulations are to be adopted as that of B. Tech. (Regular).
- 4.0** **Promotion Rule:**
 The student shall be promoted from third year to fourth year only if he fulfils the academic requirements of securing minimum of 42.5 credits out of 85 credits from all the exams conducted up to and including III year II semester regular examinations, whether the candidate takes the examinations or not.
- 5.0** **Award of Class:**
 After the student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes: The marks obtained in the best 119 credits will be considered for the calculation of percentage and award of class.

Table 1: Award of Division

| Class Awarded | % of marks to be secured | Division/ Class | CGPA | CGPA secured from 119 Credits (Excluding the credits obtained in Skill Development Courses) |
|------------------------------|---------------------------------|------------------------------|-------------------------------|---|
| First Class with Distinction | 70% and above | First class With Distinction | ≥ 7.5 | |
| First Class | Below 70% but not less than 60% | First Class | $6.5 \text{ and } < 7.5$ | |
| Second Class | Below 60% but not less than 50% | Second Class | $\geq 5.5 \text{ and } < 6.5$ | |
| Pass Class | Below 50% but not less than 40% | Pass | $\geq 4 \text{ and } < 5.5$ | |

- 6.0** All other regulations as applicable for B. Tech. Four-year degree course (Regular) will hold good for B. Tech. (Lateral Entry Scheme).

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.TECH, I-SEMESTER COURSE STRUCTURE

| Subject Code | Name of the Subject | Hours/Week | | | Credits | Marks | | |
|------------------------|---|--------------------|----------|--------------------------|---------|----------|----------|-------|
| | | Lecture/ Theory | Tutorial | Laboratory/ Practical | | Internal | External | Total |
| THEORY | | | | | | | | |
| A0001191 | Communicative English - I | 1 | 1 | - | 2 | 30 | 70 | 100 |
| A0002191 | Linear Algebra and Calculus | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0005191 | Modern Engineering Chemistry | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0201191 | Principles of Electrical Engineering | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0501191 | Programming for Problem Solving - I | 2 | 1 | - | 3 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | |
| A0091191 | Engineering Chemistry Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0591191 | Programming for Problem Solving – I Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0092191 | Digital English Language Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| | | | | | | | | |
| A0093191 | Comprehensive Viva - I | - | - | - | 0.5 | - | 50 | 50 |
| Contact Periods / Week | | 9 | 5 | 9 | 19 | 225 | 550 | 775 |

I B.TECH, II-SEMESTER COURSE STRUCTURE

| Subject Code | Name of the Subject | Hours/Week | | | Credits | Marks | | |
|------------------------|--|--------------------|----------|----------------------|---------|----------|----------|-------|
| | | Lecture/ Theory | Tutorial | Laboratory/Practical | | Internal | External | Total |
| THEORY | | | | | | | | |
| A0006192 | Communicative English - II | 1 | 1 | - | 2 | 30 | 70 | 100 |
| A0007192 | Ordinary, Partial Differential Equations and Vector Calculus | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0004191 | Applied Physics | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0301191 | Engineering Drawing | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0502192 | Programming for Problem Solving - II | 2 | 1 | - | 3 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | |
| A0094191 | Engineering Physics Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0593192 | Programming for Problem Solving – II Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0592191 | Engineering Workshop and IT Workshop | - | - | 3 | 1.5 | 25 | 50 | 75 |
| | | | | | | | | |
| A0095192 | Comprehensive Viva - II | - | - | - | 0.5 | - | 50 | 50 |
| Contact Periods / Week | | 9 | 5 | 9 | 19 | 225 | 550 | 775 |

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.TECH, I-SEMESTER COURSE STRUCTURE

| Category | Name of the Subject | Hours/Week | | | Credits | Marks | | |
|--------------------------|---|------------|----------|-----|---------|----------|----------|-------|
| | | Theory | Tutorial | Lab | | Internal | External | Total |
| THEORY | | | | | | | | |
| A0014193 | Probability and Statistics | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0504193 | Mathematical Foundation Of Computer Science | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0505193 | Programming in C++ and Data Structures | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0506193 | Digital Logic Design | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0503193 | Python Programming | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0013193 | Life Science for Engineers | 2 | - | - | 2 | 30 | 70 | 100 |
| SKILL DEVELOPMENT COURSE | | | | | | | | |
| A0011193 | Aptitude Arithmetic Reasoning and Comprehension | 1 | 2 | - | 0.5 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | |
| A0595193 | Programming in C++ and Data Structures Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0594193 | Python Programming Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0596193 | Digital Logic Design Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| | | | | | | | | |
| A0096193 | Comprehensive Viva voce | | | | 0.5 | | 50 | 50 |
| Contact Periods / Week | | 13 | 7 | 9 | 22.5 | 285 | 690 | 975 |

II B.TECH, II-SEMESTER COURSE STRUCTURE

| Category | Name of the Subject | Hours/Week | | | Credits | Marks | | |
|--------------------------|---------------------------------------|------------|----------|-----|---------|----------|----------|-------|
| | | Theory | Tutorial | Lab | | Internal | External | Total |
| THEORY | | | | | | | | |
| A0507194 | Java Programming | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0508194 | Computer Organization & Architecture | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0509194 | Formal Languages and Automata Theory | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0510194 | Design and Analysis of Algorithms | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0511194 | Database Management Systems | 2 | 1 | - | 3 | 30 | 70 | 100 |
| A0017194 | Indian Heritage and Culture | 2 | - | - | - | - | - | - |
| SKILL DEVELOPMENT COURSE | | | | | | | | |
| A0016194 | Design Thinking | 1 | 2 | - | 0.5 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | |
| A0597194 | Java Programming Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0598194 | Design and Analysis of algorithms Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| A0599194 | Database Management Systems Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| | | | | | | | | |
| A0097194 | Comprehensive Viva voce | | | | 0.5 | | 50 | 50 |
| Contact Periods / Week | | 13 | 7 | 9 | 20.5 | 255 | 620 | 875 |

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****III B.Tech, I-Semester Course Structure**

| Category | Subject Code | Name of the Subject | Hours/Week | | | Credits | Marks | | |
|----------|---------------------------|------------------------------|------------|----------|-----|---------|----------|----------|-------|
| | | | Theory | Tutorial | Lab | | Internal | External | Total |
| | THEORY | | | | | | | | |
| PC | | Computer Networks & Security | 3 | | - | 3 | 30 | 70 | 100 |
| PC | | Operating Systems | 3 | | - | 3 | 30 | 70 | 100 |
| PC | | Compiler Design | 3 | | - | 3 | 30 | 70 | 100 |
| PC | | Software Engineering | 3 | | - | 3 | 30 | 70 | 100 |
| PC | | Web Programming | 3 | | - | 3 | 30 | 70 | 100 |
| | SKILL DEVELOPMENT COURSE | | | | | | | | |
| HSMC | | PESS | 1 | 2 | - | 0.5 | 30 | 70 | 100 |
| | Mandatory Learning Course | | | | | | | | |
| BS | | Environmental Science | 2 | | | | | | |
| | PRACTICALS | | | | | | | | |
| PC | | Computer Networks Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| PC | | Operating Systems Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| PC | | Web Programming Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| PC | | Comprehensive Viva voce | | | | 0.5 | | 50 | 50 |
| | Contact Periods / Week | | 18 | 2 | 9 | 20.5 | 255 | 620 | 875 |

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

III B.Tech, II-Semester Course Structure

| Category | Subject Code | Name of the Subject | Hours/Week | | | Credits | Marks | | |
|-------------|---------------------------|--|------------|----------|-----|---------|----------|----------|-------|
| | | | Theory | Tutorial | Lab | | Internal | External | Total |
| | THEORY | | | | | | | | |
| PC | | C# & .Net Framework | 3 | | - | 3 | 30 | 70 | 100 |
| PC | | Data warehousing & Mining | 3 | | - | 3 | 30 | 70 | 100 |
| PC | | Android Programming | 3 | | - | 3 | 30 | 70 | 100 |
| PEC1 | | 1.Machine Learning 2.Cloud Infrastructure & Services 3.Principles of programming Languages 4.Image Processing | 3 | | - | 3 | 30 | 70 | 100 |
| OEC-1/MOOCs | SelfLearning | 1.Agile Software Development 2. Object Oriented Analysis and Design 3. Computer Graphics 4. MOOCs(NPTEL) | 3 | | - | 3 | 30 | 70 | 100 |
| | SKILL DEVELOPMENT COURSE | | | | | | | | |
| HSMC | | Mock Interviews and Group Discussion | 1 | 2 | - | 0.5 | 30 | 70 | 100 |
| | Mandatory Learning Course | | | | | | | | |
| BS | | Constitution of INDIA | 2 | - | - | - | - | - | - |
| | PRACTICALS | | | | | | | | |
| PC | | C# & .Net Framework Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| PC | | Android Programming Lab | - | - | 3 | 1.5 | 25 | 50 | 75 |
| PW | | Mini Project 1 | - | - | 3 | 1.5 | 25 | 50 | 75 |
| PW | | Internship | | | | 1.0 | - | - | - |
| PC | | Comprehensive Viva voce | | | | 0.5 | | 50 | 50 |
| | Contact Periods / Week | | 18 | | 9 | 21.5 | 255 | 720 | 875 |

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

| | |
|-----|---|
| T | C |
| 1+1 | 2 |

(A0001191) COMMUNICATIVE ENGLISH- I
For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E

COURSE OBJECTIVES:

- Communicative English-I is prescribed to make students communicate their thoughts, opinions and ideas freely and in real life situations. It has been framed with basics of English usage covering LSRW (Listening, Reading, Speaking and Writing Skills) with suitable practice versions. Further, this course is designed to update the learner in relevant English skills to face campus recruitments and other competitive exams.

COURSE OUTCOMES:

- Develop speaking, reading skills by prescribed lesson. Understand basic grammar principles.
- Write effective letters for job application and complaints, Enhance reading comprehension.
- Comprehend English speech sound system, stress and Intonation, Understand the usage of Vocabulary.
- Enhance reading comprehension, Vocabulary, Speaking, Grammar.
- Acquire knowledge in writing skills, learn Grammar usage and interpret the poem.

MAPPING WITH COs & POs

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | - | - | - | - | - | 2 | 3 | - | - | - | - | 1 |
| CO2 | - | - | - | - | - | 2 | 3 | - | - | - | - | 1 |
| CO3 | - | - | - | - | - | 3 | 2 | - | - | - | - | 1 |
| CO4 | - | - | - | - | - | 3 | 2 | - | - | - | - | 1 |
| CO5 | - | - | - | - | - | 2 | 3 | - | - | - | - | 1 |

UNIT I

Speaking - Describing Home Towns - Hobbies - Reading - Essay - My Vision for India by APJ. Abdul Kalam, (<http://www.studypage.in>) Essay Writing Practice - Remedial Grammar - Practice - Standard Abbreviations & Acronyms

UNIT II

Writing - Principles of Punctuation - Prewriting Techniques - Letter formats - Formal letter - Writing - Practice - Techniques of Spelling - Reading Comprehension Skills - Practice

UNIT III

Listening & Speaking - Introduction to English Pronunciation - Minimal Pairs Practice - Words with complex pronunciation - Movie Analysis - Discussion - Grammar & Vocabulary - Concord - Idioms & Phrases - Practice

UNIT IV

Reading - Skimming and Scanning - What is a Drone: Main Features & Applications of Today's Drones by Jack Brown - Vocabulary - Computer Terminology - Phrasal Verbs - Speaking - Current Affairs - Discussions - Grammar & Usage - Articles & Prepositions - Practice.

UNIT V

Writing: Structure of Paragraph Writing - Cause and Effect - Compare and Contrast -Practice - Techniques - Report writing - Official Reports - Business Reports - Practice -Grammar & Usage - Conditional sentences - IF Poem by Rudyard Kipling.

UNIT VI

Listening & Speaking - Indian English Variants - Difference between British and American English - Listening comprehensions - Test - Remedial Grammar - Correction of Sentences - Sentence Completions - Movie Analysis - Debate

REFERENCE TEXT BOOKS:

1. English Language & Communication Skills for Engineers (AICTE Syllabus) by Sanjay Kumar & Pushpa Latha, Oxford University Press, 2018
2. Practical English Usage by Michael Swan, Oxford University Press.
3. The Definitive Guide to IELTS Academic Writing, Oxford University Press, 2019.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

| | |
|-----|---|
| T | C |
| 2+1 | 3 |

(A0002191) LINEAR ALGEBRA & CALCULUS**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****COURSE OBJECTIVES:**

- The essential tool of matrices and linear algebra in a comprehensive manner.
- The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
- To deal with functions of several variables that are essential in most branches of engineering.
- Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
- The mathematical tools needed in evaluating multiple integrals and their usage

COURSE OUTCOMES:

After completion of the course the student will be able to:

- Understand the use of matrices and linear system of equations in solving problems such as Network analysis, encoding and decoding in Cryptography and Quantum mechanics problems.
- Apply the concept of Gamma and Beta functions linear digital signal processing, discrete Fourier transform, digital filters and Oscillatory theory in engineering.
- Analyze differential and integral calculus to solve improper integrals and its applications in many engineering disciplines.
- Determine the process to evaluate double and triple integrals and understand its usage to find surface area and volumes of various bodies in engineering.
- Identify the applications of advanced calculus & Linear algebra in electro-magnetic theory and in telecommunication engineering.

MAPPING WITH COs & POs

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO2 | 3 | 1 | - | 2 | - | - | - | - | - | - | - | - |
| CO3 | 1 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 3 | 2 | - | 3 | - | - | - | - | - | - | - | - |
| CO5 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |

UNIT I

Matrices: Elementary row transformations – Rank – Echelon form, Normal form – Solutions of Linear System of Homogeneous and Non Homogeneous equations.

UNIT II

Eigen Values, Eigen vectors – Properties; Cayley – Hamilton Theorem (without proof) – Inverse and Power of a matrix by Cayley – Hamilton theorem.

UNIT III

Quadratic forms: Linear Transformation – Reduction of quadratic form to canonical form and their nature.

UNIT IV

Mean value theorems: Rolle's Theorem – Lagrange's Mean Value Theorem – (excluding proof). Taylor's and Maclaurin's Series for e^x , $\sin x$, $\cos x$ and $\log(1+x)$.

Functions of several variables – Jacobian – Maxima and Minima of functions of two variables - Lagrange's method of Multipliers with three variables only.

UNIT V

Special functions: Gamma function – Properties – Beta function – properties – Relation between Gamma and Beta functions – Evaluation of Integrals using Gamma & Beta functions.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT VI

Multiple integrals: – Evaluation of Double integrals (Cartesian and Polar) – Change of Variables – Change of order of Integration – Evaluation of triple integrals.

TEXT BOOKS/REFERENCES:

- 1) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
- 2) Erwin kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2011.
- 3) Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.
- 4) Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2010.
- 5) T.K.V. Iyengar, B. Krishna Gandhi and Others, Mathematical Methods, S. Chand & Company.
- 6) T.K.V. Iyengar, B. Krishna Gandhi and Others, A Text Book of Engineering Mathematics, Vol – 1, S. Chand & Company.
- 7) S.R.K. Iyengar and R.K. Jain, Advanced Engineering Mathematics, Narosa publishing.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

T C
2+1 3

(A0005191) MODERN ENGINEERING CHEMISTRY

For Branches: CSE, ECE & EEE

COURSE OBJECTIVES:

- To familiarize engineering chemistry and its applications
- To train the students on the principles and applications of electrochemistry and polymers
- To train the concepts of molecular structures and bonding
- To introduce the basic principles of spectroscopy and Supra molecules.

COURSE OUTCOMES:

At the end of the course, the students will be able to

- **Concept** of Ψ and Ψ^2 (L2)
- **Compare** the materials of construction for different types of batteries
- **Explain** the preparation, properties, and applications of thermoplastics, thermosetting & elastomers (L2)
- **Understanding** the principles of UV-Visible, IR and HPLC (L2)
- **Applications** of Supramolecular devices (L3)

MAPPING WITH COS & POS:

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| 1 | 1 | - | - | 1 | - | - | - | 1 | 1 | - | - | 1 |
| 2 | - | 1 | 2 | 1 | - | 1 | 1 | - | - | - | - | - |
| 3 | 1 | - | - | 2 | - | - | 1 | 1 | - | - | - | - |
| 4 | 1 | 3 | - | 1 | 2 | 1 | - | 1 | - | - | - | 1 |
| 5 | 1 | 1 | - | 1 | 2 | - | - | 1 | 1 | - | - | 1 |
| Course | 1 | - | 1 | - | 1 | - | - | - | 1 | - | - | - |

UNIT I**Molecular Structure and Bonding: (10 hrs)**

Planck's quantum theory, dual nature of matter, Schrodinger equation, significance of Ψ and Ψ^2 , molecular orbital theory – bonding in homo and heteronuclear diatomic molecules – energy level diagrams of O₂, Calculation of bond order - Band theory of solids – Crystal field theory and its salient features – band diagrams for conductors, semiconductors and insulators, role of doping on band structures.

UNIT II**Electrochemistry and Applications: (10 hrs)**

Types of Conductance – Conductance, Specific conductance, Equivalent Conductance and molar conductance. Determination of equivalent conductance by Wheatstone bridge method. Numerical Problems on conductance. Electrodes – concepts, reference electrodes (Standard hydrogen electrode and Calomel electrode) Nernst equation, cell potential calculations, concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations), photovoltaic cell – working and applications.

Primary cells – Daniell cell, Fuel cells- hydrogen-oxygen and their working. Secondary cells – lithium ion batteries.

UNIT III**Polymer Technology: (10 hrs)**

Polymers: Classification of polymers, functionality, chain growth and step growth polymerization, Copolymerization with specific examples and mechanisms of additional polymerization.

Plastics - Thermoplastics and Thermosets, Preparation, properties and applications of – Bakelite, urea-formaldehyde, Nylon 6:6, Nylon 6, Nylon 11 and polyethylene.

Rubbers: Natural Processing of Rubber, Vulcanization, preparation, properties and uses of Buna-S, Buna-N, Chloroprene.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT IV

Advanced Engineering Material (8 hrs)

Composites- Definition, Constituents, Classification- Particle, Fibre and Structural reinforced composites, properties and Engineering applications

Refractories- Classification, Properties and its Applications, Reasons for failure of the refractory materials

Nanoparticles: Introduction, preparation methods – Sol-gel method, Chemical reduction method –properties and applications in electronics.

UNIT V

Fundamental aspects of Instrumental Methods (10 hrs)

Electromagnetic spectrum, Absorption of radiation: Beer-Lambert's law. UV-Visible and IR.

Spectroscopies: Principle and Instrumentation and its applications. Chromatography: Principle and methods of Thin Layer Chromatography, separation of liquid mixtures of High Performance Liquid Chromatography (HPLC)

UNIT VI

Molecular Machines and Molecular Switches: (10 hrs)

Concepts and terms of supra molecular chemistry, complementarity, Basic Lock and Key principle, examples of Supramolecules, Molecular recognition- cation binding, anion binding.

Applications of Supramolecular Devices- Ionic devices, Electronic devices, switching devices.

TEXT BOOKS:

- 1) Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
- 2) Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

REFERENCE BOOKS:

- 1) K N Jayaveera, G V Subba Reddy and C Rama Chandraiah, Engineering Chemistry 1/e McGraw Hill Education (India) Pvt Ltd, New Delhi 2016
- 2) J. D. Lee, Concise Inorganic Chemistry, 5/e, Oxford University Press, 2008.
- 3) Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
- 4) K Sesha Maheswaramma and Mridula Chugh, Engineering Chemistry Pearson India Education Services Pvt. Ltd
- 5) J.M.Lehn, Supra Molecular Chemistry, VCH Publications

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

T C
2+1 3

(A0201191) PRINCIPLES OF ELECTRICAL ENGINEERING

COURSE OBJECTIVES:

The course will enable the students to

- Get exposed to the basics in Electrical and Magnetic terms
- Get exposed to the basics in DC and AC circuits
- Briefing of Electrical machines fundamentals

COURSE OUTCOMES:

After completion of the course the students are expected to be able to

- To acquire the basic knowledge of different electrical quantities like voltage, potential difference, current, power, energy etc.,
- To analyze different kind of networks with their relevant equations analysis and get the electrical quantities and solutions to numerical problems (kvl, kcl, star-delta, mesh, nodal etc.,).
- To acquire the basic knowledge on magnetic circuits like flux, mmf, reluctance, mutual and self inductances, coefficient of coupling.
- To analyze the single phase ac circuits.
- To understand the constructional features and operation of various devices like dc generator, motor, transformers and induction motor.
- To acquire the knowledge for solving the problems on dc generator, motor, transformer, induction motors.

MAPPING WITH COS & POS:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 3 | 2 | | 1 | | | | 1 | | | 1 |
| CO2 | 3 | 3 | 3 | | 3 | | | | 2 | 2 | | 1 |
| CO3 | 2 | 2 | | | | | | | 1 | | | 1 |
| CO4 | 3 | 2 | 1 | | 2 | | | | 1 | 1 | | 1 |
| CO5 | 3 | 2 | 1 | | | | | | 2 | 1 | | 1 |
| CO6 | 2 | 3 | 2 | | 2 | | | | 2 | 1 | | 1 |

UNIT I

ELEMENTS OF ELECTRICAL CIRCUITS: Basic electrical terms: Charge-Voltage- Current- Power-Energy- Workdone

Basic elements: Resistor- inductor-capacitor-ideal voltage source-practical voltage source- ideal current source-practical current source-Energy stored in inductor and capacitor

Magnetic circuit terms and elements: Flux-reluctance-permeance – mmf – reluctance-comparison between electrical circuit and magnetic circuit-self inductance-mutual inductance-coefficient of coupling Problems on relations of basic terms in electric circuits and magnetic circuits

UNIT II

DC CIRCUITS: Ohms law- KCL-KVL-Nodal analysis-mesh analysis-source transformation-resistors in series-parallel-Capacitors in series-parallel-Simple problems on dc circuits-Star to delta and delta to star transformation- simple problems.

UNIT III

SINGLE PHASE AC CIRCUITS: Basic definitions-ac voltage source-time period-frequency-average value-RMS value-maximum value-form factor-peak factor-behavior of L and C – RL series and parallel- RC series and parallel- RLC series and parallel -P-Q-S- impedance triangle-power triangle- power factor-Introduction to three phase system-Simple problems

UNIT IV

TRANSFORMER: Faradays laws of electromagnetic induction-types of induced emfs (statically, dynamically)-Lenzs law-principle of operation of transformer-types of transformers (core, shell)-derivation of EMF equation-transformation ratio-simple problems on emf equation

UNIT V

DC MACHINES: Construction-principle of operation for Generator & Motor-emf equation -Types of DC Motors-Load & Speed Characteristics for DC Motor-O.C.C for DC Generator-Problems on EMF equation

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT VI

INDUCTION MOTORS: Construction-RMF-working principle-slip-effect of slip on rotor quantities-comparison between transformer and induction motor-simple problems

TEXT BOOKS:

1. Basic Electrical Engineering – 2nd Edition-T K Nagasarkar and M S Sukhija- Oxford University press- 2009.
2. Introduction to Electrical Engineering – 3rd Edition- M.S Naidu and S. Kamakshaiah- TMH publications -2007.
3. Principle of Electrical Engineering – 1st Edition- V.K.Mehta, Rohith Mehta- S.Chand publications- 2005.

REFERENCE BOOKS:

1. Basic Electrical Engineering-2nd Edition- Kothari and Nagarath- TMH Publications- 2013.
2. Electrical Machines – Vol-II- 23rd Edition- B.L.Theraja- S.Chand publications- 2005.
3. Engineering Circuit Analysis – 8th Edition- William Hayt and Jack E. Kemmerly-Mc Graw-Hill Companies-2017.
4. Network Analysis –3rd Edition-M.E Van Valkenberg- Prentice Hall India Learning Private Limited- 1980.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

| | |
|-----|---|
| T | C |
| 2+1 | 3 |

(A0501191) PROGRAMMING FOR PROBLEM SOLVING - I**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****COURSE OBJECTIVES:**

- To make students aware about fundamentals of computer programming.
- To provide exposure on C programming language
- To provide exposure on various C programming concepts like arrays, functions, pointers, Structures etc.
- To develop solutions for various problems by using C programming language.

COURSE OUTCOMES:

At the end of this course, the student would be able to

- Design algorithms and flowcharts for real world applications
- Know the usage of various operators in Program development
- Design programs involving decision and iteration structures.
- Apply the concepts code reusability using Functions
- Analyse the concepts of Arrays and Strings for real world problems.
- Able to apply the pointers in programs

MAPPING WITH COs & POs:

| CO\PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | - | 3 | - | 2 | - | - | - | 2 | 1 | - | - |
| CO2 | 2 | - | - | - | 2 | - | - | - | - | - | - | - |
| CO3 | 3 | 2 | 3 | 2 | - | 2 | - | - | 2 | - | - | - |
| CO4 | 3 | - | 2 | - | - | - | - | - | 3 | - | - | - |
| CO5 | - | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - |
| CO6 | - | - | 3 | - | - | - | 2 | - | - | - | - | - |

UNIT I**Problem Solving Using Computers:** Introduction, Algorithms, Flowcharts and pseudo code.**Overview of C Language:** Introduction, Salient Features of C Language, Structure of a "C" Program.**C Language Preliminaries:** Keywords and Identifiers, Constants, Variables, Data Types, and Input Output Statements with suitable illustrative "C" Programs.**UNIT II****Operators:** Assignment Operators, Relational and Logical Operators, Increment and Decrement Operators, Bitwise Operators, Ternary Operator, Type Conversion, Precedence and Associativity with suitable illustrative C Programs.**UNIT III****Statements in C:****Conditional/Decision Statements:** if, if-else, Nested if-else, else-if ladder, Switch-Statement and goto statement with suitable illustrative C Programs.**Loop Control Statements:** while, do-while and for with suitable illustrative "C" Programs, break, continue statements.**UNIT IV****Arrays:** Definition, Importance of an array in C language, One-Dimensional Arrays, Two-Dimensional Arrays, Example programs on the topics mentioned above**Strings:** Introduction to Strings, String I/O, String Operations with and without built-in functions (strlen(), strcmp(), strcat(), strcpy(), and strrev()) Example Programs on the topics mentioned above

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT V

Functions: Introduction to Functions, benefits of functions, types of functions, Function calls, return vs. exit(), Parameter Passing mechanisms, Call-by-Value, Recursion, Storage Classes, preprocessor directives

UNIT VI

Pointers: Pointer variable and its importance, Pointer variable declaration, initialization of pointer variables, how to access a value from a memory location through its pointer variable. Arithmetic operations on pointer variables, Scale factor length. Pointers and functions - pointers as function arguments (i.e., call-by-reference), Pointers and Arrays, Pointers and Strings, Generic Pointers.

TEXT BOOKS:

1. B.A.Forouzon and R.F. Gilberg, "COMPUTER SCIENCE: A Structured Programming Approach Using C", Third edition, CENGAGE Learning, 2016
2. Pradip Dey and ManasGhosh, Programming in C, Oxford University Press, 2nd Edition 2011.

REFERENCE BOOKS:

1. Byron Gottfried, "Programming with C ", Schaum's Outlines, 2nd Edition, TATA McGraw-Hill.
2. M.T.Somashekara, "Problem Solving Using C", PHI, 2nd Edition 2009.
3. A.K.Sharma, Computer Fundamentals and Programming in C, 2nd Edition, University Press
4. Rajaraman V., "The Fundamentals of Computers", 4th Edition, Prentice Hall of India, 2006.
5. R S Bichker, "Programming in C", University Press, 2012.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0091191) ENGINEERING CHEMISTRY LAB
For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E

COURSE OBJECTIVE:

- Verify the fundamental concepts with experiments

COURSE OUTCOMES:

At the end of the course, the students will be able to

- Learning the analytical skills while doing the experiments (L3)
- Learning the quality of water and its significance (L2)
- Importance of the Conductometric titrations while determine the strength of weak acids an coloured solutions (L3)
- Analyse the IR and UV-Visible Spectra of some organic compounds (L3)

Mapping with Cos & POs:

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| 1 | 1 | 1 | - | 1 | - | - | - | - | 1 | - | - | 1 |
| 2 | - | 2 | 1 | - | 2 | 1 | 1 | 1 | - | - | 1 | - |
| 3 | - | 1 | - | - | 1 | - | 1 | - | 1 | - | - | 1 |
| 4 | 1 | 3 | 2 | 1 | 2 | - | 1 | - | - | - | 1 | 1 |
| Course | 1 | 2 | 1 | - | 2 | 1 | - | - | 1 | 1 | | 1 |

LIST OF EXPERIMENTS:

1. Preparation of standard $K_2Cr_2O_7$ solution
2. Estimation of Hardness of Water by using Standard EDTA solution
3. Estimation of Copper by using Standard EDTA solution
4. Estimation of Magnesium by using Standard EDTA solution
5. Estimation of dissolved oxygen by Winkler's method
6. Determination of Strength of given Hydrochloric Acid against standard sodium hydroxide solution by Conductometric titrations
7. Determination of Strength of given Acetic Acid against standard sodium hydroxide solution by Conductometric titrations
8. Determination of strength of mixture of acids against standard sodium hydroxide solution by conductometric method.
9. Verification of Beer-Lambert's law
10. Determine the strength of Cu(II) ion by colorimeter
11. Determination of total alkalinity of water
12. Preparation of a simple polymer
13. Thin layer chromatography
14. Identification of simple organic compounds by IR and UV-Visible Spectroscopy
15. HPLC method in separation of liquid mixtures

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0591191) PROGRAMMING FOR PROBLEM SOLVING LAB - I**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****COURSE OUTCOMES:**

- To learn about different types of operators
- To learn how decision making is done during programming
- To learn about various simple constructs used for programming
- To learn to define functions and call them with appropriate parameters
- To understand the usage of string libraries to do common string operations
- To understand pointer referencing and pointer dereferencing

COURSE OUTCOMES:

At the end of this course, the student would be able to

- Apply the specification of syntax rules for numerical constants and variables, data types
- Know the Usage of various operators and other C constructs
- Design programs on decision and control constructs
- Develop programs on code reusability using functions
- Implement various concepts of arrays and strings

MAPPING WITH Cos & POs:

| CO\PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | - | - | - | 2 | - | - | - | - | - | - | - |
| CO2 | 2 | - | - | - | 3 | - | - | - | - | - | - | - |
| CO3 | - | 3 | 3 | - | - | - | - | - | - | - | - | - |
| CO4 | 3 | - | 2 | - | - | - | - | - | - | 1 | 2 | - |
| CO5 | - | 2 | - | - | 2 | - | 2 | - | - | - | - | 1 |

RECOMMENDED SYSTEMS /SOFTWARE REQUIREMENTS:

- Intel based desktop PC with ANSI C Compiler and Supporting Editors

Exercise 1

Write a C program to demonstrate the various operators used in C language.

Exercise 2

- a) Write a C program to find the roots of a quadratic equation.
- b) Write a C program to find both the largest and smallest number in a list of integers.

Exercise 2

- a) Write a C program, which takes two integer operands and one operator from the user, performs the specified operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)
- b) Write a C Program to find the reverse of a given number.

Exercise 3

- a) Write a C program to find the sum of individual digits of a positive integer.
- b) Write a C program to generate the first 'n' terms of the Fibonacci sequence.
 [Note: 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.]
- c) Write a C program to generate all the prime numbers between 1 and n, where 'n' value is given by the user.
 [Note: Develop each of the above programs by using different loop constructs supported by C language. (i.e., while, do while and for Loops)]

Exercise 4

- a) Write a C Program to mask the most significant digit of the given number.
- b) Write a program which Prints the following pattern

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

0
 111
 2222
 333333
 44444444

Exercise 5

- a) Write a C program to find all the even numbers in the given one dimensional array.
- b) Write a C program to print the elements of an array in reverse order.
- c) Write a C program to construct a pyramid of numbers.

Exercise 6

Write a C program to perform the following operations:

- a) Addition of Two Matrices
 - b) Multiplication of Two Matrices
- [Note: Use functions to implement the above specified operations]

Exercise 7

Write C programs that use both recursive and non-recursive functions

- a) To find the factorial of a given integer.
- b) To find the GCD (greatest common divisor) of two given integers.

Exercise 8

- a) Write a C Program to solve the Towers of Hanoi problem by using recursive function.
- b) Write a C Program to demonstrate the various storage classes, which are supported by the C language.
 [i.e., automatic, external, static and register]

Exercise 9

- a) Write a C Program to demonstrate that, how to pass an entire array as an argument to a function with a suitable example.
- b) Write a C Program to perform various operations on given two strings using string handling functions.

Exercise 10

- a) Write a C Program to perform various arithmetic operations on pointer variables.
- b) Write a C Program to demonstrate the following parameter passing mechanisms:
 - i) Call-by-value
 - ii) Call-by-reference

Exercise 11

- a) Write a C program that uses functions to perform the following operations:
 - i). To insert a sub-string in to a given main string from the specified position.
 - ii). To delete 'n' Characters from a given position in a given string.
- b) Write a C program to determine if the given string is a palindrome or not.

Exercise 12

- a) Write a C program that displays the position or index in the string 'S' where the string 'T' begins, or – 1 if 'S' doesn't contain 'T'.
- b) Write a C program to count the lines, words and characters in a given text.

REFERENCE BOOKS

1. Programming in C, Pradeep Dey, Manas Ghosh, Oxford Heigher Education
2. The Spirit of C, an introduction to modern programming, M.Cooper, Jaico Publishing House.
3. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publications.
4. Computer Basics and C Programming, V. Raja Raman, PHI Publications.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, I-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0092191) DIGITAL ENGLISH LANGUAGE LAB**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E**

The Digital English Language Lab focuses on the production and practice of sounds of language and equips students with the use of English and vocabulary in everyday situations and contexts.

COURSE OBJECTIVES:

- To facilitate the students to use language effectively in everyday social conversations
- To expose the students to the blend of self-instructional and modes of language learning teacher assisted through digital lab
- To improve the fluency and intelligibility of student in spoken English and neutralize their mother tongue influences
- To help the students to participate in group discussions, to face interviews and shape the individual language learning.

COURSE OUTCOMES:

- Social interactions, greetings, self-introductions and group talk
- Improving standard pronunciation patterns and neutralize the mother tongue impact
- Developing communication through listening, reading, speaking and writing activities
- Enhancing vocabulary and grammar to develop professional language
- Improving life skills through GD and role plays practices

MAPPING WITH COs & POs

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 1 | - | - | - | - | 1 | 1 | 2 | 2 | 3 | - | 2 |
| CO2 | 1 | - | - | - | - | 2 | 1 | 2 | 2 | 3 | - | 2 |
| CO3 | 1 | - | - | - | - | 2 | 1 | 2 | 2 | 3 | - | 2 |
| CO4 | 1 | - | - | - | - | 2 | 1 | 2 | 2 | 3 | - | 2 |
| CO5 | 1 | - | - | - | - | 2 | 1 | 2 | 2 | 3 | - | 2 |

Digital English Language Lab consists of two parts:

- CALL (Lab): Computer Assisted Language Learning
- ICS (Lab): Interactivity Communication Skills

Exercise 1

Introduction to Phonetics - Speech Sounds - Vowels - Phonetic Transcription - CALL Lab - Ice Breaking Activity - Self Introductions (SWOT) - Social Interactions - Pair work - ICS Lab

Exercise 2

Diphthongs - Consonants - Phonetic Transcription - CALL Lab - Just A Minute (JAM) - ICS Lab

Exercise 3

Listening Comprehension (audio) - IELTS Testing Exercises - CALL Lab - Speaking Activity - Group talk - ICS Lab

Exercise 4

Vocabulary Building - Synonyms & Antonyms - Analogy - Testing Exercises - CALL Lab - Narration of a Story/Event/ Describing an Object - ICS Lab

Exercise 5

Situational Dialogues - CALL Lab - Role Play - ICS Lab

Exercise 6

Pronunciation Evaluation Testing Exercises through EPD - CALL Lab - Group Discussion - ICS Lab - Any student based activities

Course Outcomes:

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Student will able to learn:

- Will understand the spoken skills from CALL and ICS
- Will know the variations in accent of native and non-native speakers of English and achieve accent neutralization
- Will develop the reading & listening comprehension skills

PRESCRIBED SOFTWARE:

- K-VAN Solutions (licensed software)
 - Advance Communication Skills Lab
 - English Language Communication Skills Lab
- Cambridge Advanced Learners' English Dictionary with CD
- IELTS Academic Preparation and Practice with CD

BOOKS SUGGESTED FOR DELL: (CENTRAL LIBRARY)

- 1) Skill Pro – A Course in Communication Skills and Soft Skills by Prof. K. Sumakiran et.al, EMESCO.
- 2) Skill Pro-I Foundation Course - 4 - by Dr. G. Gulam Tariq et.al, Maruthi Publications.
- 3) Strengthen Your Steps – A Multimodal Course in Communication skills by Dr. M. Hari
- 4) Prasad et.al
- 5) English Pronouncing Dictionary Daniel Jones Current Edition with CD
- 6) English Dictionary for Advanced Learners, (with CD) International edn. Macmillan 2009.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|-----|---|
| T | C |
| 1+1 | 2 |

(A0006192) COMMUNICATIVE ENGLISH- II**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****COURSE OBJECTIVES:**

- The course Communicative English - II is an extension of Communicative English - I. This will provide inputs in business vocabulary to introduce Communicative style in writing and speaking to expose students to professional scenario. This will lead students to write letters in professional contexts. Communicative English -II enhances the students' communication skills in terms of LSRW Skills.

COURSE OUTCOMES:

- Develop communicative competence by enunciating words and learn Language games.
- Build the habit of reading skills and enhance styles of writing.
- Interpret different accents and modulations through active listening and improvisation of writing skills.
- Write clear and coherent passages.
- Improve the ability to speak effectively in English in real life situations and understanding of Team Dynamics.

MAPPING WITH COs & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | - | - | - | - | - | 2 | 3 | - | - | - | 1 | 2 |
| CO2 | - | - | - | - | - | 3 | 2 | - | 2 | - | 3 | 1 |
| CO3 | - | - | - | - | - | 2 | 3 | - | 2 | - | 1 | 1 |
| CO4 | - | - | - | - | - | 2 | 3 | - | 2 | - | 1 | 1 |
| CO5 | - | - | - | - | - | 2 | 3 | - | 2 | - | 2 | 1 |

UNIT I

- Speaking - News Paper Reading - Narrating a Story/ Event
- Vocabulary Development: Root words-Homonyms-Homophones-Wordlists-Quizzes - Language Games – Puzzles

UNIT II

- Reading Comprehension-Life is a Pizza by Richard Templar from Rules of Life - Vocabulary on Eateries, Food & Travel
- Business Writing - Memorandums - Letters - Style & Formats - E-mail Writing - Practice

UNIT III

- Listening & Speaking - TED Talks - Listening Comprehension- Practice – Tests
- Writing - Proposals - Technical Paper Writing- Practice – Movie Analysis

UNIT IV

- Writing - Gadget Reviews - Technical Jargon - Resume Writing - Practice
- Précis Writing - Techniques of Writing the Précis- Sample Analysis-Practice.

UNIT V

- Speaking - Seeking Information – Preferences - Likes & Dislikes - Cross - Cultural Communication
- Satya Nadella: When empathy is good for business <https://www.morningfuture.com> - Team Dynamics Activity

UNIT VI

- Listening & Writing - Movie/Short Film/Documentary Analysis
- Info Graphics- Techniques – Practice from IELTS Videos

REFERENCE TEXT BOOKS:

- Word Power Made Easy by Norman Lewis, Goyal Publications
- Group Dynamics for Teams 3rd ed. By Levi, Daniel. Sage Publications India Pvt.Ltd. New Delhi, 2011.
- Business English Essentials by Henderson, Greta Lafollette & Price R Voiles 7th Edition. Glencoe/McGraw Hill.
- On Writing Well by William Zinsser, Harper Perennial Press, 2016

RGM-R-2019

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

T C
2+1 3

(A0007192) ORDINARY, PARTIAL DIFFERENTIAL EQUATIONS & VECTOR CALCULUS

For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E.

COURSE OBJECTIVES:

- The effective mathematical tools for the solutions of differential equations that model physical processes.
- To enlighten the learners in the concept of differential equations and multivariable calculus.
- To introduce the solution methodologies for second order Partial Differential Equations with applications in engineering
- To familiarize the concepts in vector calculus like gradient, divergent and curl, as well as, divergent theorems.

COURSE OUTCOMES:

After completion of the course the student will be able to:

- Obtain the knowledge of first and higher order differential equations and its use in solving Circuit analysis, heat transfer problems in engineering.
- Analyze solving higher order linear differential equations with variable coefficients and its applications.
- Understand about formation and solution of partial differential equations and importance in thermodynamics, continuum mechanics and fluid mechanics.
- Understand about vector differentiation and its applications in Electromagnetic theory.
- Apply the concept of vector integration to solve many problems in field theory, Electromagnetic theory and transmission lines.

MAPPING WITH COs & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - |
| CO2 | 3 | 1 | - | - | - | - | - | - | - | - | - | - |
| CO3 | 1 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 3 | 2 | - | 3 | - | - | - | - | - | - | - | - |
| CO5 | 1 | 3 | 2 | - | - | - | - | - | - | - | - | - |

UNIT I

Differential equations of first order and first degree - Formation of ODEs - Solution of ODEs - Exact, Non - Exact, Linear and Bernoulli's equations - Applications of ODEs to L - R & C - R circuits.

UNIT II

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

UNIT III

Higher Order linear Differential Equations with variable coefficients: Cauchy's and Legendre's linear Differential equations, simultaneous linear differential equations with constant coefficients.

UNIT IV

Partial Differential Equations of First order:

First order partial differential equations, Formation of partial differential equations, solutions of first order linear and non – linear Partial differential equations, Method of separation of variables.

UNIT V

Vector Differentiation: Introduction of Vector differentiation– Scalar and vector point functions – Gradient of scalar function– Directional derivatives – Divergence of a vector function – Curl of a vector function.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT VI

Vector integration: Line integral - Potential function – Area, Surface and volume integrals. Vector integral theorems: Green's theorem (without proof) – Stoke's theorem (without proof) and Gauss Divergence Theorem (without proof); Verification of Green's, Stoke's and Gauss Theorems.

TEXT BOOKS/REFERENCES:

- 1) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
- 2) Erwin kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2011.
- 3) Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
- 4) T.K.V. Iyengar, B. Krishna Gandhi and Others, Mathematical Methods, S. Chand & Company.
- 5) T.K.V. Iyengar, B. Krishna Gandhi and Others, A Text Book of Engineering Mathematics, Vol – 1, S. Chand & Company.
- 6) S.R.K. Iyengar and R.K. Jain, Advanced Engineering Mathematics, Narosa publishing.
- 7) Ian Sneddon, Elements of Partial Differential equations, McGraw Hill.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|-----|---|
| T | C |
| 2+1 | 3 |

(A0004191) APPLIED PHYSICS**For Branches: EEE, ECE & CSE****COURSE OBJECTIVES:**

- To provide basic concepts of optics, quantum physics, semiconductors and their applications to the engineering students.

COURSE OUTCOMES:

After the completion of the course the students will be able to:

- Understand the concept of signals by studying the properties of light.
- Construct a quantum mechanical model to explain the behavior of a system at the microscopic level.
- Analyze the structures of materials.
- Identify the semiconducting materials for a particular application.
- Design new optoelectronic devices for various applications.

MAPPING WITH COs & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 2 | - | 2 | 1 | 1 | - | - | - | - | - | - | 1 |
| CO2 | 3 | - | 1 | 1 | 2 | - | - | - | - | - | - | - |
| CO3 | 2 | 3 | 1 | 2 | 2 | - | - | - | - | - | - | 1 |
| CO4 | 2 | 3 | 2 | 1 | 1 | - | 1 | - | - | - | - | - |
| CO5 | 2 | 2 | 3 | 1 | 2 | - | - | - | - | - | - | 1 |

UNIT I: WAVE – OPTICS (9 Hours)

Interference: Introduction – Division of amplitude – Newton's rings and its applications. **Diffraction:** Introduction – Fraunhofer diffraction at single slit – Diffraction Grating – Grating spectra – Determination of wavelength of light.

Polarization: Introduction to polarization – Applications

UNIT II: QUANTUM MECHANICS (9 Hours)

Introduction to quantum physics – Wave-Particle duality – de Broglie hypothesis – Verification of wave character of Matter waves (Davison–Germer experiment) – Uncertainty principle – Thought experiment (Electron diffraction) – Wave function (ψ) – Schrodinger's one-dimensional time-independent wave equation – Particle in 1D-potential box.

UNIT III: QUANTUM OPTICS & FIBER OPTICS (9 Hours)

Lasers: Characteristics – Einstein's coefficients – Radiation processes – Population inversion – Pumping processes Lasing action – Nd-YAG and He-Ne lasers – Engineering applications

Fiber Optics: Structure – Principle – Acceptance angle, Numerical aperture – Propagation of light in Step-index and Graded-index fibers – Applications: Fibre optic communication system (Block diagram) – Sensors.

UNIT IV: THE CRYSTAL STRUCTURE OF SOLIDS (9 Hours)

Introduction – Space lattice – Basis – Unit cell (primitive and Non-primitive) – Crystal systems – Bravais lattices – Atomic radius, Nearest neighbouring distance, Coordination number and packing factor for SC, BCC, FCC lattices – Diamond structure – Crystal planes and directions – Miller Indices – calculation of interplanar distance.

UNIT V: FREE ELECTRON THEORY & BAND STRUCTURE OF SOLIDS (9 Hours)

Introduction – Free electron theory – Sources of electrical resistivity – Fermi energy – Fermi level – Effect of temperature on Fermi distribution function – Kronig-Penny model (qualitative) – Energy bands – Effective mass – Classification of materials based on band theory.

UNIT VI: SEMICONDUCTOR PHYSICS & DEVICES (9 Hours)

Introduction – Intrinsic and Extrinsic semiconductors – Fermi level (qualitative) – Carrier generation and recombination – Carrier transport: Diffusion and Drift – Hall Effect and its applications – Direct and indirect

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

band gap semiconductors – p-n junction, Band diagram and Working principle – Metal-semiconductor junction (Ohmic and Schottky) – LED – Photo detector – Solar cell.

TEXT BOOKS:

1. M. N. Avadhanulu, P.G. Kshirsagar & TVS Arun Murthy” A Text book of Engineering Physics” - S. Chand Publications, 11th Edition 2019.
2. R. K. Gaur and S.C. Gupta, “Engineering Physics”, Dhanpat Rai Publications, New Delhi.

REFERENCES:

1. “Concepts of Modern Physics”, Arthur Beiser Tata Mc Graw Hill Publications, New Delhi.
2. “Physics Volume – II”, Resnick, Halliday and Krane, Wiley, New Delhi.
3. “Elements of Solid State Physics”, J.P. Srivastava, PHI, 4th eds. New Delhi.
4. “Semiconductor Devices: Physics and Technology” S. M. Sze, 2nd eds. Wiley.
5. “Solid State Electronic Devices” Ben G. Streetman, Sanjay Kumar Banerjee, 6th eds. Phi Learning.
6. “Electronic Devices and Circuits”, 2nd eds. Reston Publishing Company, Inc., Reston, Virginia.
7. “Solid State Physics” R.K. Puri and V.K. Babber, S. Chand,

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

T C
2+1 3

(A0301191) ENGINEERING DRAWING
For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E

COURSE OBJECTIVES:

- Increase ability to communicate with people
- Learn to take data and transform it into graphic drawings.
- Learn basic engineering drawing formats
- Prepare the student for future Engineering positions

COURSE OUTCOMES:

At the end of the course, the student will be able to:

- Understand the theory of orthographic projection.
- Understand the conventions and the methods adopted in engineering drawing.
- Know the importance of sectioning and Developments of solids in actual applications.
- Improve their visualization skills so that they can apply these skills in developing new products.

MAPPING WITH COs & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| CO2 | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | - |
| CO3 | 3 | 2 | 2 | 1 | 3 | - | - | - | - | - | - | 1 |
| CO4 | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | 1 | - |

UNIT I

Polygons-Construction of Regular Polygons using given length of a side; Conic sections- Ellipse- Arcs of Circles and Oblong Methods, Construction of Parabola and Hyperbola by eccentricity method only.

UNIT II

Introduction to Orthographic Projections- Projections of Points-Projections of Straight Lines parallel to both planes; Projections of Straight Lines-Parallel to one and inclined to other plane, inclined to both planes, determination of true lengths, angle of inclinations.

UNIT III

Projections of Planes- Regular Planes Perpendicular / Parallel to one Reference, Plane and inclined to other Reference Plane.

UNIT IV

Projections of Solids-Prisms, pyramids, cones and Cylinders with the axis inclined to one Plane.

UNIT V

Section of solids: Sectioning of prism, pyramid, cone and cylinder– sectional view – true shape. Solids in simple position and cutting plane inclined to one reference plane only.

Development of surface of solids: Development of truncated prism, pyramid, cone and cylinder – frustum of cone and pyramid

UNIT VI

Conversion of Isometric Views to Orthographic Views/Projections-Conversion of Orthographic Views to Isometric Projection/ Views.

TEXT BOOK:

1. Engineering Drawing by N.D. Bhatt, Chariot Publications.
2. Engineering Drawing and Graphics, Venugopal/New age publications.

REFERENCE BOOKS:

1. Engineering Drawing. K.L Narayana, P. Kannaiah, Scitech Publications.
2. Engineering Drawing, B.V.R Gupta, J.K. Publishers.
3. Engineering Drawing by M.B. Shah and B.C. Rana, Pearson Publishers.
4. Engineering Drawing, Johle, Tata Mc Graw - Hill.
5. K.V. Natarajan, 'A text book of Engineering Graphics', Dhanalakshmi publishers, Chennai (2006).

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|-----|---|
| T | C |
| 2+1 | 3 |

(A0502192) PROGRAMMING FOR PROBLEM SOLVING - II**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****COURSE OBJECTIVES:**

- To make students aware about structures and unions in C language.
- To provide exposure on various searching and sorting techniques.
- To provide exposure on various data structures like stacks, queues, circular queues and linked lists etc.,
- To develop solutions for various problems by using C Programming Language by students.

COURSE OUTCOMES:

At the end of this course, the student would be able to

- Develop programs with user defined data types.
- Apply various file handling techniques for better data management
- Apply stacks in various applications
- Apply queues in various applications and distinguish between stacks and queues.
- Analyze various dynamic data structures.
- Implement various searching and sorting techniques

MAPPING WITH Cos & POs:

| CO\PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | - | - | 3 | - | 2 | - | - | - | 2 | - | - | 2 |
| CO2 | 3 | - | 3 | - | - | 2 | - | - | - | - | 2 | - |
| CO3 | 3 | 2 | - | - | - | - | 3 | - | - | - | - | - |
| CO4 | - | 3 | - | - | - | - | 2 | - | - | - | - | - |
| CO5 | 3 | 3 | 2 | - | - | 2 | 3 | - | - | - | - | - |
| CO6 | 3 | - | - | 2 | 3 | 3 | - | - | - | - | - | - |

UNIT I

STRUCTURE AND UNIONS IN C LANGUAGE: Structures – Introduction, Features of Structures. Declaration and Initialization of Structures, Accessing structure members, structure initialization. Nested Structures, Array of Structures, Arrays within structures and Pointers to Structures, Structures and Functions, Unions, typedef. Example Programs on the topics mentioned above.

UNIT II

Files : Input and Output – Concept of a file, streams, text files and binary files, Differences between text and binary files, State of a file, Opening and Closing files, file input / output functions(standard library input / output functions for files), file status functions (error handling), Positioning functions, command –line arguments, C program examples.

UNIT III

INTRODUCTION TO DATA STRUCTURES: Classification of data structures, dynamic memory allocation functions in C language. **Stacks:** Definition, Various representation methods, operations on stacks and their implementation in C language, applications of stacks.

UNIT IV

QUEUES: Definition, Various representation methods, operations on queues and their implementation in C language, applications of queues. Circular queues- operations on circular queues and their implementation in C language.

UNIT V

LINKED LISTS: Definition, Various representation methods, operations on linked lists and their implementation in C language.

UNIT VI

SEARCHING AND SORTING TECHNIQUES: Searching Techniques - Linear search and Binary Search Techniques. Sorting techniques - Bubble Sort, Selection Sort, Insertion Sort. Implementation of all the above mentioned techniques in C language and trace them by giving different test data.

TEXT BOOKS:

1. B.A.Forouzon and R.F. Gilberg, "COMPUTER SCIENCE: A Structured Programming Approach Using C", Third edition, CENGAGE Learning, 2016
2. PradipDey and ManasGhosh, Programming in C, Oxford University Press, 2nd Edition 2011.

REFERENCE BOOKS:

1. Byron Gottfried, "Programming with C", Schaum's Outlines, 2nd Edition, TATA McGraw-Hill.
2. M.T.Somashekara, "Problem Solving Using C", PHI, 2nd Edition 2009.
3. A.K.Sharma, Computer Fundamentals and Programming in C, 2nd Edition, University Press
4. Rajaraman V., "The Fundamentals of Computers", 4th Edition, Prentice Hall of India, 2006.
5. R S Bichker, "Programming in C", University Press, 2012.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0094191) ENGINEERING PHYSICS LAB
For Branches: EEE, ECE & CSE

COURSE OBJECTIVES:

- The laboratory should help the student to develop a broad array of basic skills and tools of experimental physics and data analysis.
- The laboratory should help students to understand the role of direct observation in physics and to distinguish inferences based on theory and the outcomes of experiments.
- To learn about the optical experiments in establishing the fundamentals in Interference and Diffraction phenomena which will be visualized with the light and laser experiments mentioned in the syllabus.
- To learn about the basic electronic experiments such as energy band gap determination, Hall Effect to know the type of extrinsic semiconductors, Stewart-Gee's experiment in field intensity determination and Solar I-V characteristics.

COURSE OUTCOMES:

After completion of the course the students will be able to

- Operate optical instruments like microscope and spectrometer.
- Determine thickness of a hair/paper with the concept of interference.
- Estimate the wavelength of different colors using diffraction grating.
- Measure the resolving power of the given optical device.
- Study the variation of intensity of the magnetic field due to circular coil carrying current with distance.
- Evaluate the acceptance angle of an optical fiber and numerical aperture.
- Calculate the band gap of the given semiconductor using four probe method.
- Identify the type of semiconductor (i.e., n-type or p-type) using Hall Effect.

MAPPING WITH Cos & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 2 | 1 | - | - | 1 | - | - | - | - | - | - | 1 |
| CO2 | 2 | - | 2 | 1 | - | - | - | - | - | - | - | - |
| CO3 | 3 | 2 | - | 1 | 1 | - | - | - | - | - | - | 1 |
| CO4 | 3 | 2 | - | 1 | 1 | - | - | - | - | - | - | 1 |

LIST OF EXPERIMENTS (ANY10 EXPERIMENTS)

1. Determination of wavelength of light – Newton's rings
2. Determination of thickness of a thin film
3. Spectrometer – Transmission grating
4. Determination of wavelength of a Sodium light – Normal Incidence
5. Dispersive power of a prism - spectrometer
6. Laser experiment: wavelength determination using grating
7. Laser experiment: particle size determination
8. Determination of numerical aperture of an optical fiber
9. Field along the axis of coil carrying current – Stewart Gee's method
10. Determination of rigidity modulus – Torsional Pendulum
11. Determination of Band gap of Si or Ge – Four probe method
12. Study of B – H Curve.
13. Determination of Charge density and Hall coefficient or magnetic flux density – Hall effect.
14. Study of I-V characteristics of Solar Cell.
15. Measurement of Dielectric constant

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0593192) PROGRAMMING FOR PROBLEM SOLVING LAB - II**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****COURSE OBJECTIVES:**

- To understand how to use structures and unions as a compound data types
- To understand various basic file operations
- To understand various stack and queue operations
- To understand various linked list operations
- To understand basic searching and sorting techniques

COURSE OUTCOMES:

At the end of this course, the student would be able to

- Develop applications on user defined data types
- Apply dynamic memory allocation through pointers
- Use different data structures for create/update basic data files
- Implement linear data structures through stacks and queues
- Implement various searching and sorting techniques, Linked lists.

MAPPING WITH Cos & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | - | - | 3 | 2 | - | 3 | - | - | 2 | - | - | - |
| CO2 | - | - | - | - | 3 | - | 2 | - | - | - | 1 | - |
| CO3 | - | 2 | - | - | 3 | 2 | - | - | - | - | - | 2 |
| CO4 | 3 | - | 3 | - | - | - | - | - | - | - | - | - |
| CO5 | 3 | - | - | 2 | - | 3 | - | - | - | 2 | - | - |

RECOMMENDED SYSTEMS /SOFTWARE REQUIREMENTS:

- Intel based desktop PC with ANSI C Compiler and Supporting Editors

Exercise 1

- a) Write a C Program to copy the contents of one structure variable to another structure variable.
- b) Write a C program to implement nested structure to store and display the student information. The structure student contains the field's S.no, name, and date. Date is the nested structure and it contains the fields day, month and year.

Exercise 2

- a) Write a C program to add two distances which is in feet and inches
- b) Write a C program to illustrate passing the whole structure as argument to a function.

Exercise 3

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

- a) Reading a complex number
- b) Writing a complex number
- c) Addition of two complex numbers
- d) Multiplication of two complex numbers (Note: represent complex number using a structure.)

Exercise 4

- a) Write a C program to implement Union Concept.
- b) Write a C program which copies last 'n' characters from one file to another.

Exercise 5

- a) Write a C program to reverse the first 'n' characters in a file.
- b) Write a C program to merge two files into a third file.

Exercise 6

Write a C program to implement the following operations on Stack using array representation

- a) Push
- b) Pop
- c) Display

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Exercise 7

Write a C program to implement the following operations on Queue using array representation

- a) Insert
- b) Delete
- c) Display

Exercise 8

Write a C program to implement the following operations on Singly Linked list using linked representation

- a) Insert
- b) Delete
- c) Display
- d) Search

Exercise 9

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order.

- a) Bubble sort
- b) Selection sort
- c) Insertion sort

Exercise 10

Write C program to implement the following searching methods to search an element in a given list of integers

- a) Linear Search
- b) Binary Search

REFERENCE BOOKS:

- 1) Programming in C, Pradeep Dey, Manas Ghosh, Oxford Higher Education
- 2) Computer programming and Data Structures, E.Balaguruswamy, Tata Mc Graw Hill. 2009 revised edition.
- 3) Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publications.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I B.Tech, II-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0592191) ENGINEERING WORKSHOP & IT WORKSHOP**For Branches: C.E., E.E.E., M.E., E.C.E., C.S.E****ENGINEERING WORKSHOP****COURSE OBJECTIVES:**

- To familiarize with the basic manufacturing processes and to study the various tools and equipment used, hands-on training is given in different sections. Essentially student should know the labour involved, machinery or equipment necessary, time required to fabricate and also should be able to estimate the cost of the product or job work.

COURSE OUTCOMES:

At the end of the Engineering Work Shop:

- A student should know the basic knowledge of various tools and their use in different sections of manufacturing such as fitting, carpentry, tin smithy, welding etc. and basic engineering practices such as plumbing, electrical wiring, electronic circuits, machine shop practice.
- Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.
- Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.
- Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.

MAPPING WITH COs & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| CO1 | - | 1 | 2 | 2 | 1 | - | - | - | 2 | - | 2 | 1 | 1 | - | - | 1 |
| CO2 | - | - | - | - | 2 | 1 | - | - | 2 | 2 | 2 | - | 2 | - | - | 1 |
| CO3 | - | - | - | - | 2 | 1 | - | - | 2 | 2 | 2 | - | 2 | - | - | 1 |
| CO4 | - | - | - | - | 2 | 1 | - | - | 2 | 2 | 2 | - | 2 | - | - | 1 |

Note: At least two exercises to be done from each trade.**1. TRADES FOR EXERCISES:****A] Carpentry**

- T-Lap Joint
- Cross Lap Joint
- Dovetail Joint
- Mortise and Tennon Joint

B] Fitting

- Vee Fit
- Square Fit
- Half Round Fit
- Dovetail Fit

C] House Wiring

- Parallel / Series Connection of two/three bulbs
- Stair Case wiring
- Tube Light Wiring
- Measurement of Earth Resistance/Go down Wiring

D] Tin Smithy

- Rectangular Tray

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

2. Square Box without lid
3. Open Scoop
4. Funnel

E] Welding

1. Single V butt joint
2. Lap joint
3. Double V butt joint
4. T fillet joint.

F] Soldering

1. 1.Soldering & Desoldering Practice
2. Series Circuit
3. Parallel Circuit

2. TRADES FOR DEMONSTRATION:

- a) Plumbing
- b) Machine Shop
- c) Bosch Power Tools

REFERENCE BOOKS:

1. Engineering Work shop practice for JNTU, V. Ramesh Babu, VRB Publishers Pvt. Ltd., 2009.
2. Work shop Manual / P.Kannaiah/ K.L.Narayana/ SciTech Publishers.
3. Engineering Practices Lab Manual, Jeyapoovan, Saravana Pandian, 4/e Vikas.
4. Dictionary of Mechanical Engineering, GHF Nayler, Jaico Publishing House

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IT WORKSHOP

COURSE OBJECTIVES:

- The modules include training on PC Hardware, and Productivity tools including text processor, spread sheet, presentation tools. It enables the students to understand and fix the common hardware, software issues & makes the students to install either Windows or UNIX based Operating system in the machines.
- Enable students to understand how computers work, different types of computers, functions of applications, input and data storage devices, different operating systems,
- It makes the students to understand and use the common office suite tools like word, excel etc. effectively in their daily usage.

COURSE OUTCOMES:

By the end of module students will be expected to demonstrate

- PC Hardware- introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer. The students should work on working PC to disassemble and assemble to working condition.
- To do installation of system software like MS Windows and Linux and the required device drivers.
- Productivity tools- module would enable the students in crafting professional word documents; excel spread sheets and power point presentations using the Microsoft suite of office tools.

MAPPING WITH COs & POs:

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - |
| CO2 | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - |
| CO3 | 2 | 2 | - | - | - | - | - | - | - | 3 | - | - |
| CO4 | 2 | 2 | - | 2 | 3 | - | - | - | - | - | - | - |

PC HARDWARE

Exercise 1 - Identify the peripherals of a computer, components in a CPU and its functions.

Exercise 2 - Every student should disassemble and assemble the PC back to working condition.

Exercise 3 - Every student should individually install MS windows on the personal computer and also install Linux as dual boot with both Windows and

OFFICE TOOLS

Exercise 4 - Word Orientation: The mentor needs to give an overview of LaTeX and Microsoft (MS) office equivalent tool word: Importance of LaTeX and MS office tool Word as word Processors, Details of the four tasks and features that would be covered in each. Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 1-Task III: Using Word Processor to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in Word.

SPREAD SHEET

Exercise 5 – Spread Sheet Orientation: The mentor needs to tell the importance of MS office 2007, 2010/ equivalent tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1-Task III: Features to be covered: - Gridlines, Format Cells, Summation, auto fill, Formatting Text, Formulas, Functions

PRESENTATION

Exercise 6 - Students will be working on basic presentation utilities and tools which help them create basic power point presentation. Topic covered during this Exercise includes :- PPT Orientation, Slide Layouts,

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint. Students will be given model power point presentation which needs to be replicated (exactly how it's asked).

REFERENCES:

- 1) Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
- 2) LaTeX Companion – Leslie Lamport, PHI/Pearson.
- 3) Introduction to Computers, Peter Norton, 6/e Mc Graw Hill
- 4) Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education
- 5) Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dreamtech
- 6) IT Essentials PC Hardware and Software Companion Guide, Third Edition by David Anfinson and Ken Quamme. – CISCO Press, Pearson Education.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

T C
2+1 3**(A0014193) PROBABILITY AND STATISTICS****COURSE OBJECTIVES:****COURSE OUTCOMES:**

After completion of the course the student will be able to:

- ❖ Understand the basic probability concepts and random variables that have numerous applications in computer science.
- ❖ Apply the concept of distribution functions in web data and traffic network modelling in computer science engineering.
- ❖ Analyse statistics and its applications in simulation, data mining and reliability theory.
- ❖ Determine the process constructing linear and non-linear curves through the method of least square and understand its usage in binary mixtures.
- ❖ Identify the concept of statistical quality control in computer science and mechanical engineering.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO2 | 3 | 1 | - | 1 | - | - | - | - | - | - | - | - |
| CO3 | 1 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 2 | 3 | - | 2 | - | - | - | - | - | - | - | - |
| CO5 | 1 | 2 | - | - | - | - | - | - | - | - | - | - |

UNIT-1

Basic concept of probability – Random variables – Expectation – Discrete and continuous distributions.

UNIT-2

Distribution functions: Binomial Distribution – Poison Distribution and Normal Distribution – Related properties.

UNIT-3

Test of Hypothesis: population and sample – Confidence interval of mean from normal distribution – Statistical Hypothesis – Null and Alternative hypothesis- level of significance. Test of significance – Test based on normal distribution – Z test for means and proportions.

UNIT-4

Small samples – t – test for one sample and two sample problem, F – test and Chi – square test (Testing of goodness of fit and independence).

UNIT-5**Curve fitting:** Fitting a straight line – Second degree curve – Exponential curve-Power curve by method of least squares.**UNIT-6****Correlation and Regression:**

Correlation: Rank correlation – Correlation Coefficient – Karl Pearson's Coefficient Correlation – Spearman Rank Correlation.

Regression: Regression lines – Standard Error of estimation – Classification of Regression techniques – Linear Regression (LR) Model.**TEXTBOOKS/REFERENCES:**

- 1) Probability and Statistics, T.K.V. Iyengar, B. Krishna Gandhi and Others S. Chand & Company, 2012.
- 2) Higher Engineering Mathematics by B.S.Grewal, Khanna Publishers, 2010.
- 3) Erwin kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2017.
- 4) Statistical methods by S.P.Gupta, S.Chand Publications, 2011.
- 5) Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2017.
- 6) Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

- 7) <https://www.barnesandnoble.com/w/advanced-engineering-mathematics-kreyszig/1100520690>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

T C
2+1 3**(A0504193) MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE****COURSE OBJECTIVES:**

- ❖ To teach students notations used in the discrete mathematics associated with computer science and engineering.
- ❖ To teach the rudiments of elementary mathematical reasoning (elementary proofs; proofs by induction).
- ❖ To prepare students for the theoretical parts of all further courses in CSE.
- ❖ To study logic and Boolean algebra from a mathematical perspective, but relating it to computer engineering applications.
- ❖ To introduce basic set-theoretical notions: relations, functions, graphs, equivalence relations and orderings.
- ❖ To relate these notions to applications in CSE.

COURSE OUTCOMES:

- ❖ Understand the truth tables, the concept of logical equivalence, normal forms. And express English assertions in symbolic form and in predicate calculus using quantifiers.
- ❖ Gain knowledge on how to check validity of premises using different methods such as rule-cp, indirect method, and direct method.
- ❖ Know the basics of relations, functions and lattices.
- ❖ Perceive the Fundamentals of algebraic structures.
- ❖ Know the fundamentals of graph theory and traversing techniques of graphs.
- ❖ Know the applications of graphs such as Euler circuits, Hamiltonian graphs, Isomorphism, and Chromatic number

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 3 | 1 | - | - | 2 | - | - | - | - | - | - | - | - | - | - |
| CO2 | 2 | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| CO3 | 2 | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 2 | 1 | - | - | 2 | - | - | - | - | - | - | - | - | - | - |
| CO5 | 1 | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| CO6 | 2 | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - |

UNIT-1

Mathematical Logic: Statements and notations, Connectives, Well-formed formulas, Truth Tables, tautology, converse, inverse and contrapositive, equivalence, implication, Normal forms.

UNIT-2

Predicates: Rules of inference, Consistency, Predicate calculus: Free and bounded variable, Quantifiers: Universal Quantifiers, Existential Quantifiers.

UNIT-3

Relations: Relations, Properties of binary Relations, Types of relations: equivalence, compatibility and partial ordering relations, Hasse diagram. Lattices and its properties.

Functions: introduction to Functions, types of functions

UNIT-4

Algebraic structures: Algebraic systems with examples and general properties, semi groups and monoids, groups & its types, Introduction to homomorphism and Isomorphism (Proof of theorems are not required)

UNIT-5

Graph Theory: Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs.

UNIT-6

Graph Theory and Applications: Directed Graphs, Graphs, Basic Concepts of Isomorphism and Sub graphs, walks and their classification, Multi graphs and Euler circuits, Hamiltonian graphs, Euler's formula & its applications, Chromatic Numbers.

TEXT BOOKS:

- Discrete Mathematical Structures with applications to computer science Trembly J.P & Manohar.P, TMH, 2017. (unit-1 to 4)
- Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall, 2008. (unit-5 to 6)

REFERENCES:

- Mathematical foundations of computer science Dr D.S.Chandrasekharaiah Prism books Pvt Ltd, 2012.
- Discrete Mathematics, R.K. Bisht, H.S. Dhami, Oxford, 7th Edition, 2012.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

T C
2+1 3**(A0505193) PROGRAMMING IN C++ AND DATA STRUCTURES****COURSE OBJECTIVES:**

- ❖ This course explores fundamental data structures and the practical problems of implementing those structures in real programming languages and environments

COURSE OUTCOMES:

After the successful completion of this course, the students should:

- ❖ Differentiate between structure oriented programming and object oriented programming.
- ❖ Understand about Polymorphism and Inheritance
- ❖ Understand about the Exception Handling mechanism.
- ❖ Understand the linear data structures and Non-linear data structures.
- ❖ Understand the non-linear data structures like Binary search trees.
- ❖ Learn different Hashing techniques.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | - | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 | 1 |
| CO2 | 2 | 1 | - | - | - | 1 | - | - | - | - | - | - | 1 | 2 | 1 |
| CO3 | - | - | 1 | - | - | 1 | - | - | - | - | - | - | 1 | 2 | 1 |
| CO4 | - | - | - | 1 | - | 1 | - | - | - | - | - | - | 1 | 2 | 2 |
| CO5 | 2 | - | - | 1 | - | - | - | - | - | - | - | - | 1 | 1 | 2 |
| CO6 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | 1 | 1 | 2 |

UNIT-1

C++ Programming Elements, Classes and Objects, Constructors and Destructors, Static Class Members, Dynamic Memory Allocation (new and delete), Passing Parameter Methods, Inline Functions, Friend Functions.

UNIT-2

Inheritance in C++- Inheritance Types, Base class Access Control, Examples of Inheritance, Virtual Base Classes and Abstract Classes, Constructors in Derived Classes, Polymorphism - Types of Polymorphism, Function Overloading and Operator Overloading - Unary and Binary Operator Overloading.

UNIT-3

Virtual Functions and Pure Virtual Functions, Templates – Class Templates, Function Templates, Templates with Multiple Parameters, Member Function Templates, Overloading of Template Functions, Exception Handling – Exception Handling Mechanism, Throwing Mechanism, Catching Mechanism, Re-throwing an Exceptions and Specifying Exceptions.

UNIT-4

Overview of Data Structures, Implementation of Data Structures, Stack ADT, Queue ADT, List ADT, Circular Queue ADT, Priority Queue ADT, Double Linked List ADT and Implementation of ADT's using template classes in C++.

UNIT-5

Binary Search Trees, Definition, ADT, Operations- Searching, Insertion and Deletion.

UNIT-6

Dictionaries, operations insertion, deletion and searching hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

TEXT BOOKS:

1. Object Oriented Programming Through C++, E. Balaguruswamy, 6 Edition, 2013.
2. Data Structures and algorithms: Concepts, Techniques and Applications G A V Pai, 2017.

REFERENCES:

1. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) pvt.Ltd, 3rd edition 2013, Universities Press Orient Longman Pvt. Ltd.
2. Object Oriented Programming with C++, Sourav Sahay, Oxford 3 Edition, 2012.
3. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and Mount, Wiley student edition, John Wiley and Sons, 2004.
4. Data structures and algorithms in C++, 3rd Edition, 2006, Adam Drozdek, Thomson.
5. Data structures using C and C++, 2nd Edition, 2006, Langsam, Augenstein and Tanenbaum, PHI.
6. <http://www.cplusplus.com/reference/>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

T C
2+1 3**(A0506193) DIGITAL LOGIC DESIGN****COURSE OBJECTIVES:**

- ❖ Understand the different number system, its conversions and binary arithmetic.
- ❖ Know the fundamentals of Boolean algebra and theorems, Karnaugh maps including the minimization of logic functions to SOP or POS form.
- ❖ Analysis of logic circuits and optimization techniques to minimize gate count, signals, IC count, or time delay
- ❖ To strengthen the principles of logic design and use of simple memory devices, flip-flops, and sequential circuits.
- ❖ To fortify the documentation standards for logic designs, standard sequential devices, including counters and registers.
- ❖ To understand design of logic functions using PLDs (ROM, RAM, PAL, PLA).

COURSE OUTCOMES:

- ❖ Ability to differentiate between analog and digital representations.
- ❖ Ability to convert a number from one number system to its equivalent in of the other number system.
- ❖ Cite the advantages of the octal and hexa decimal number systems and to understand the difference between BCD and straightbinary.
- ❖ Ability to perform the three basic logic operations and construct the truth tables for the different types of gates. And Implement logic circuits using basic AND, OR and NOT gates.
- ❖ Ability to Use De-Morgan's theorem to simplify logic expressions and describe the concept of active LOW and active HIGH logic signals and Use Boolean algebra and K- map as tool to simplify and design logic circuits and Design simple logic circuits without the help of truth tables.
- ❖ Ability to Construct and analyze the operation of flip-flop and troubleshoot various types of flip-flop circuits.

MAPPING OF COs & POs:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | - | 1 | - | 2 | - | - | - | - | - | - | 2 | - | 2 | 1 |
| CO2 | - | 1 | - | - | - | - | - | - | - | - | - | - | 2 | 1 | 1 |
| CO3 | 1 | 1 | - | - | - | 2 | - | - | - | - | - | - | 3 | 2 | 1 |
| CO4 | - | 2 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | 1 | 2 |
| CO5 | - | 1 | - | - | - | - | - | - | - | - | - | - | 2 | 1 | - |
| CO6 | 1 | - | - | 3 | 2 | 2 | - | - | - | - | - | 2 | 1 | 1 | - |

UNIT-1

BINARY SYSTEMS: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary Storage and Registers, Binary logic.

BOOLEAN ALGEBRA : Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions canonical and standard forms, other logic operations.

UNIT-2

LOGIC GATES AND GATE – LEVEL MINIMIZATION: Digital logic gates, and their integrated circuit numbers. The map method, Four-variable map, Five-Variable map, product of sums simplification Don't-care conditions, NAND and NOR implementation other Two-level implementations, Exclusive – OR function.

UNIT-3

COMBINATIONAL LOGIC: Combinational Circuits, Analysis procedure Design procedure, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, Introduction to HDL, VHDL code for basic and universal logic gates, Half adder, full adder circuits.

UNIT-4

SYNCHRONOUS SEQUENTIAL LOGIC: Sequential circuits, latches, Flip-Flops Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT-5

ASYNCHRONOUS SEQUENTIAL LOGIC: Introduction, Analysis Procedure, Circuits with Latches, Design Procedure .Registers, shift Registers, Ripple counters synchronous counters other counters. Sequential Programmable Devices, VHDL code for Flip-flops, decade counter.

UNIT-6

PROGRAMMABLE LOGIC DEVICES: Introduction, Random-Access Memory, Memory Decoding, Error Detection and correction Read-only memory, Programmable logic Array, programmable Array logic, Sequential Programmable Devices.

TEXT BOOKS:

1. Digital Design –5 Edition, 2013, M.Morris Mano, Pearson Education/PHI.
2. Fundamentals of Logic Design, Roth, 7th Edition, 2020 Thomson.

REFERENCES:

3. Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.
4. Switching and Logic Design, C.V.S. Rao, Pearson Education 2005.
5. Digital Principles and Design – Donald D.Givone, Tata McGraw Hill, 5 Edition, 2005.
6. Fundamentals of Digital Logic & Micro Computer Design, 5th Edition, 2005 M. Rafiquzzaman John Wiley.
7. <https://www.computer.org/csdl/journal/lt/2015/02/06897963/13rRUxE04q2>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

T C
2+1 3**(A0503193) PYTHON PROGRAMMING**

(Common to CE, Mech, EEE, ECE, CSE)

COURSE OBJECTIVES:

This course will enable students to

- ❖ Learn Syntax and Semantics of various Operators used in Python.
- ❖ Understand about Various Input, Output and Control flow statements of Python.
- ❖ Handle Strings and Files in Python.
- ❖ Understand Lists, Tuples in Python.
- ❖ Understand Sets, Dictionaries in Python.
- ❖ Understand Functions, Modules and Regular Expressions in Python.

COURSE OUTCOMES:

The students should be able to

- ❖ Examine Python syntax and semantics and be fluent in the use of various Operators of Python.
- ❖ Make use of flow control statements and Input / Output functions of Python.
- ❖ Demonstrate proficiency in handling Strings and File Systems.
- ❖ Create, run and manipulate Python Programs using core data structures like Lists and Tuples.
- ❖ Apply the core data structures like Sets and Dictionaries in Python Programming.
- ❖ Demonstrate the use of functions, modules and Regular Expressions in Python.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 3 | - | - | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO2 | 2 | 3 | - | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO3 | 1 | - | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO4 | 2 | - | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO5 | 2 | - | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO6 | 2 | - | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |

UNIT-1

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation. Overview on data types: Numbers, Strings, Lists, Set, Tuple and Dictionaries.

Operators in Python: Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Shift Operators, Ternary operator, Membership Operators, Identity Operators, Expressions and order of evaluations. Illustrative examples on all the above operators.

UNIT-2

Input and Output statements: input() function, reading multiple values from the keyboard in a single line, print() function, 'sep' and 'end' attributes, Printing formatted string, replacement operator ({}). Illustrative examples on all the above topics.

Control flow statements: Conditional statements – if, if-else and if-elif-else statements. Iterative statements – for, while. Transfer statements – break, continue and pass. Illustrative examples on all the above topics.

UNIT-3

Strings: Introduction to strings, Defining and Accessing strings, **Operations on string** - String slicing, Mathematical Operators for String, Membership operators on string, Removing spaces from the string, Finding Substrings, Counting substring in the given String, Replacing a string with another string, Splitting of Strings, Joining of Strings, Changing case of a String, Checking starting and ending part of the string, checking type of characters present in a string. Illustrative examples on all the above topics.

Files: Opening files, Text files and lines, Reading files, Searching through a file, Using try, except and open, Writing files, debugging.

UNIT-4

Lists: Creation of list objects, Accessing and traversing the elements of list. **Important functions of list** – len(), count(), index(), append(), insert(), extend(), remove(), pop(), reverse() and sort(). **Basic Operations on**

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

list: Aliasing and Cloning of List objects, Mathematical Operators for list objects, Comparing list objects, Membership operators on list, Nested Lists, List Comprehensions. Illustrative examples on all the above topics.

Tuples: Creation of Tuple objects, Accessing elements of tuple, Mathematical operators for tuple, Important functions of Tuple – len(), count(), index(), sorted(), min(), max(), cmp(). Tuple Packing and Unpacking. Illustrative examples on all the above topics.

UNIT-5

Sets: Creation of set objects, Accessing the elements of set. Important functions of set – add(), update(), copy(), pop(), remove(), discard(), clear(). Basic Operations on set - Mathematical Operators for set objects, Membership operators on list, Set Comprehensions. Illustrative examples on all the above topics.

Dictionaries: Creation of Dictionary objects, Accessing elements of dictionary, Basic operations on Dictionary - Updating the Dictionary, Deleting the elements from Dictionary. Important functions of Dictionary – dict(), len(), clear(), get(), pop(), popitem(), keys(), values(), items(), copy(), setdefault(). Illustrative examples on all the above topics.

UNIT-6

Functions - Defining Functions, Calling Functions, Types of Arguments - Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful functions (Function Returning Values), Scope of the Variables in a Function - Global and Local Variables. Recursive functions, Illustrative examples on all the above topics.

Modules: Creating modules, **import** statement, from Import statement.

Regular Expressions: Character matching in regular expressions, Extracting data using regular expressions, Combining searching and extracting, Escape character.

TEXT BOOKS:

- 1) Python for Everybody: Exploring Data Using Python 3, 2017 Dr. Charles R. Severance

REFERENCE BOOKS:

- 1) Think Python, 2 Edition, 2017 Allen Downey, Green Tea Press
- 2) Core Python Programming, 2016 W.Chun, Pearson.
- 3) Introduction to Python, 2015 Kenneth A. Lambert, Cengages
- 4) https://www.w3schools.com/python/python_reference.asp
- 5) <https://www.python.org/doc/>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

| | |
|---|---|
| T | C |
| 2 | 2 |

(A0013193) LIFE SCIENCE FOR ENGINEERS

(Common to CE, Mech, EEE, ECE, CSE)

COURSE OBJECTIVES:

- ❖ To familiarize about biological components and their applications
- ❖ To train the students on the principles and Mechanisms in Biological Chemistry
- ❖ To train the concepts of molecular structures of Biomolecules
- ❖ To introduce the basic principles of Cell Structures and Functions
- ❖ To apply the concepts in the development of biosensors for mankind.

COURSE OUTCOMES:

At the end of the course, the students will be able to

- ❖ Explain concept and function of cell and cell organelles
- ❖ Develop knowledge about various physiological processes in biological systems
- ❖ Explain about biomolecules, their structure and function and their role in living organisms. How biomolecules are useful in industry.
- ❖ Understanding about human physiology
- ❖ Identify and describe the functions of the skeletal system

MAPPING OF COs & POs:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 3 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| CO2 | 2 | - | 2 | - | - | - | 2 | - | - | - | - | 1 | - | - | - |
| CO3 | 2 | - | 2 | - | - | - | - | 1 | - | - | - | 1 | - | - | - |
| CO4 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| CO5 | 2 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Course | 1 | - | 1 | - | 1 | - | - | - | 1 | - | - | - | - | - | - |

UNIT-1:

Cell Structure and Function - Cell theory, Ultra structure of eukaryotic cell (Cell wall, Cell membrane, Golgi complex, Endoplasmic Reticulum, Peroxisome, Lysosomes), Semi- autonomous cell Organelles (Mitochondria & Chloroplast) (5 periods)

Learning outcomes:

1. Understand the structure and importance of the cell.
2. Explain the importance of eukaryotic cell.
3. Explain the functions of cell organelles.

UNIT-2:

Human Physiology – Nutrition (Functions of micro & macro nutrients and their role), Respiration (Definition, Types, Respiration in humans), Digestion (Process and digestive organs in humans), Excretion (Definition, Urinary system in humans). (6 Periods)

Learning outcomes:

1. Understand the metabolism in living organism.
2. Explain about the importance of human physiological process.
3. Identify the nutritional values in human body.

UNIT-3:

Biomolecules - Proteins (Denaturation of proteins), Nucleic acids (Mechanism of Replication & Transcription), Vitamins (Classification & functions of vitamins in bio-systems). (5 Periods)

Learning outcomes:

1. Describe the denaturation of proteins.
2. Illustrate replication of nucleic acids.
3. Identify the importance of Vitamins in human body.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT-4:

Biomaterials - Definition of biomaterials, Requirements of biomaterials, Classification of biomaterials, Physical and Mechanical properties of bio-materials, Comparison of properties of some common biomaterials.
(5 Periods)

Learning outcomes

1. Understand the role of biomaterials for humans.
2. Understand the properties of biomaterials for organ substitution.

UNIT-5:

Skeletal System-Types of bones, Structure and composition of bone, artificial bone replacements with soft engineering materials.
(6 Periods)

Learning outcomes

- 1) Understand bone structure and composition
- 2) Able to develop knowledge about bone replacement.

UNIT-6:

Applications of Biology- Stem Cells (Sources, Types and its Uses) Cancer Therapy, Basics of bio-sensors and bio-chips for bio-engineering.
(5 Periods)

Learning outcomes

1. Understand the role of stem cells in biology.
2. Develop new type of biosensors, biochips etc.

TEXT BOOKS

1. Nelson, D. L. and Cox, M.M. (2008).Lehninger, Principles of Biochemistry, 5th Edition, W.H.Freeman and Company, N.Y., USA.
2. Ross & Wilson, Anatomy and Physiology, Churchill Livigstone publications (2014).

REFERENCE BOOKS

1. Voet, D. and Voet, J.G. (2004). Biochemistry, 3rd Edition, John Wiley & Sons, Inc. USA.
2. Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition, John Wiley & Sons. Inc.
3. De Robertis, E. D. P. and De Robertis R. E. 2009. Cell and Molecular Biology, 8th edition. Lippincott Williams and Wilkins, Philadelphia.
4. Cooper G. M. Hausman R. E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press and Sunderland, Washington D. C.; Sinauer Academic Press.
5. L. Hench & E.C. Ethridge, Biomaterials – An Interfacial approach, Academic Press, 1982.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

T C
1+2 0.5**(A0011193) APTITUDE ARITHMETIC REASONING AND COMPREHENSION**

(Common to CE, Mech, EEE, ECE, CSE)

COURSE OBJECTIVES:**COURSE OUTCOMES:**

After completion of the course the student will be able to:

- ❖ Understand number system which helps to become well trained for recruitment drives.
- ❖ Analyze permutations and combinations concept.
- ❖ Obtain the knowledge of coding and decoding concept.
- ❖ Understand the topics related to clock and probability.
- ❖ Identify the topics related to Venn diagrams, reasoning and Non-verbal reasoning.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO2 | 3 | 1 | - | 2 | - | - | - | - | - | - | - | - |
| CO3 | 1 | 2 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 3 | 2 | - | 3 | - | - | - | - | - | - | - | - |
| CO5 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |

UNIT-1

Numbers, Number Systems Simple Equations, Ratio, Proportion, Variation Quadratic Equations, Progressions Percentages.

UNIT-2

Profit, Loss, Partnerships Averages, Mixtures & Allegations, Simple Interest, Compound Interest, Time and Work-Pipes, indices, surds, inequalities, Cisterns Time and Distance Geometry and Menstruation.

UNIT-3

Permutations & Combinations and Probability Data Interpretation & Data Sufficiency.

UNIT-4

Number & Letter Series, Analogies, Coding Decoding, Odd Man Out Blood Relations.

UNIT-5

Direction Sense, Symbols and Notations Deductions & Connectives Clocks, Calendars Analytical

UNIT-6

Reasoning (Verbal and Non-Verbal), Venn Diagrams, Analytical Puzzles and Octal number system.

REFERENCES:

1. R.S.Agarwal. Quantitative Techniques. S.Chand Series.
2. Shankuntala Devi. Techniques of Reasoning. S.Chand Series.
3. <https://www.fresherslive.com/online-test/verbal-ability-test/questions-and-answers>
4. <https://www.fresherslive.com/online-questions/verbal-ability-test/arithmetic-Reasoning>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0595193) PROGRAMMING IN C++ AND DATA STRUCTURES LAB**COURSE OBJECTIVES:**

- ❖ To make the student learn an object oriented way of solving problems.
- ❖ Learn how to implement some useful data structures.
- ❖ Understand the effect of data structures on an algorithm's complexity.
- ❖ To develop skills to design and analyze simple linear data structures
- ❖ To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- ❖ To Gain knowledge in practical applications of data structures

COURSE OUTCOMES:

- ❖ Basic ability to analyse algorithms and to determine algorithm correctness and time efficiency class.
- ❖ Design, write, execute, and debug programs in C++.
- ❖ At the end of this lab session, the student will
- ❖ Be able to design and analyze the time and space efficiency of the data structure
- ❖ Be capable to identify the appropriate data structure for given problem
- ❖ Have practical knowledge on the application of data structures

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | - | - | - | - | - | - | 1 | - | - | - | 1 | - | - | - |
| CO2 | 2 | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| CO3 | 2 | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - |
| CO4 | 2 | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| CO5 | 2 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| CO6 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |

WEEK 1:

Write C++ program that convert the given expression from Infix to prefix using templates.

WEEK 2:

Write a C++ program to evaluate the given Postfix expression.

WEEK 3:

Write C++ program that implement all the operations on Circular Queue with array representation with templates.

WEEK 4:

Write C++ program that implement all the operations on DE Queue with array representation with templates.

WEEK 5:

Write C++ programs to implement the following using an array representation with templates.

- a) Min Heap b) Max Heap

WEEK 6:

Write C++ programs to implement the following using an array representation with templates.

- a) Ascending Priority Queue b) Descending Priority Queue

WEEK 7:

Write C++ program to implement Doubly Linked List for all operations along with templates.

WEEK 8:

Write a C++ program to implement the following operations on Binary Tree

- a) Insert b) Delete c) Search d) Display

WEEK 9:

Write a C++ program to implement the following operations on Binary Search Tree

- a) Insert b) Delete c) Search d) Display

WEEK 10:

Write a C++ program to implement the following collision resolution techniques using templates.

- a) Linear Probing b) Quadratic Probing c) Double Hashing

TEXT BOOKS:

- Object Oriented Programming Through C++, E. Balaguruswamy 6 Edition, 2013.
- Data Structures using C++, Oxford, Varsha H. Patil.
- Classic Data Structures, Debasis Samanta, PHI Learning Pvt Ltd, 2nd edition.
- Data Structures and Algorithms in C++, Third Edition, 2006 Adam Drozdek, Thomson.
- Data Structures using C++, D.S. Malik, Thomson

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0594193) PYTHON PROGRAMMING LAB

(Common to CE, Mech, EEE, ECE, CSE)

COURSE OBJECTIVES:

- ❖ To be able to introduce core programming basics and various Operators of Python programming language.
- ❖ To demonstrate about Python data structures like Lists, Tuples, Sets and dictionaries
- ❖ To understand about Functions, Modules and Regular Expressions in Python Programming.

COURSE OUTCOMES:

- ❖ Student should be able to understand the basic concepts of scripting and the contributions of scripting language.
- ❖ Ability to explore python data structures like Lists, Tuples, Sets and dictionaries.
- ❖ Ability to create practical and contemporary applications using Functions, Modules and Regular Expressions.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 3 | 1 | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO2 | 3 | 3 | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |
| CO3 | 3 | 1 | 2 | - | - | - | - | - | 1 | - | - | - | 1 | 1 | 1 |

1. Program to demonstrate basic data type in python
2. Program to demonstrate operators in python
3. A cashier has currency notes of denominations 10, 50, and 100.If the amount to be withdrawn is input through the keyboard using input() function in hundreds, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer
4. Program to demonstrate list and tuple in python
5. Write a program in Python, A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message
6. Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work for fractional part of an hour.
7. Two numbers are entered through the keyboard; write a program to find the value of one number raised to the power of another.
8. Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from main() and print the result in main
9. Write a program to read a file and display its contents.
10. Write a program to demonstrate Regular Expressions in python.

TEXT BOOKS:

1. Learning Python, Mark Lutz, Orielly, 3 Edition 2007.
2. Python Programming: A Modern Approach, Vamsi Kurama, Pearson, 2017.

REFERENCE BOOKS:

- 1) Think Python, 2 Edition, 2017 Allen Downey, Green Tea Press
- 2) Core Python Programming, 2016 W.Chun, Pearson.
- 3) Introduction to Python, 2015 Kenneth A. Lambert, Cengages
- 4) https://www.w3schools.com/python/python_reference.asp
- 5) <https://www.python.org/doc/>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. I-Sem (CSE)

P C
3 1.5

(A0596193) DIGITAL LOGIC DESIGN LAB**COURSE OBJECTIVES:**

- ❖ Know the fundamentals of Boolean algebra and theorems, Karnaugh maps including the minimization of logic functions to SOP or POS form.
- ❖ To strengthen the principles of logic design and use of simple memory devices, flip-flops, and sequential circuits.
- ❖ To fortify the documentation standards for logic designs, standard sequential devices, including counters and registers, combinational devices, includes decoder, multiplexer.

COURSE OUTCOMES:

- ❖ Ability to perform three basic logic operations and construct the truth tables for the different types of gates and implement logic circuits using basic AND, OR and NOT gates.
- ❖ Ability to use De-Morgan's theorem to simplify logic expressions and describe the concept of active LOW and active HIGH logic signals and use boolean algebra and K-map as tool to simplify and design logic circuits and Design simple logic circuits without the help of truth tables.
- ❖ Ability to Construct and analyze the operation of flip-flop and troubleshoot various types of flip-flop circuits, decoder, multiplexer.
- ❖ Analyze the operation of each IC in various logical systems.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | - | 2 | 1 | - | - | - | - | - | - | - | - | - | 2 | - | - |
| CO2 | 3 | 3 | 2 | 1 | 1 | - | - | - | 1 | 2 | - | - | 2 | - | - |
| CO3 | 1 | 3 | 3 | 2 | 1 | 1 | - | - | 2 | 1 | - | 2 | - | 3 | 2 |
| CO4 | - | 2 | 2 | 1 | 3 | - | - | - | 2 | 1 | 1 | 2 | - | - | 3 |

EXPERIMENTS

- 1) Basic Logic Gates AND, OR, NOT and their applications
- 2) Universal gates NAND and NOR
- 3) Study of combinational circuits 1 Half Adder and Full Adder
- 4) Study of combinational circuits 1 Half Subtractor and Full subtractor.
- 5) Study of Flip flops a) S-R F/F b) J-K F/F c) D-F/F d) T - F/F
- 6) Design of four bit ring counter using Flip Flop
- 7) 3 – bit synchronous counter using Flip Flop
- 8) 4-bit Johnson Ring counter using Flip Flop
- 9) MOD-5 Synchronous counter using F/F
- 10) 2-4 decoder
- 11) 4 to 1 Multiplexer
- 12) 3 – bit up/down counter using F/F

REFERENCES:

- 1) Digital Design –5 Edition, 2013, M.Morris Mano, Pearson Education/PHI.
- 2) Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

T C
2+1 3**(A0507194) JAVA PROGRAMMING****COURSE OBJECTIVES:**

After taking this course, the student should be able to:

- ❖ To understand the concepts and features of object oriented programming.
- ❖ The skills to apply OOP in Java programming in problem solving
- ❖ To understand the concept of polymorphism and inheritance.
- ❖ To understand the creation of user defined packages and interfaces.
- ❖ To learn java's exception handling mechanism, multithreading,
- ❖ To learn the network programming implementation using java.

COURSE OUTCOMES:

- ❖ Students can able to understand the OOP concepts and java syntaxes.
- ❖ Students will Able Identify classes, objects, members of a class and relationships among them needed for a specific problem and understanding the Inheritance and polymorphism.
- ❖ Students Can Able to build directories and manage applications with interfaces.
- ❖ Able to develop java programs that manages input/output streams.
- ❖ Students can able to Write Java programs to implement error handling techniques using exception handling and multitasking.
- ❖ Students can able to Create and understanding of client/ server interactions.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | 1 | 1 | - | 2 | - | - | - | - | - | - | 2 | - | - | - |
| CO2 | 2 | 1 | 3 | 2 | - | - | - | - | 1 | - | - | 2 | - | - | - |
| CO3 | 2 | 2 | 2 | 1 | - | - | - | - | 2 | - | - | 2 | - | - | - |
| CO4 | 2 | 1 | 2 | 2 | - | - | - | - | - | - | - | 2 | - | - | - |
| CO5 | 3 | 2 | 3 | 1 | - | - | - | - | - | - | - | 2 | - | - | - |
| CO6 | 1 | 1 | 3 | 2 | - | - | - | - | 2 | - | - | 2 | - | - | - |

UNIT-1

Introduction To Java – Introduction to OOP, OOP Concepts, History of Java, Java buzzwords, How Java differs from C and C++, Structure of Java Program, data types, variables, constants, type conversion and casting, enumerated types, scope and life time of variables, operators, expressions, control statements, command line arguments, arrays.

UNIT-2

Introductions to Class and Objects: overview of classes, creations of objects, instant variables and methods, use of static, constructors, access control, usage of this, , overloading methods and constructors, garbage collection.

Inheritance – overview, Super and Sub classes, Member access rules, types of Inheritance, super uses, method overriding, Dynamic method dispatch, abstract classes and methods, use of final, the Object class and its methods.

UNIT-3

Interfaces – Interfaces vs. Abstract classes, defining interfaces, implementing and extending interfaces, allowing method definitions in interfaces (Java8).

Packages- Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, access protection.

UNIT-4

Input/Output exploring of java.io: The Java I/O Classes and Interfaces, File class, The Byte Streams and Character Streams, The Console Class, Using Stream I/O, Serialization

Strings: Strings, string functions,

UNIT-5

Exception handling: Fundamentals, exception types, usage of try, catch, throw, throws and finally, built in exceptions, creating your own exceptions subclasses.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Multithreading – overview, Main thread, creating threads, thread life cycle, creating multiple threads, use of isAlive() & join(), thread priorities, thread synchronization, interthread communication

UNIT-6

Collections Framework: Collections Overview, Collection Interfaces: Collection, List, Set, Sorted-Set, Collection Classes: Array-List, Linked-List, Hash-set, Linked-Hash-Set, Tree-Set Class. Accessing a Collection via Iterator, Sorting User-Defined Classes in Collections, Random Access Interface, working with Maps, Comparators, Collection Algorithms: Arrays, The Legacy classes and Interfaces: Enumeration, Vector, Stack, Dictionary, Hashtable, Properties, using store() and load().

TEXT BOOKS:

1. Java; the complete reference, 11th edition, 2018 Herbert schildt, TMH.
2. Understanding OOP with Java, updated edition, T. Budd, pearson education.

REFERENCES:

1. An Introduction to programming and OO design using Java, 2015 , J.Nino and F.A. Hosch, John wiley & sons.
2. Programming in Java, Sachin Malhotra, Saurabh Choudhary, 6 Edition, 2018.
3. An Introduction to OOP, 3 edition, 2001, T. Budd, pearson education.
4. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.
5. An introduction to Java programming and object oriented application development, R.A. Johnson-Thomson.
6. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, seventh Edition, Pearson Education.
7. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.
8. <https://www.w3schools.com/JSREF/DEFAULT.ASP>
9. <https://dzone.com/articles/top-10-websites-advanced-level>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

T C
2+1 3**(A0508194) COMPUTER ORGANIZATION & ARCHITECTURE****COURSE OBJECTIVES:**

The Students will learn the following:

- ❖ To understand the structure, function, characteristics and performance issues of computer systems.
- ❖ To understand the design of the various functional units of digital computers.
- ❖ To understand the basic processing unit and how they are connected and how it generates control signals (using hardwired and micro programmed approaches).
- ❖ To understand the different types of memory and how they are related.
- ❖ To learn basics of Parallel Computing and Pipelining.

COURSE OUTCOMES:

Upon the successful completion of the course, the student will be able:

- ❖ Students will learn about computer performance, computer design, and trade-offs between cost and performance as well as between hardware and software.
- ❖ Students will formulate and solve problems, understand the performance requirements of systems.
- ❖ Students will learn to communicate effectively and learn to think creatively and critically, both independently and with others.
- ❖ Ability to design memory organization that uses banks for different word size operations.
- ❖ Students will learn about all the detailed design issues and circuits of each unit.
- ❖ Ability to conceptualize instruction level parallelism.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | | 1 | 3 | | | | | | 2 | | | | 2 | | 1 |
| CO2 | 2 | | 2 | 3 | 1 | | | | | | | | | 3 | |
| CO3 | 3 | 2 | 1 | 2 | | | | | | | | | 1 | | |
| CO4 | | 2 | | 1 | | | | 1 | | 2 | | | | | 2 |
| CO5 | | | 3 | 2 | | | | | | | | 1 | 2 | | |
| CO6 | | | | | 3 | | | | | | 2 | 1 | | 3 | |

UNIT-1**BASIC STRUCTURE OF COMPUTERS:** Computer Types, Functional unit, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers.**DATA REPRESENTATION:** Fixed Point Representation, Floating Point Representation. Error Detection codes.**UNIT-2****REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS:** Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations**BASIC COMPUTER ORGANIZATION AND DESIGN:** Instruction codes, Computer Registers, Computer instructions, Instruction cycle, Memory- reference instructions, Input – Output and Interrupt.**UNIT-3****CENTRAL PROCESSING UNIT:** Stack organization, Instruction formats, Addressing modes, Data transfer and manipulation, Program control, Reduced Instruction set computer**COMPUTER ARITHMETIC:** Fixed point operations - Addition and subtraction, multiplication, Division Algorithms**UNIT-4****THE MEMORY SYSTEM:** Basic concepts, semiconductor RAM memories, Read-only memories, Cache memories, performance considerations**UNIT-5****PIPELINE AND VECTOR PROCESSING:** Parallel processing, Arithmetic pipeline, Instruction Pipeline, RISC Pipeline, Vector processing, Array Processors.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT-6

MULTI PROCESSORS: Characteristics of Multi Processors, Inter Connection Structures, Inter Processor Arbitration, Inter Processor Communication & Synchronization, Cache Coherence

TEXT BOOKS:

- 1) Computer Systems Architecture – M. Moris Mano, 10 Edition 2016, Pearson/PH
- 2) Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition 2011, McGraw Hill.

REFERENCES:

- 1) Computer Organization and Architecture–William Stallings Sixth Edition, 2012 Pearson/PHI
- 2) Dr. M. Usha, T. S. Srikanth, “Computer System Architecture and Organization”, First Edition, Wiley-India.
- 3) “Computer Organization” by ISRD Group, Tata McGraw-Hill
- 4) https://en.wikipedia.org/wiki/Computer_architecture
- 5) <https://onlinelibrary.wiley.com/doi/full/10.1002/9780470050118.ecse071>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

T C
2+1 3**(A0509194) FORMAL LANGUAGES AND AUTOMATA THEORY****COURSE OBJECTIVES:**

The purpose of this course is to acquaint the student with an overview of the theoretical foundations of computer science from the perspective of formal languages.

- ❖ Classify machines by their power to recognize languages.
- ❖ Employ finite state machines to solve problems in computing.
- ❖ Explain deterministic and non-deterministic machines.
- ❖ Comprehend the hierarchy of problems arising in the computer sciences.

COURSE OUTCOMES:

- ❖ To introduce the computer science students to the theoretical foundations of computer science.
- ❖ To study abstract models of information processing machines and limits of digital computation.
- ❖ To provide theoretical preparation for the study of programming languages and compilers.
- ❖ To design structural description of language statements.
- ❖ To develop the skills of formal and abstract reasoning as needed; for example, when designing, analysing, and / or verifying complex software/hardware systems.
- ❖ Be familiar with thinking analytically and intuitively for problem-solving situations in related areas of theory in computer science.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 3 | 1 | | 1 | | | | 1 | 2 | | 1 | | 1 | | |
| CO2 | 1 | 1 | | 1 | | | | | | | | | 1 | | 1 |
| CO3 | | 2 | | 1 | | | | | 1 | | | 1 | | 2 | |
| CO4 | | 2 | | 1 | | | | | 1 | | 1 | 1 | 2 | | |
| CO5 | 1 | 1 | | | | | | 1 | | | 1 | 1 | | | |
| CO6 | | 2 | | | | | | | 1 | | | | | 1 | |

UNIT-1

Automata: Why study Automata Theory: introduction to FA, Structural Representations, Automata and complexity.

The central concepts of Automata: Alphabet, Strings, Language and Operations.

Deterministic finite automaton: definition, How DFA processes Strings, Simpler notations for DFA's, extending the transition Function to Strings, The Language of a DFA and minimization of FSM.

UNIT-2

Non deterministic finite automaton: An informal view of NFA, Definition, The extended Transition Function, The language of an NFA, Equivalence of DFA and NFA.

Finite Automata with ϵ transitions: use of ϵ transitions, Notation, Epsilon closures, Eliminating ϵ Transitions: ϵ -NFA to DFA conversion.

Finite Automata with output: Moore and Melay machines.

UNIT-3

Regular Languages: Regular expressions, identity rules for regular expressions, Arden's Theorem.

Finite Automata and regular expressions: Converting a regular expression to a finite automata, Converting finite automata to a regular expression, Converting DFA's to Regular Expressions by Eliminating States (state elimination method), Converting finite automata to a regular expression using Algebraic method (using Arden's theorem), Equivalence of two finite automata. Pumping lemma of regular sets, Applications of pumping lemma, closure properties of regular sets (proofs not required).

UNIT-4

Context free grammar and Languages- Chomsky hierarchy of languages, Definition of CFG, Right most and leftmost derivations, The language of a grammar, Sentential Forms.

Regular grammars: construction of Regular grammar generating for a given DFA. Constructing a FA for given RG.

Parse Trees: Constructing Parse Trees, Application of CFG.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Ambiguity in grammars and Languages: Ambiguous grammars.

UNIT-5

Properties of CFL-Normal Forms for CFG: Eliminating Useless Symbols, Computing the generating and reachable symbols, Eliminating ϵ - productions, Eliminating unit productions, Chomsky normal form, Greibach normal form, Pumping Lemma for CFL and Closure properties of CFL (proofs are not required).

Push Down Automata- PDA: definition, model, graphical notation for PDA's, Instantaneous Descriptions of a PDA and The Language of a PDA.

UNIT-6

Introduction to Turing Machines-TM: notation for the Turing Machine, Instantaneous Descriptions for TM, Transition Diagrams for TM, The language of a TM.

Extensions to the basic TM: Multi-tape TM, NDTM, Restricted Turing machines: Multi-stack machines, Counter Machines. Universal Turing Machine, Church's thesis, Linear bounded automata and context sensitive languages, Undecidability, Recursive and recursively enumerable languages, Post's Correspondence Problem.

TEXT BOOKS:

1. "Introduction to Automata Theory Languages and Computation". John E. Hopcroft, Rajeev Motwani and Jeffery D. Ullman. Pearson Education – third edition 2008.
2. Formal Language and Automata Theory by KVN Sunitha ,Tata McGraw Hill Education 2010

REFERENCES:

1. "Theory of Computer Science (Automata languages and computation)" K. L. P. Mishra and N. Chandra Shekaran, 2nd edition, 2006 PHI. (UNIT II)
2. Theory of Computation, Vivek Kulkarni, Oxford, 7 Edition
3. Formal Languages and Automata Theory, C.K. Nagpal.
4. <https://www.oreilly.com/library/view/introduction-to-automata/9788131793510/xhtml/references.xhtml>
5. <https://www.ics.uci.edu/~goodrich/teach/cs162/notes/>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

T C
2+1 3**(A0510194) DESIGN AND ANALYSIS OF ALGORITHMS****COURSE OBJECTIVES:**

- ❖ To understand the significance of algorithms in the computer field.
- ❖ To understand the various aspects of algorithm development.
- ❖ To find the qualities of a good solution.
- ❖ To understand the significance and importance of program correctness.
- ❖ To understand the relationship between algorithms and other fields in the computer realm.
- ❖ To understand the significance of algorithm efficiency.

COURSE OUTCOMES:

- ❖ Students will be able to demonstrate the performance of algorithm and represent time complexity.
- ❖ Students will understand to design the efficient algorithms using Divide and Conquer algorithm design technique.
- ❖ Students will demonstrate a number of standard algorithms for problems using Greedy method.
- ❖ Students will be able to understand the Dynamic Programming algorithm design strategies and solve the problem using this technique.
- ❖ Students will learn the Backtracking design strategies.
- ❖ Students will be able to understand the Distinguish between P and NP Problems.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | 2 | 1 | | 2 | | | | 2 | 2 | | | | | |
| CO2 | 2 | 3 | | | 2 | | | | 2 | 2 | | | | | |
| CO3 | 2 | 3 | | | 2 | | | | 2 | 2 | | | | | |
| CO4 | 2 | 3 | | | 2 | | | | 2 | 2 | | | | | |
| CO5 | 2 | 3 | | | 2 | | | | | 2 | | | | | |
| CO6 | 2 | 2 | | | 2 | | | | 2 | 1 | | | | | |

UNIT-1

Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh, Omega, Theta notation and Little oh notation, Disjoint Sets-disjoint set operations, union and find algorithms.

UNIT-2

Divide and conquer: General method, applications-Binary search, Finding Maximum and minimum, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT-3

Greedy method: General method, applications-Job sequencing with deadlines, knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT-4

Dynamic Programming: General method, applications- 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design, optimal binary search tree.

UNIT-5

Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT-6

NP-Hard and NP-Complete problems: Basic Concepts, Non Deterministic algorithms, the classes of NP Hard and NP Complete, Cook's Theorem.

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, 2015 Galgotia publications pvt. Ltd.
2. Algorithm Design: Foundations, Analysis and Internet examples, M.T.Goodrich and R.Tomassia, 2006 John wiley and sons.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

REFERENCES:

1. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L.Rivest and C.Stein, PHI Pvt. Ltd. Pearson Education.
2. Design and Analysis of algorithms, S. Sridhar, Oxford, 2014.
3. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
4. Algorithms – Richard Johnson baugh and Marcus Schaefer, Pearson Education.
5. <https://www2.cs.duke.edu/courses/fall08/cps230/Book.pdf>
6. <http://www.personal.kent.edu/~rmuhamma/Algorithms/algorithm.html>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

T C
2+1 3**(A0511194) DATABASE MANAGEMENT SYSTEMS****COURSE OBJECTIVES:**

- ❖ Advantages applications of DBMS and Database system structure.
- ❖ Schema design: ER model and conceptual design.
- ❖ Relational Model, Formal Query Languages and SQL basis.
- ❖ Storage and efficient retrieval of data: various indexing techniques.
- ❖ Schema refinement: normalization and redundancy removal and functional dependant.
- ❖ Transaction management: locking protocols, serializability concepts etc.

COURSE OUTCOMES:

- ❖ Students will learn about the need for DBMS, applications and its structure.
- ❖ Students will learn about storage and efficient retrieval of large Information, constraints and formal query languages.
- ❖ Students will also learn basics of SQL, primary key, foreign key concepts and triggers.
- ❖ Students will learn about functional dependency and the need for schema refinement (normalization) to remove redundancy of data.
- ❖ Students will also learn about transaction management concurrency Control.
- ❖ Students will learn about various storage and indexing methods and RAID concepts.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | | 3 | | | | | | | | | | 2 | | |
| CO2 | 1 | | | 3 | | | | 2 | | | | | | 2 | 3 |
| CO3 | | 2 | | | | | | | | 1 | 1 | | 1 | | |
| CO4 | | | | | | | 2 | | | | | | | | 2 |
| CO5 | | | 2 | | | | 2 | | | | | | | 1 | |

UNIT-1

Database System Applications, database System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Database Languages – DDL – DML – Database Access for applications Programs – Database Users and Administrator – Transaction Management – Database System Structure – Storage Manager – the Query Processor- Data base design and ER diagrams – Beyond ER Design- Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Conceptual Design with the ER Model.

UNIT-2

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical database Design – Introduction to Views – Destroying /altering Tables and Views. Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra queries – Relational calculus – Tuple relational Calculus – Domain relational calculus.

UNIT-3

The Form of a Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries, Set – Comparison Operators – Aggregate Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL, Triggers and Active Data bases.

UNIT-4

Schema refinement – Problems Caused by redundancy – Decompositions – Problems related to decomposition – Functional dependencies-reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT-5

Overview Of Transaction Management: The ACID Properties, Transactions and Schedules, Concurrent Execution of transactions-Lock Based Concurrency Control, Performance of Locking, Transaction Support in SQL.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Concurrency Control: 2PL, Serializability and recoverability, Introduction Lock Management, Lock Conversions, Dealing with Deadlocks, Concurrency control without locking.

UNIT-6

Data on External Storage – File Organizations and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – The Memory Hierarchy, RAID, Disk Space Management, Buffer Manager, Files of Records, Page Formats, record Formats.

TEXT BOOKS:

1. Data base Management Systems, Raghu Ramakrishna, Johannes Gehrke, TATA McGraw Hill 3rd Edition 2017
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, 6 edition, 2013.

REFERENCES:

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 11th Edition, 2016.
2. Fundamentals of Database Systems, ElmasriNavathe Pearson Education.
3. Introduction to Database Systems, C.J.Date Pearson Education.
4. <https://www.oreilly.com/library/view/concepts-of-database/9789332537422/xhtml/bibliography.xhtml>
5. <https://en.wikipedia.org/wiki/Database>
6. <https://www.sanfoundry.com/best-reference-books-database-management-systems/>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

| | |
|---|---|
| T | C |
| 2 | 0 |

(A0017194) INDIAN HERITAGE AND CULTURE

(Common to)

INTRODUCTION:

- ❖ Indian Heritage is an ancient facet pertaining to bygone ages. It reflects strong ethical culture and embodiment of nature in life style. It had its deep roots in great Indian epics and Upanishads. It has been transformed and strengthened by many kings and queens. It is received by erudite writers. The glory of Indian Heritage & culture have been ignored or distorted in wake of western culture. The present generation ought to know their indigenous culture and heritage.

COURSE OBJECTIVES:

- ❖ To enable the students to have an insight into and understanding of the great heritage and culture of India.
- ❖ To sensitize them towards preservation and progression of the same.

COURSE OUTCOMES:

- ❖ Equip themselves with knowledge about the heritage and culture of India.
- ❖ Apply the ancient wisdom to become successful professionals.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | | | | | | | | | | | | | | | |
| CO2 | | | | | | | | | | | | | | | |

UNIT-1

Origin of Indian Culture - Indus valley & Vedic Culture Evolution - Political unification of India under Mauryas and Guptas - Cultural achievements - Cultural conditions under the Sathavahanas - Contribution of Pallavas and Cholas to art and letters.

UNIT-2

Influence of Islam on Indian Culture - The Sufi, Bhakti and Vishnavite Movements - Cultural achievements of Vijayanagara rulers - Contribution of Shershah and Akbar to the evolution of administrative system in India - Cultural Developments under Mughals - Great Indian Monuments.

UNIT-3

Great Indian Epics - Ramayana and Mahabharata - Upanishads - Vedas - Pathanjali - Yoga -Principles of Jainism and Buddhism.

UNIT-4

Indian Literature - Rabindranath Tagore - Arundhati Roy - RK.Narayan - Sri Sri - Gurajada -Jashuva - Western Impact on India - Introduction of Western Education - End of the Gurukulas educational system.

UNIT-5

Social and Cultural awakening and social reform movements - Raja Rama Mohan Roy - Dayananda Saraswathi -Theosophical Society - Ramakrishna Paramahansa and Vivekananda - Iswara Chandra Vidyasagar and Kandukuri Veeresalingam - Emancipation of women and struggle against Caste.

UNIT-6

Mahatma Gandhi - Non-violence and Satyagraha - Great leaders of Freedom struggle - Post Independent Era.

TEXT BOOK

- 1) Madanlal Malpani & Shamsunder Malpani (2016), *Indian Heritage and Culture*, New Delhi: Kalyani Publishers.

REFERENCE BOOKS

- 1) Romila Thapar (2018) , Indian Cultures as Heritage: Contemporary Pasts, India.
- 2) Anurag Mathur (2017), Indian Culture & Heritage , Create space independent publishing Platform, 2017.
- 3) P.R.Rao & P. Raghavendra , Indian Heritage and culture, Sterling Publication Pvt. Ltd.
- 4) Madhukar kumar Bhagat, Indian Heritage and culture, Access Publications.
- 5) Dhirendra Singh, Indian Heritage and culture , APH Publications.
- 6) <http://www.indiaculture.nic.in/>
- 7) <http://www.indiaculture.nic.in/world-heritage>

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

T C
1+2 0.5**(A0016194) DESIGN THINKING**

(Skill Development Course)

Common to

COURSE OBJECTIVES:

- ❖ To create awareness of design among students of engineering
- ❖ To motivate students to think of design before implementing an engineering project
- ❖ To teach a systematic approach to identifying and defining a problem before brainstorming for a solution
- ❖ To instil a sense of significance towards applying creativity to product and service design

COURSE OUTCOMES:

Upon completion of this course, the student shall be

- ❖ Learn to identify design principles from an engineering perspective
- ❖ Cultivate sensitivity towards design aspects in objects made by engineers and non-engineers, which are typically used in daily life
- ❖ Understand and create visual design elements to communicate more effectively
- ❖ Construct clear problem statements, understand the importance of validation, and design services creatively
- ❖ Develop fundamental team skills: working in teams and managing teams, strategizing tasks, and streamlining activities pertaining to a project

STUDENTS' RESPONSIBILITIES:

1. Students will form teams of 3–5 members each, while working collaboratively throughout the semester.
2. Students will present and report the tasks to the class and to the concerned faculty members and design experts, using their oral and written communication skills as well as creativity and team skills.
3. Students must proactively engage in observing the objects and processes which are part of their daily life and society from a design perspective and discuss with peers to learn collaboratively.

4. MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | | | | | | | | | | | | | | | |
| CO2 | | | | | | | | | | | | | | | |
| CO3 | | | | | | | | | | | | | | | |
| CO4 | | | | | | | | | | | | | | | |

MODULE-1

Design Overview and Motivation: History and Context of birth of Design; Design thinking: Introduction and Motivation; Various definitions and interpretations of design, Design Vocabulary; Design in Indian Context; Art and Design: Art in Design, Design beyond Art; Design in Creative Industries

MODULE-2

Design Sensitization for Engineers: Design Engineering vs. Engineering Design, Examples of Engineering Design and Design Engineering in various engineering domains, Examples of design failures leading to bad products and services, Real-world examples of bad design that caused engineering and technological disasters, Domain-specific Engineering Design examples.

MODULE-3

Design Thinking Foundations: The Design Double Diamond: Discover-Define-Develop-Deliver, User-centric design approaches: Importance of user-centricity for design, Empathisation, Empathy Maps, Data collection from users and for users, Data Validation, Responsible Innovation and Ethical Design: Ethics as foundation for design, Concern for environment and sustainability

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MODULE-4

Communication Skills for Design, Culture and Art: Communication Media to express an idea: Visuals, Text, Voice and Audio, Infographics General Guidelines for a good Presentation: Target audience, slideshow templates, appropriate visual elements, presentation styles, guidelines, General guidelines for a good Report: Documentation classification, standards, styles, and templates, Modes of communication: Reports and documents, Presentation, poster, graphic, blog or website.

Understanding Art in Design: Need for creativity, Elements of Visual Design, Design Aesthetics: Influences and impressions of Colours, Shapes, Layouts, Patterns, and Fonts as Design Elements.

MODULE-5

Applied Creativity and Design for Services: Methods to brainstorm solutions for user issues; Combining solutions to workable solution concepts; Identifying the user needs in a service-driven economy; Process Flows and Customer Experience considerations for designing and improving services; 5 Why's; Service Delivery Pathways

MODULE-6

Doing Design: Looking for a problem, Ideation and Rules of Ideation, Framing and stating the problem; Basic considerations of Prototyping/ Model Building, Basics of Testing and Validation, Incorporating feedback

TEXT BOOKS:

- 1) Daniel Ling, "Complete Design Thinking Guide for Successful Professionals", CreateSpace Independent Publishing, 2015 (ISBN: 978-1514202739)
- 2) Tim Brown, "Change by Design", Harper Business, 2012 (ISBN: 978-0062337382)

REFERENCES:

- 1) Jimmy Jain, "Design Thinking for Startups: A Handbook for Readers and Workbook for Practitioners", Notion Press, 2018 (ISBN: 978-1642495034)
- 2) Beverly Rudkin Ingle, "Design Thinking for Entrepreneurs and Small Businesses: Putting the Power of Design to Work", APress, 2013 (ISBN: 978-1430261810)
- 3) Donald A. Norman, "The Design of Everyday Things", *MIT Press*, 2013 (ISBN: 978-0262525671)
- 4) Bruno Munari, "Design As Art", *Penguin UK*, 2009 (ISBN: 978-0141035819)
- 5) Tom Kelly, Jonathan Littman, "The Art of Innovation", HarperCollins Business, 2002 (ISBN: 978-0007102938)
- 6) Thomas Lockwood, "Design Thinking: Integrating Innovation, Customer Experience, and Brand Value", *Allworth Press*, 2009 (ISBN: 978-158115

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

(A0597194) JAVA PROGRAMMING LAB**COURSE OBJECTIVES:**

- ❖ To make the student operating systems.
- ❖ Learn object oriented way of solving problems.
- ❖ To teach the student to write programs in Java to solve the problems

COURSE OUTCOMES:

After Completion of the Lab Course student should be able:

- ❖ Student can able to write a programs using classes and objects.
- ❖ Student can able to develop the polymorphic behaviour of objects.
- ❖ Students can able to design a software using object oriented approach.
- ❖ Able to implement the programs handling built in exceptions and creating custom Exceptions.
- ❖ Able to develop the Mutli thread programming.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | 1 | 3 | 1 | 2 | | | | 1 | | 2 | 2 | | | |
| CO2 | 2 | 1 | 3 | 2 | 2 | | | | | | | 3 | | | |
| CO3 | 1 | 2 | 2 | 1 | 1 | | | | | | | 2 | | | |
| CO4 | 1 | 2 | 1 | 1 | | | | | 2 | | 2 | 2 | | | |
| CO5 | 2 | 2 | 2 | | 2 | | | | | | 1 | 2 | | | |

- Write a Java Program to find the reverse of a given number. And also check whether it is palindrome or not.
- Write a Java Program to print Fibonacci sequence (rule: The first two values in the sequence are 0 and 1. Every subsequent value is the sum of the two values preceding it.)
- Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
- Write a Java program to multiply two given matrices.
- Write a Java program to find both the largest and smallest number in a list of integers.
- Write a Java program to find the volume of a box by creating objects.
- Write a Java program to implement all arithmetic operations with class methods for each operation. User must provide values from Keyboard.
- Write a Java program to implement parameter passing techniques:
 - call-by-value
 - call-by-reference
- Write a Java program to implement the following:
 - Overloading methods
 - overloading constructors
 - recursion
- Write a Java program to implement multi-level inheritance and also demonstrate super keyword.
- Write a Java program to demonstrate method overriding by implementing dynamic method dispatch?
- Write a Java program to create and abstract class called Shape which inherits Rectangle and triangle to calculate area of each shape by implementing abstract method of Shape class by implementing hierarchical inheritance.
- Write a Java program to implement multiple-inheritance?
- Write a Java program to import user defined packages to display results for any mathematical operations like addition, subtractions, multiplications and division (class methods) from one package and also producing results square, cube and square-root of a given number (instant methods) from another package.
- Write a Java program to sort a list of names in ascending order.
- Write a Java program that checks whether a given string is a palindrome or not.
Ex: MADAM is a palindrome
- Write a Java program to handle multiple exceptions and also use finally?
- Write a Java program to handle user-defined exceptions?

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

19. Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
20. Write a Java program that displays the count of number of characters, lines and words in a text file.(user provide file using cmd line args)
21. Write a Java program that creates three threads. First thread displays “Good Morning” every one second, the second thread displays “Hello” every two seconds and the third thread displays Welcome” every three seconds.
22. Write a Java program that correctly implements producer consumer problem using the concept of inter-thread communication
23. Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)
24. Write a Java program to retrieve the information from the given URL? (**Note:** Read the URL from Command Line Arguments).
25. Write a java program to create a sample TCP chat application where client and server can chat with each other?

REFERENCES:

1. Java; the complete reference, 11th editon,2018 Herbert schildt, TMH.
2. An Introduction to programming and OO design using Java, 2015 , J.Nino and F.A. Hosch, John wiley & sons Programming in Java, Sachin Malhotra, Saurabh Choudhary, Second Edition.
3. An Introduction to OOP, second edition, T. Budd, pearson education.
4. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

P C
3 1.5

(A0598194) DESIGN AND ANALYSIS OF ALGORITHMS LAB

COURSE OBJECTIVES:

- ❖ The principle objective of this course is to build solid foundation in algorithms and their applications.
- ❖ To implement various divide and conquer techniques examples.
- ❖ To implement various Greedy techniques examples.
- ❖ To implement various Dynamic Programming techniques examples.
- ❖ To provide a practical exposure of all algorithms.
- ❖ To understand the importance of algorithm and its complexities.

COURSE OUTCOMES:

- ❖ Students will be able to calculate the time complexity of algorithm.
- ❖ Students will be able to sort the given numbers using various sorting algorithms.
- ❖ Students will be able to write programs for the problems using Divide and Conquer.
- ❖ Students will be able to write programs for the problems using Greedy Method.
- ❖ Students will be able to write programs for the problems using Dynamic programming.
- ❖ Students will be able to write programs for the problems using Backtracking.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO 4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO 3 |
|-------|-----|-----|-----|------|-----|-----|-----|-----|-----|------|------|------|------|------|-------|
| CO1 | 2 | 2 | | | 2 | | | | 2 | 3 | | | | | |
| CO2 | 2 | 2 | | | 2 | | | | 2 | 2 | | 1 | | | |
| CO3 | 3 | 2 | | 1 | 3 | | | | 2 | 1 | | | | | |
| CO4 | 2 | 3 | | | 2 | 1 | | | 2 | 1 | | 1 | | | |
| CO5 | 3 | 2 | | | 2 | | | | 2 | 2 | | | | | |
| CO6 | 2 | 2 | 1 | | 2 | | | | 2 | 2 | | | | | |

EXPERIMENTS

1. Write a program to perform operation count for a given pseudo code
2. Write a program to perform Bubble sort for any given list of numbers.
3. Write a program to perform Insertion sort for any given list of numbers.
4. Write a program to perform Quick Sort for the given list of integer values.
5. Write a program to find Maximum and Minimum of the given set of integer values.
6. Write a Program to perform Merge Sort on the given two lists of integer values.
7. Write a Program to perform Binary Search for a given set of integer values recursively and non-recursively.
8. Write a program to find solution for knapsack problem using greedy method.
9. Write a program to find minimum cost spanning tree using Prim's Algorithm.
10. Write a program to find minimum cost spanning tree using Kruskal's Algorithm.
11. Write a program to perform Single source shortest path problem for a given graph.
12. Write a program to find solution for job sequencing with deadlines problem.
13. Write a program for all pairs shortest path problem.
14. Write a program to solve N-QUEENS problem.
15. Write a program to solve Sum of subsets problem for a given set of distinct numbers.

REFERENCES:

1. Data Structures and Algorithms by G.A.V. Pai, 2017, TMH.
2. Fundamentals of Computer Algorithms by Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, 2nd edition, University Press.

R G M COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech. II-Sem (CSE)

P C
3 1.5

(A0599194) DATABASE MANAGEMENT SYSTEMS LAB**COURSE OBJECTIVES:**

Student will be able to:

- ❖ Create and delete database schemas and execute SQL queries
- ❖ Inserting data, Altering and dropping the tables.
- ❖ Various types of data conversions using the functions.
- ❖ Make Use of PL/SQL variables and Language Components.
- ❖ Make Use of Identifiers in PL/SQL.
- ❖ Make Use of Anchored Data type.

COURSE OUTCOMES:

Upon completion of the lab, the student should be able to:

- ❖ Map the model into a relational database system.
- ❖ Implement the given schema on a relational DBMS.
- ❖ Design, develop, and maintain Oracle Database Objects.
- ❖ Use a database language for manipulating and querying data.
- ❖ Develop advanced packages, stored procedures, and triggers.
- ❖ Develop various functions definitions and procedures using PL/SQL.

MAPPING OF COs & POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | | | 3 | | 2 | | | | | | | | 1 | | |
| CO2 | | | | | | | | 2 | | 2 | | | | 2 | |
| CO3 | | | 2 | | | | | | | 1 | 1 | | | 1 | 1 |
| CO4 | | | | | 1 | | | | | | | 2 | 1 | | 2 |
| CO5 | 1 | | 2 | | | | | | | | | | 2 | | 1 |

RECOMMENDED SYSTEMS/SOFTWARE REQUIREMENTS:

- ❖ Intel based desktop PC
 - ❖ Mysql /Oracle latest version Recommended.
- 1) Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
 - 2) Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
Example:- Select the roll number and name of the student who secured fourth rank in the class.
 - 3) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
 - 4) Nested Queries and correlated nested queries
 - 5) Table alterations
 - 6) 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)
 - 7) Creating procedures
 - 8) Creating functions and packages
 - 9) Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.
 - 10) Introduction to ORACLE reports

REFERENCES:

1. ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition.
2. ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.
3. SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING****Computer Networks & Security**

III B.Tech. I-Sem (CSE)

T C

3 3

OUTCOMES:**CO1:** Students are able to classify network services, physical and data link layer**CO2:** Students are able to familiar with network layer, routing algorithms.**CO3:** Students will be able to understand TCP, UDP and DNS.**CO4:** Students will be able identify the major types of threats to information security and the different cipher techniques.**CO5:** Students will be able to understand the different conventional encryption techniques and MAC.**CO6:** Students will be able to familiarize the Public key cryptography and key management**CO-PO MAPPING:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | P10 | P11 | P12 | PS01 | PS02 | PS03 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | 2 | 1 | 1 | 1 | | 1 | 1 | | | 2 | 3 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | | | | | 2 | 3 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 1 | 1 | | 1 | | | | | 2 | 3 | 2 | 3 |
| CO4 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 1 | | | | 2 | 1 | 2 | 2 |
| CO5 | 3 | 2 | 1 | 2 | 1 | 3 | 2 | | 1 | | | 2 | 1 | 1 | 2 |
| CO6 | 3 | 3 | 1 | 3 | 1 | 3 | 2 | | 1 | | | 2 | 2 | 1 | 2 |

Unit-1:

Introduction: Network Hardware, Network Software, References Models. **The Physical Layer:** Guided Transmission Media, Communication Satellites. **Data Link Layer:** Data link Layer Design Issues, Elementary Data Link Protocols, and Sliding Window Protocols.

Unit-2:

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking, Network Layer in the internet.

Unit-3:

The Transport Layer: The Transport Service, Elements of Transport Protocols, The Internet Transport Protocols: UDP, The Internet Transport Protocols: TCP. **Application Layer:** DNS-The Domain Name System, Electronic Mail.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING****Unit-4:**

Security goals, Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms. Substitution and Transposition techniques.

Unit-5:

Conventional Encryption Principles, Techniques Conventional encryption algorithms, cipher block modes of operation, Approaches of Message Authentication, hash functions, Secure Hash Functions and HMAC.

Unit-6:

Public key cryptography principles, public key cryptography algorithms (RSA, DIFFIE-HELLMAN, DSS), digital signatures, Certificate Authority and key management, X.509 Directory Authentication Service.

TEXT BOOKS:

1. Computer Networks, Andrew S. Tanenbaum, Fourth Edition, Pearson Education.
2. TCP/IP Protocol suite Fourth Edition- Behrouz A. Forouzan
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.

REFERENCES:

1. Computer Communications and Networking Technologies, Michael A. Gallo, William M. Hancock, Cengage Learning.
2. Computer Networks, Bhushan Trivedi, Oxford.
3. Computer Networks: Principles, Technologies and Protocols for Network Design, Natalia Olifer, Victor Olifer, Wiley India.
4. Data Communications and Networking, Behrouz A. Forouzan, Fourth Edition, Tata McGraw Hill.
5. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W. Manzuik and Ryan Permech, Wiley Dreamtech
6. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
7. Principles of Information Security, Whitman, Thomson

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING
Operating Systems

III B.Tech. I-Sem (CSE)

T C

3 3

OBJECTIVES:

- ❖ This course deals with functions, structures and history of operating systems.
- ❖ To understand the design issues associated with operating systems.
- ❖ To understand various process management concepts including scheduling, synchronization, deadlocks.
- ❖ To be familiar with multithreading and the concepts of memory management including virtual memory.
- ❖ To understand the issues related to file system interface and implementation, disk management with protection and security mechanisms.
- ❖ Some example operating systems (Unix, Windows, Solaris etc)

OUTCOMES:

- ❖ Students will learn about and understand services provided by and the design of an operating system
- ❖ Students will learn about system calls for managing processes, memory and the file system and various process management concepts including scheduling
- ❖ Students will learn about and understand synchronization, deadlocks
- ❖ Students will learn about and understand different approaches to memory management
- ❖ Students will learn about and understand the issues related to file system interface and implementation, disk management
- ❖ Students will learn about and understand secondary storage structure and tertiary storage devices.

CO-PO MAPPING:

| CO / PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|---------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 2 | | | | 1 | | 1 | | 1 | 1 | | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 2 | 1 | | | | | 2 | 1 | | | 2 | 1 | 1 |
| CO3 | 1 | 3 | 2 | 2 | 1 | | | | 1 | 1 | | | 1 | 1 | 1 |
| CO4 | 1 | 3 | 2 | | 1 | | | | 1 | 1 | | | 2 | 1 | 1 |
| CO5 | 1 | 2 | 1 | 2 | 1 | | | | 1 | | | | 1 | 2 | 2 |
| CO6 | 1 | 2 | 1 | 1 | | | 1 | | | | 1 | 1 | 3 | 2 | 1 |

UNIT I

Introduction - what operating systems do, computer system architecture, process management, memory management, protection and security, distributed systems, special purpose systems

System structure - operating system services, systems calls, types of system calls, system programs, operating system structure, operating systems generation, system boot.

UNIT II

Process concepts - overview, process scheduling, operations on process, inter-process communication.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****Multithread Programming** – overview, multithreading models**Process scheduling** – basic concepts, scheduling criteria, process scheduling algorithms, algorithm evaluation.**UNIT III****Concurrency** - Process synchronization, the critical-section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors**Principles of deadlock:** system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock.**UNIT IV****Memory Management Strategies** –back ground, Swapping, contiguous memory allocation, paging, , segmentation**Virtual memory management** – background, demand paging, copy-on-write, page-replacement algorithms-FIFO, LRU, Optimal, LFU, MFU, Second chance algorithm**UNIT V****File system** – file concept, Access Methods, Directory structure, protection.**File System implementation** - File system structure, file system implementation, directory implementation, allocation methods, free-space management, Recovery.**UNIT VI****Secondary-storage structure-** overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management, RAID structure**Tertiary storage devices-** removable disks, tapes, future technology, performance issues.**TEXT BOOKS:**

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.

REFERENCES:

1. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition–2009, Pearson Education.
2. Principles of Operating Systems, Naresh Chauhan, Oxford.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****() Compiler Design**

III B.Tech. I-Sem (CSE)

T C

3 3

OBJECTIVES:

- ❖ Thorough understanding of the overall architecture of a modern compiler.
- ❖ Being familiar with both top-down and bottom-up parsing paradigms.
- ❖ Fluent with syntax-directed translation scheme and different compiler-compilers.
- ❖ Knowledgeable with assembly language and code-block based code generation scheme.
- ❖ Knowing the inner details of compilers, libraries, operating systems/platforms, and how they interact with each other to form modern computing environments.

OUTCOMES:

- ❖ Identify and understand different phases and passes of Compiler and their functioning.
- ❖ Understand lexical, syntax and semantic analysis processes.
- ❖ Understand and define the role of lexical analyzer, use of regular expression and transition diagrams.
- ❖ Understand Finite state machine and use Context free grammar, and parse tree construction
- ❖ Determine code generation and optimization techniques.
- ❖ Apply error detection and correction methods.

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 1 | 3 | | | | | | | | | | | 2 | 1 | |
| CO2 | 2 | 1 | | | | | | | | | | | | | |
| CO3 | | | | | 1 | 2 | | | | | | | | 1 | |
| CO4 | 3 | | | | | | 2 | | | | 1 | 2 | 1 | 1 | |
| CO5 | | | | | 1 | | 1 | 1 | | | | | 2 | | |
| CO6 | | | | | | | | | | | 2 | | | | 1 |

UNIT-I

Introduction to compilers: compilers, cousins of the compiler, phases of a compiler, interpreter, grouping of phases into pass, bootstrapping

Lexical analysis: role of the lexical analyzer, input buffering, a language for specifying lexical analyzers

UNIT-II

Syntax analysis: the role of the parser, context free grammars, writing a grammar: eliminating ambiguity, elimination of left recursion, elimination of left factoring

Top-down parsing: Recursive descent parsing, first and follow, predictive parsing, construction of predictive parsing table.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****UNIT-III**

Bottom up Parsing: handles, handle pruning, shift reduce parsing, viable prefixes, conflicts during shift reduce parsing

LR Parsers: SLR Parsing: LR (0) items, SLR Parse table. CLR Parser: CLR (1) Items, CLR (1) Parsing table. LALR (1) parser: LR (1) items, LALR (1) parsing table.

UNIT-IV

Semantic analysis: type checking: type checking of expressions, type checking of statements, type checking of functions, type conversions

Syntax directed translation: form of a syntax directed definition, synthesize attributes, inherited attributes, dependency graph, annotated parse tree.

Intermediate code generation: intermediate code forms: abstract syntax tree, polish notation, three address code .implementation of three address code statements: quadruples, triples, indirect triples

UNIT-V

Symbol table and Runtime environments: symbol table format, storage organization, storage allocation strategies, parameter passing, activation trees, activation records, storage allocation for arrays, strings and records

UNIT-VI

Code optimization: Consideration for Optimization, Scope of Optimization, principle sources of optimization: function preserving transformations, local Optimization, loop Optimization, global Optimization

Data flow analysis: construction of flow graph, loops in flow graph

Code generation: object code forms, issues in code generation, a simple code generator algorithm, generic code from DAGS

TEXT BOOKS:

1. Compilers principles, techniques, &tools- A.V.Aho. J.D.Ullman; pearson Education. Second edition.

REFERENCES:

1. Compiler design: Theory, Tools and examples by Seth D. Bergmann.
2. Compiler design, K. Muneeswaran, Oxford.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING
 ()Software Engineering

III B.Tech. I-Sem (CSE)

T C

3 3

OBJECTIVES:

- ❖ To understand Software development as a process.
- ❖ Various software process models and system models.
- ❖ Various software designs: Architectural, object oriented, user interface etc.
- ❖ Software testing methodologies overview: various testing techniques including white box testing black box testing regression testing etc.
- ❖ Software quality: metrics, risk management quality assurance etc.

OUTCOMES:

- ❖ Understand software development life cycle
- ❖ Analyze and Apply various process models for a project
- ❖ Prepare SRS document for a project
- ❖ Understand requirement and Design engineering process for a project
- ❖ Identify different principles to create an user interface
- ❖ Identify different testing methods and metrics in a software engineering project

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 3 | 1 | | | | | | | 1 | 1 | | | 1 | 2 | |
| CO2 | 2 | 3 | 1 | | | | | | 2 | 2 | | | | 3 | |
| CO3 | 2 | 2 | | | | | | | | 2 | | | | 1 | |
| CO4 | 2 | 1 | 2 | | | | | | 1 | 1 | | | | 3 | |
| CO5 | 2 | 2 | 1 | | | | | | 1 | 1 | | | | 2 | |
| CO6 | 2 | | | | | | | 1 | | | | | | 2 | |

UNIT I

Introduction to Software Engineering: The evolving role of 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 patterns, process assessment, personal and team process models.

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

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. **System models:** Context Models, Behavioral models, Data models, Object models.

UNIT IV

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

Creating an architectural design: Software architecture, Data design, Architectural styles and patterns.

UNIT V

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

UNIT VI

Metrics for Process and Products: Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. Software Quality, Software Measurement, Metrics for software quality. **Quality Management :** Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, The ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition. McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.

REFERENCES:

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
2. Software Engineering principles and practices, Deepak Jain, Oxford.
3. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.
4. Systems Analysis and Design- Shely Cashman Rosenblatt, Thomson Publications.
5. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. I-Sem (CSE)

T C

3 3

() Web Programming**OBJECTIVES:**

1. In-depth learning of client side scripting like HTML, JavaScript and server side scripting like servlets, JSPs. Also focuses on XML and web servers and database interfacing.
2. Use the “echo” and “print” to send output to the browser.
3. Learn how to create and use PHP basic and advanced concepts.
4. Write PHP programs that access form data

Course Outcomes (CO)

1. Student can able to demonstrate the HTML important tags and for designing static web pages and separate design from content using CSS.
2. Able to design a webpage with more user interactivity using JavaScript and understand the need of XML in the developing of Web applications.
3. Students able to understand the need of Server side scripting using Servlets and JSP along with database connectivity.
4. Understand the syntax and basic concepts of PHP, conditional and looping statements, Arrays and Functions, strings and files
5. Understand and develop programs on PHP object-oriented concepts and advanced concepts (cookies&sessions) and data and time functions.
6. Be able to develop a form containing several fields and be able to process the data with database using html & PHP-based script.

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | | 1 | | 1 | 1 | 1 | | 1 | 2 | 1 | 1 | 1 | | 1 |
| CO2 | 1 | | 2 | | | | | | | | | | 1 | | |
| CO3 | 1 | | 3 | 2 | 2 | | | 2 | 2 | 2 | 3 | 1 | 2 | 2 | 2 |
| CO4 | 2 | 1 | 2 | | 1 | | | | | 1 | | | 1 | | |
| CO5 | 1 | | 2 | | 2 | | | | | 1 | 1 | | | 1 | 1 |
| CO6 | 1 | 1 | 3 | 2 | 1 | 2 | 2 | | 3 | 2 | 3 | 1 | 1 | 2 | 2 |

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****UNIT I**

Introduction to HTML - HTML common tags, HTML program structure, Attributes, List, Tables, images, forms, Frames, Cascading Style sheets

UNIT II

JavaScript - Introduction to Java Scripts, Data Validation using Java Script. XML - Document type definition, XML Schemas, Document Object model, Presenting XML.

UNIT III

Web Servers and Servlets: Introduction to Servlets, Lifecycle of a Servlet, A Simple servlet, The Servlet API, Reading Servlet Parameters, Handling Http Request & Responses.

JSP Application Development - Using Scripting Elements, Implicit JSP Objects, Sharing Session and Application Data.

Database Access- Database Programming using JDBC, Types of JDBC Drivers, Accessing a Database from a servlets and JSP.

UNIT IV

Introduction to PHP: Features of php, Basic Syntax, Php variables, Php Data types, Type casting, Operators and Expressions, control statements and Looping statements, introduction to arrays, array functions, strings-Its related library functions, functions- parameter passing techniques, Recursive functions.

UNIT V

Object oriented programming concepts, PHP Advanced Concepts- Cookies, Sessions.

Working with Date and Time-Displaying Human-Readable Dates and Times, Finding the Date for a Weekday, Getting the Day and Week of the Year, Determining Whether a Given Year Is a Leap Year, Obtaining the Difference Between Two Dates, Determining the Number of Days in the Current Month, Determining the Number of Days in Any Given Month.

UNIT VI

Creating and Using Forms- Understanding Common Form Issues, Validating form input, Working with multiple forms, and Preventing Multiple Submissions of a form.

PHP and Database Access- Connecting to a MYSQL database, performing basic database operations.

TEXT BOOKS:

1. HTML Black Book – Steve Holzner.
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH
3. Java Server Pages –Hans Bergsten, SPD O'Reilly
4. Beginning PHP and MySQL, 3rdEdition, Jason Gilmore, Apress Publications (Dream tech.).

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

5. PHP 5 Recipes A problem Solution Approach Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens.

REFERENCES:

1. PHP 6 Fast and Easy Web Development, Julie Meloni and Matt Telles, CengageLearning Publications.
2. PHP 5.1, I. Bayross and S.Shah, The X Team, SPD.
3. Programming world wide web-Sebesta,Pearson.
4. Web Technologies, Uttam K. Roy, Oxford.
5. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson.
6. An Introduction to web Design and Programming –Wang-Thomson.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. I-Sem (CSE)

T C

1+2 0.5

PROFESSIONAL ETHICS AND SOFT SKILLS

(Common to all branches)

OBJECTIVE:

- ❖ The main objective of Engineering Ethics is to increase the awareness in engineering failures. Engineering decisions can impact public health, safety, business practices and politics. Engineering ethics is the field of applied ethics and system of moral principles that apply to the practice of engineering. The field examines and sets the obligations by engineers to society, to their clients, and to the profession. Engineering ethics in academic institutions has been undertaken by the directives of Supreme Court for creating awareness interactively among engineering students of all disciplines. By studying engineering ethics, the students develop awareness and assessment skill of the likely impact of their future decisions on moral and ethical grounds.

OUTCOMES:

- ❖ To apply ethical theories and moral reasoning to a good professional
- ❖ Understand the professional behaviour and implementation of process of communication
- ❖ To approach of corporate communication problem solving techniques
- ❖ To have a practical orientation of interpersonal communication
- ❖ Aware of intellectual property rights

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|-------|
| CO1 | 2 | | | | | 2 | 2 | 3 | 3 | 3 | 1 | 2 | | | |
| CO2 | 1 | | 1 | | | 2 | 1 | 3 | 3 | 3 | 1 | 2 | 2 | | |
| CO3 | 1 | | 2 | | | 2 | 1 | 2 | 3 | 2 | 1 | 2 | 2 | | |
| CO4 | 2 | | | | | 2 | 1 | 3 | 2 | 2 | 1 | 3 | 2 | | |
| CO5 | 3 | | | | | 2 | 1 | 3 | 2 | 3 | 1 | 3 | | | |

UNIT-I

Nature and Scope of Engineering Ethics: Definition, Nature, Scope – Moral Dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory- Moral Reasoning and Ethical theories – Theories of Right Action-Self – Utilitarianism interest- Use of ethical Theories- case study.

UNIT-II

Professional Etiquettes: Professional Etiquettes – Mobile Etiquettes – Email Etiquettes -Kinesics – Proxemics

- Chronemics – Chromatics – Olfacts - Haptics – Case study..

UNIT-III

Corporate Communication: Communication Models- Types of Communication – Downward and Upward Communication- Business Deliberations – Meetings – Negotiation Skills - Case Study.

UNIT-IV

Soft Skills: Interpersonal Communication – Johari Window – Interpersonal conflict resolutions- Daniel Goleman's Emotional Intelligence.

UNIT-V

Global Issues: Multinational Corporations – Corporate Governance - Corporate Social Responsibility Environmental Ethics – case study.

UNIT-VI

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

Introduction to Intellectual Property: Meaning and Types of Intellectual Property – Recent developments of the copy right act –Trademark Protection – Patent Law - Plagiarism.

TEXT BOOKS:

1. Professional Ethics by R.Subramanian, OXFORD
2. Business Communication , P.D. Chaturvedi, Mukesh Chaturvedi

REFERENCES:

1. The ACE of Soft Skills(Attitude, Communication and Etiquette for success) by – Gopalaswamy Ramesh & Mahadevan Ramesh, Pearson 2010.
2. Essentials of Business Communication, Rajendra Pal, JS.Korlahhi, S.Chand
3. Intellectual Property Right , Deborah E. BouchouxS, Cengage, 2005
4. Business Ethics and Professional Values, A.B. Rao, Excel,2009
5. M.P. Raghavan [2006], Professional Ethics and Human Values, Scitech Publications, Chennai.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. I-Sem (CSE)

T C

2

() Environmental Studies

(Mandatory Learning)

OBJECTIVES:

- ❖ Creating the awareness about environmental problems among people.
- ❖ Imparting basic knowledge about the environment and its allied problems.
- ❖ Developing an attitude of concern for the environment.
- ❖ Motivating public to participate in environment protection and environment improvement.
- ❖ Acquiring skills to help the concerned individuals in identifying and solving environmental problems.
- ❖ Environmental education should be compulsory, right from the primary up to the post graduate stage.
- ❖ Environmental education should have an interdisciplinary approach by including

OUTCOMES:

- ❖ Understand environmental problems arising due to developmental activities.
- ❖ Realize the importance of ecosystem and biodiversity for maintaining ecological balance.
- ❖ Identify the natural resources and suitable methods for conservation and sustainable development.
- ❖ Identify the environmental pollutants and abatement devices.
- ❖ Adopt practices that help in promoting balance in nature by making judicious utilization of resources.

CO-PO MAPPING:

| CO/PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|-------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 2 | | | | | 1 | 3 | 2 | | | | 2 | | | |
| CO2 | 1 | 2 | | | | | 3 | 1 | 2 | | | 2 | | | |
| CO3 | 1 | | | | 1 | 1 | 3 | 1 | 1 | | 1 | 2 | | | |
| CO4 | | 1 | 1 | | 2 | 1 | 1 | 1 | | | 1 | 2 | | | 1 |
| CO5 | | 1 | 1 | | | | 2 | 1 | | | | 2 | | | 1 |

UNIT I

MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL SCIENCE: Environment - Definition, scope and importance, Segments of Environment-Importance, Productivity, Aesthetical& Optional values of nature, need for public awareness.

UNIT II

RESOURCES AND UTILIZATION: Renewable and non-renewable resources.

- a) Natural Resources: soil & water sources (salinity intrusion –conflicts of over utilization of water Resources-water logging, Hydro power project-problems), forest & mineral resources – Utilization-problems.
- b) Non conventional resources of energy(Solar Energy, wind energy and their applications)
- c) Chemical fertilizers and pesticides-problems.
- d) Green Revolution-white revolution- blue Revolution.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

e) Non equitable distribution of Resources.

UNIT III**a) CONCEPTS OF ECO-SYSTEM**

Structure and functions of an ecosystem: producers, consumers and decomposers- Interaction between biotic and abiotic factors in an ecosystem- Energy flow and its importance- Trophic levels- food chain- Food web –Ecological Pyramid, Ecological succession

b) TYPES OF ECOSYSTEM

Understanding the types of ecosystem:

- (i) Terrestrial (forest, grassland and desert) and
- (ii) Aquatic (fresh water and salt water) with an example of each.

UNIT IV

BIODIVERSITY: Introduction – Definition - genetic, species and ecosystem diversity- -

Biogeographical classification of India- Value of biodiversity- Hot-spots of biodiversity- Biodiversity at global, National and local levels- India as a mega diversity nation - Hot-spots of biodiversity- Threats to biodiversity- IUCN Red data book.

Conservation of bio diversity (IN-SITU and EX-SITU conservation)

UNIT V

ENVIRONMENTAL POLLUTION: Introduction - Cause, effects and control measures of

- a. Air pollution
- b. Water pollution
- c. Soil pollution
- d. Marine pollution
- e. Noise pollution
- f. Thermal pollution
- g. Nuclear hazards

Municipal Solid waste Management: Sources and Disposable methods.

Disaster management: floods, earthquake, cyclone.

UNIT VI

HUMAN POPULATION:

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

- a) Population and Environment:- Definition of species, community, population; Population growth rate curves, Sex ratio, From unsustainable to sustainable development, Diseases-HIV, Malaria, Diarrhoea, Cancer.
- b) Human rights, fundamental duties and value education.
- c) Women and child welfare & Family welfare programs.

SOCIAL ISSUES:

- a) Resettlement and rehabilitation of people.
- b) Energy Crisis – urban and rural sectors.
- c) Greenhouse effect and global warming.
- d) Climatic changes.
- e) Acid rain.
- f) Ozone layer depletion.
- g) Sustainability- water conservation methods- Rain water harvesting.

TEXT BOOKS:

1. Deswal, S and Deswal A., (2004), A Basic Course in Environmental Studies, Dhanpat Rai & Co. Delhi.
2. Anubha Kousik and C P Kousik ., New age international publishers.
3. Garg, S.K and Garg, R., (2006), Ecological and Environmental Studies, Khanna Publishers, Delhi.
4. Chauhan, A.S., (2006), Environmental Studies, Jain Brothers, New Delhi

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. I-Sem (CSE)

T C

3 1.5

() Computer Networks Lab

OBJECTIVES:

This course deals about the implementation of computer networks as well as Information Security. In the Computer Networks portion of the syllabus emphasis is given on various protocols and algorithms. In the Information Security section several different kinds of security measure to prevent attacks have to be implemented to make sure that the data does not fall into unauthorized users.

OUTCOMES:

CO1: Students are able to classify network services, physical and data link layer

CO2: Students are able to familiar with network layer, routing algorithms.

CO3: Students will be able to understand TCP, UDP and DNS.

CO4: Students will be able identify the major types of threats to information security and the different cipher techniques.

CO5: Students will be able to understand the different conventional encryption techniques and MAC.

CO6: Students will be able to familiarize the Public key cryptography and key management

CO-PO MAPPING:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | P10 | P11 | P12 | PS01 | PS02 | PS03 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 3 | 2 | 2 | 1 | 1 | 1 | | 1 | 1 | | | 2 | 3 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | | | | | 2 | 3 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 1 | 1 | | 1 | | | | | 2 | 3 | 2 | 3 |
| CO4 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 1 | | | | 2 | 1 | 2 | 2 |
| CO5 | 3 | 2 | 1 | 2 | 1 | 3 | 2 | | 1 | | | 2 | 1 | 1 | 2 |
| CO6 | 3 | 3 | 1 | 3 | 1 | 3 | 2 | | 1 | | | 2 | 2 | 1 | 2 |

COMPUTER NETWORKS

1. Write a program to implement Sliding Window Protocol.
2. Write a program to implement any Error detection code.
3. Write a program to implement Distance Vector Routing.
4. Write a program to implement Shortest Path Algorithm.
5. Write a program to implement TCP echo using client-server program
6. Write a program to implement File transfer using UDP.

INFORMATION SECURITY

1. Write a program to implement Caesar cipher.
2. Write a program to implement Playfair cipher.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

3. Write a program to implement Hill cipher.
4. Write a program to implement any symmetric key algorithm.
5. Write a program to Implement RSA Cryptosystem
6. Write a program to Implement the Diffie–Hellman key exchange protocol

TEXT BOOKS:

- 1.Computer Networks, Andrew S. Tanenbaum, Fouth Edition, Pearson Education.
- 2.Cryptography and network Security, Third edition, Stallings, PHI/Pearson

REFERENCES:

- 1.Computer Networks: Principles, Technologies and Protocols for Network Design, Natalia Olifer, Victor Olifer, Wiley India.
- 2.Data Communications and Networking, Behrouz A. Forouzan, Fourth Edition, Tata McGraw Hill.
- 3.Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
- 4.Principles of Information Security, Whitman, Thomson

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. I-Sem (CSE)

T C

3 1.5

() Operating Systems Lab

OBJECTIVES:

A student will be able to:

- ❖ Prepare students for easy transfer from academia into practical life.
- ❖ Get an Insight into the Computer Technologies.
- ❖ Obtain Basic Knowledge of Operating Systems.

OUTCOMES:

The main learning outcomes are:

- ❖ Implement various modules for CPU scheduling algorithms
- ❖ Simulation of Bankers algorithm for deadlock avoidance and prevention
- ❖ Implement various modules for PAGE replacement algorithms
- ❖ Simulate various memory allocation techniques
- ❖ Simulate various file allocation and paging techniques

CO-PO MAPPING:

| CO / PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|---------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 1 | 3 | | | | | | | | | | | | | |
| CO2 | | 3 | 1 | | | | | | | | | | | | |
| CO3 | 1 | 2 | | | | | | | | | | | | | |
| CO4 | 1 | 3 | 1 | | | | | | | | | | | | |
| CO5 | 1 | 2 | | | | | | | | | | | | | |

1. Simulate the following CPU scheduling algorithms
 - a) FCFS b) SJF c) Priority d) Round Robin
2. Simulate Bankers Algorithm for Dead Lock Avoidance
3. Simulate Bankers Algorithm for Dead Lock Detection
4. Simulate the page replacement algorithms
 - a) FIFO b) LRU c) Optimal
5. Simulate the dynamic storage allocation strategies
 - a) First fit b) Best fit c) Worst fit
6. Simulate MVT architecture
7. Simulate MFT architecture
8. Simulate sequential file allocation strategy
9. Simulate linked file allocation strategy
10. Simulate paging technique
11. Simulate following File Organization Techniques
 - a) Single level directory b) Two level directory

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

REFERENCES:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.
2. Operating Systems, A Concept based Approach - D.M.Dhamdhere, Second Edition, TMH.
3. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition–2009, Pearson Education.

**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING**

III B. Tech. I- Sem (CSE)

| | |
|---|-----|
| P | C |
| 3 | 1.5 |

Web Programming Lab

OBJECTIVE :

1. In-depth learning of client side scripting like HTML, JavaScript and server side scripting like servlets, JSPs. Also focuses on XML and web servers and database interfacing.
2. Use the “echo” and “print” to send output to the browser.
3. Learn how to create and use PHP basic and advanced concepts.
4. Write PHP programs that access form data

OUTCOMES:

1. Student can able to demonstrate the HTML important tags and for designing static web pages and separate design from content using CSS.
2. Able to design a webpage with more user interactivity using JavaScript and understand the need of XML in the developing of Web applications.
3. Students able to understand the need of Server side scripting using Servlets and JSP along with database connectivity.
4. Understand the syntax and basic concepts of PHP, conditional and looping statements, Arrays and Functions, strings and files
5. Understand and develop programs on PHP object-oriented concepts and advanced concepts (cookies&sessions) and data and time functions.
6. Be able to develop a form containing several fields and be able to process the data with database using html & PHP-based script.

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | | 1 | | 1 | 1 | 1 | | 1 | 2 | 1 | 1 | 1 | | 1 |
| CO2 | 1 | | 2 | | | | | | | | | | 1 | | |
| CO3 | 1 | | 3 | 2 | 2 | | | 2 | 2 | 2 | 3 | 1 | 2 | 2 | 2 |
| CO4 | 2 | 1 | 2 | | 1 | | | | | 1 | | | 1 | | |
| CO5 | 1 | | 2 | | 2 | | | | | 1 | 1 | | | 1 | 1 |
| CO6 | 1 | 1 | 3 | 2 | 1 | 2 | 2 | | 3 | 2 | 3 | 1 | 1 | 2 | 2 |

Week1

1. Write a HTML program to develop static Home Page using frames.
2. Write a HTML program to develop a static Registration Form.
3. Write a HTML program to develop a static Login Page.
4. Write HTML for demonstration of cascading style sheets.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****Week2**

5. Write a javascript program to validate USER LOGIN page.
6. Write a javascript program for validating REGISTRATION FORM

Week3

7. Write an XML for person information and access the data using XSL.
8. Write an XML for student information and access second student's data using DOM.

Week4

9. Write a servlet for displaying a message.
10. Write a servlet that reads parameters from employee login page.

Week5

11. Write a JSP that reads parameters from user login page.
12. Write a JSP that reads a value, creates a cookie and retrieves it.
13. Write a servlet that connects to the database and retrieves the data and displays it.

Week6

14. Write a PHP program to perform arithmetic operations on variables.
15. Write a PHP programs on different controls and looping statements.

Week7

16. Create a PHP program to demonstrate the different predefined functions in strings.

Week8

17. Create a PHP program on Inheritance concept.
18. Create a PHP program on constructors and destructors.
19. Create a PHP program on interfaces.

Week10

20. Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Use PHP script for programs 1 and 2.
 - a) Create a Cookie and add these four user ID" s and passwords to this Cookie.
 - b) Read the User id and Passwords entered in the Login form and authenticate with the values (UserId and Passwords) available in the cookies.If he is a valid user (i.e., UserName and Password match) you should welcome him by name (UserName) else you should display "You are not an authenticated user"".

Week11

21. Write a PHP program to start a PHP Session.
22. Write a PHP program to destroy a PHP Session.
23. Write a PHP program to store page views count in SESSION, to increment the count on each refresh, and to show the count on web page.

Week12

24. Write a PHP program on date and time concepts.

Week13

25. Write a PHP program on multiple forms using hidden fields.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

26. Write a PHP program to prevent multiple submissions on client and server side.

Week12

27. Write a PHP program to perform the following database operations :

i. Create ii. Insert iii. Update iv. Delete

28. Write a PHP which does the following job: Authenticate the user when he submits the login form using the Username and Password.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() C# & .NET FRAMEWORK**AIM:**

- ❖ To cover the fundamental concepts of the C# language and the .NET framework.

OBJECTIVE:

- ❖ The student will gain knowledge in the concepts of the .NET framework as a whole and the technologies that constitute the Framework.
- ❖ The student will gain programming skills in C# both in basic and advanced levels.
- ❖ By building sample applications, the student will get experience and be ready for large-scale projects.

OUTCOMES:

- ❖ Understand the .NET Framework and syntax of basic C# programming constructs.
- ❖ Create and use new types (enumerations, classes, and structures), and understand the differences between reference types and value types.
- ❖ Use collections to aggregate data, and use Generics to implement type-safe collection classes, structures, interfaces, and methods.
- ❖ Design, document, code and unit test class libraries as part of larger projects like WINFORMS, SQL Server and ADO.NET
- ❖ Create web-based distributed applications using C#, ASP.NET, SQL Server and ADO.NET.
- ❖ Create and debug application and class library solutions and projects.

CO-PO MAPPING:

| CO / PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|---------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 2 | | 1 | 1 | 2 | 1 | | | 1 | | | 1 | | | |
| CO2 | 2 | 2 | 2 | | 2 | 1 | | | 1 | | | 1 | | | |
| CO3 | 2 | 1 | 2 | | 2 | | | | | | | 2 | | | |
| CO4 | 2 | 1 | 3 | 1 | 3 | | | | 2 | | 1 | 2 | | | |
| CO5 | 2 | 1 | 3 | 1 | 3 | | | | 1 | | 1 | 2 | | | |
| CO6 | 2 | 1 | 1 | 2 | 3 | | | | 1 | | 1 | 2 | | | |

UNIT I

INTRODUCTION to C#: Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

UNIT II

OBJECT ORIENTED ASPECTS OF C#: Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Errors and Exceptions.

UNIT III

WINDOWS APPLICATIONS: Drawbacks of Console Applications, Container Controls, Non Container Controls, Developing Windows Application from Notepad

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

and Visual Studio, Events, Types of Events – Mouse, Focus, Drag, Key and Other Related Events, Building Windows Applications.

ADO.NET: Problems with File Handling, Data Source Communication, Drivers and Providers, Introduction of ADO.NET, ADO.NET Namespaces, ADO.NET Objects, Accessing Data with ADO.NET.

UNIT IV

BUILDING ASP.NET WEB PAGES: HTML form Development, Client side Scripting, Server side Scripting, Web applications and Web servers, HTTP, Advantages Using ASP.NET, ASP.NET Application, ASP.NET Namespaces, ASP.NET Web Page Structure, Creating Sample C# Web Applications, ASP.NET Web Page Execution Architecture, Debugging and Tracing of ASP.NET.

UNIT V

ASP.NET WEB CONTROLS: Web Form Structures, Introduction to Web Form controls, Server Side Controls, Web Server Controls, GET and POST, Page Submission, Web Page Creation Techniques, Redirection between Web Pages, Validation Controls.

UNIT VI

WEB SERVICES: Web Services, Web Service Architecture, WSDL, Building WSDL Web Service.

CONFIGURING .NET ASSEMBLIES: Private Assemblies, Shared Assemblies, and Versioning.

MULTITHREADED PROGRAMMING: Thread Class, Life Cycle of a Thread, Steps for Creating a Thread, Thread Synchronization.

TEXT BOOKS:

1. Pro C# 2010 and the .NET 4 Platform, Andrew Trolesen,
2. Programming in C#, E. Balagurusamy, Tata McGraw-Hill, 2004.

REFERENCE BOOKS:

1. Programming C#, J. Liberty, 2nd Edition., O'Reilly, 2002.
2. C# and the .NET Platform, Andrew Trolesen, 2nd Edition, Dreamtech Press
3. Sams Teach Yourself the C# Language in 21 Days', Bradley L Jones, 1st edition, 2001.
4. Microsoft C# Programming for the Absolute Beginner, Andy Harris, PTR publications, 2002.
5. The Complete Reference: C#, Herbert Schildt, Tata McGraw-Hill, 2004.
6. Professional C#, Robinson et al, 2nd Edition., WroxPress, 2002.
7. C# and the .NET Platform, Andrew Troelsen, Al Press, 2003.
8. A Textbook on C#, S. ThamaraiSelvi, R. Murugesan, Pearson Education, 2003.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() Data Warehousing and Mining**OBJECTIVES:**

The main objective of this course is to provide students

- ❖ With the basic data warehousing and data mining concepts
- ❖ To learn mining rules in large databases
- ❖ To get idea on clustering analysis
- ❖ Applications that can enable them to set up and manage an industrial data warehousing and data mining system.
- ❖ To learn about OLTP and OLAP systems

OUTCOMES:

Upon completion of the course students should:

- ❖ Ability to do Conceptual, Logical, and Physical design of Data Warehouses
- ❖ Familiarity with Requirements Engineering for Data Warehouses
- ❖ OLAP applications and OLAP deployment
- ❖ Have a good knowledge of the fundamental concepts that provide the foundation of data mining.
- ❖ Learn broad classes of data mining technologies
- ❖ Understand how these concepts are engineered to use some of the basic data mining tools.

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 1 | | 2 | | | | | | | 1 | | | | 3 | |
| CO2 | | 1 | | 2 | 2 | | | 2 | | | | | 1 | | |
| CO3 | 2 | 1 | | | | 1 | | | | | | 2 | | | 2 |
| CO4 | 1 | | | 1 | | | | 2 | | | | | 2 | | |
| CO5 | 1 | | 2 | | | | | | | | | | | 3 | |
| CO6 | 2 | | 2 | | 1 | | | 1 | | | | | | | 1 |

UNIT – I

Introduction: What Motivated Data Mining? Why is it Important?; What is Data Mining?; Data Mining-On What Kind of Data?; Data Mining Functionalities: What kinds of Data Can be Mined?; Are all of Patterns Interesting?; Classification of Data Mining Systems; Data Mining task primitives;

Data Warehouse and OLAP Technology: What is a Data Warehouse?; A Multidimensional Data Model: From Tables and Spreadsheet to Data Cubes, Stars, Snowflakes and Fact constellation schemas for Multidimensional Databases, Measures: Their Categorization and Computation, Concept Hierarchies, OLAP operations in the Multidimensional Data Model; Data Warehouse Architecture:

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Steps for the Design and Construction of Data Warehouses, A three-tier Architecture.

UNIT-II

Data Pre-processing: Why pre-process the data; Descriptive Data Summarization: Measuring the Central Tendency, Measuring the Dispersion of Data, Graphic Displays of Basic Descriptive Data Summaries; Data Cleaning: Missing values, Noisy Data Cleaning as a process; Data Integration and Transformation: Data Integration, Data Transformation, Data Reduction: Data Cube aggregation, attribute subset selection; Dimensionality Reduction, Numerosity Reduction;

UNIT-III

Mining Frequent patterns, Associations, and Correlations: Basic Concepts; Efficient and Scalable Frequent Itemset Mining methods: The Apriori Algorithm, Generating Association Rules from Frequent Itemsets, Improving Efficiency of Apriori, Mining Frequent Itemsets without Candidate Generation; Mining various kinds of Association Rules: Mining multilevel & multi-dimensional association rules; From Association Mining to Correlation Analysis: Strong Rules are not necessarily Interesting, From Association analysis to Correlation analysis;

UNIT-IV

Classification I: Overview of Classification and Prediction: What is Classification, What is prediction?; Issues Regarding Classification and Prediction: Preparing data for Classification and Prediction, Comparing Classification and Prediction Methods; Bayesian Classification: Bayes' theorem, Naïve Bayesian Classification; Classification by Decision Tree Induction: Decision Tree Induction, Attribute Selection Measures, Tree Pruning, Scalability and Decision Tree Induction; Rule-Based Classification: Using IF-THEN rules for Classification, Rule Extraction from Decision Tree, Rule Induction using a Sequential Covering Algorithm; Classification by Back propagation: A Multilayer Feed-Forward Neural Network, Defining Network Topology, Back propagation;

UNIT-V

Classification II and Prediction: Support Vector Machines: The Case when the Data are Linearly Separable, The Case when the Data are Linearly Inseparable; Lazy Learners: k-Nearest-Neighbour Classifiers, Case-Based Reasoning; Prediction: Linear Regression, Nonlinear Regression; Accuracy and Error Measures: Classifier Accuracy Measures, Predictor Error Measures; Evaluating the Accuracy of a Classifier or Predictor: Holdout Method and Random sub sampling, Cross validation, Bootstrap;

UNIT-VI

Cluster Analysis: Overview of Cluster Analysis; Types of data in Cluster Analysis: Interval-Scaled Variables, Binary Variables, Categorical, Ordinal, and Ratio-Scaled variables, Variables of Mixed Types; A Categorization of Major Clustering Methods; Partitioning Methods: Classical Partitioning Methods: k-Means and k-Medoids,

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Partitioning Methods in Large Databases: From k-Medoids to CLARANS; Hierarchical Methods: Agglomerative and Divisive Hierarchical Clustering, BIRCH, ROCK; Density-Based Methods: DBSCAN; Grid-Based Methods: STING; Model-Based Clustering Methods: Expectation-Maximization;

TEXT BOOKS:

1. Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber Harcourt India, second Edition.

REFERENCES:

1. Data Mining Introductory and advanced topics–Margaret H Dunham, Pearson Education
2. Data Mining Techniques – Arun K Pujari, University Press.
3. Data Warehousing in the Real World – Sam Anahory & Dennis Murray. Pearson Edn Asia.
4. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley Student Edition
5. The Data Warehouse Life cycle Tool kit – Ralph Kimball Wiley Student Edition.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() Android Programming**OBJECTIVES:**

Upon completion of this course, you will be able to:

- ❖ Build your own Android apps
- ❖ Explain the differences between Android and other mobile development environments
- ❖ Understand how Android applications work, their life cycle, manifest, Intents, and using external resources
- ❖ Design and develop useful Android applications with compelling user interfaces by using, extending, and creating your own layouts and Views and using Menus.
- ❖ Take advantage of Android's APIs for data storage, retrieval, user preferences, files, databases, and content providers
- ❖ Tap into location-based services, geocoder, compass sensors, and create rich map-based applications

OUTCOMES:

- ❖ Understand the Android Framework and architecture. Installation on Android studio and its project development environment.
- ❖ Display proficiency in coding on a mobile programming platform and accessing the User Interfaces built-in application tools.
- ❖ Storage tools, Webview and Telephony concepts for the Android platform.
- ❖ Design and develop Multimedia application in android.
- ❖ Create a Mobile app with a significant programming component Tap into Built-in Services.
- ❖ Create a Mobile app with a significant programming component to google map locations, content Provider and dialog box.

CO-PO MAPPING:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|-------|
| CO1 | | | 1 | | 2 | | | | 1 | | | | 1 | | |
| CO2 | | 1 | 3 | | 1 | | | | | | | | 1 | 1 | |
| CO3 | | | 1 | | 1 | | | 1 | | | | | 1 | 1 | |
| CO4 | | 1 | 1 | | 1 | 1 | | | | | | | 1 | 1 | |
| CO5 | 2 | | 2 | | 1 | | | | | | | 1 | 1 | 2 | 1 |
| CO6 | 1 | | 2 | | 1 | | | | | | | 1 | 1 | 2 | |

UNIT-I

Introduction to Android, Types of Mobile Applications, Android Architecture(About DVM, Linux kernel, Java libraries & Native libraries, application frame work), Android Framework(Activity, Service, Broadcast Receiver, Content Provider), Android Studio Environment(how to Install, install in emulator, real device) Project Structure(R.Java, res folder, manifest.xml and .apk file), Android features, History, Layout UI groups(Linear Layout, Relative Layout, Table Layout, Frame Layout, Grid Layout), Width and height properties(Match parent, Wrap content, Pixel, Density pixel and Scaled pixel).

UNIT-II

Activity, Activity lifecycle, Life cycle Methods, Intents, Intent Methods, layout file and its child elements and attributes, Basic UI Components(Text View, Button, Edit Text, Radio

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Button, Check Box), Advanced UI Components (AutoCompleteTextView, Spinner, ListView) Adapters (ArrayAdapter, Custom Adapter), Toast.

UNIT-III

WebView, WebView-HTML Communication, Fragment, Fragment Life Cycle. **Storage Methods:** shared preferences, SQLite Database (insert, read, update, delete). **Telephony:** send SMS, Call, Attaching File, and Send E-Mail.

UNIT-IV

Multimedia in Android: Media Player, Video View, Audio Recording, Video recording, Camera, Gallery. **Service:** Service, Service lifecycle methods.

UNIT-V

Built-in Services (location service, Notification service, Sensor Service, WIFI Service, Bluetooth Service, Vibrator Service), Broadcast Receivers.

UNIT-VI

Content Provider, Dialog Boxes (Custom dialog, Alert dialog, date Picker, Time Picker, Progress dialog, dialog Fragment), Google Maps.

TEXT BOOKS:

1. Android Application Development (with Kitkat Support), Black Book by Pradeep Kothari.
2. Android Programming: Pushing the Limits by Erik Hellman.

REFERENCES:

1. Beginning Android 4 Application Development by Wei-Meng Lee
2. Android Application Development for Dummies by Michael Burton

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() Machine Learning

(Professional Elective-1)

OBJECTIVES:

To give students

- ❖ Basic knowledge about the key algorithms and theory that form the foundation of machine learning and computational intelligence
- ❖ A practical knowledge of machine learning algorithms and methods

OUT COMES:

They will be able to

- ❖ Understand the principles, advantages, limitations and possible applications of machine learning.
- ❖ Identify and apply the appropriate machine learning technique to classification, pattern recognition, optimization and decision problems.
- ❖ Provides a broad introduction to machine learning, data mining, and statistical pattern recognition.
- ❖ Understands a wide variety of learning algorithms and how to apply them on the data.
- ❖ Understand how to perform evolution of learning algorithms and model selection.
- ❖ Learn not only the theoretical underpinnings of learning but also gain practical know how needed to quickly and powerfully apply these techniques to new problems.

CO-PO MAPPING:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | 2 | 1 | | 2 | | | | 2 | | | | 1 | 1 | 2 |
| CO2 | 3 | | | | | | 2 | | | | | 1 | | 1 | 1 |
| CO3 | 2 | | | 2 | | | | | | 1 | | 2 | | | 1 |
| CO4 | | 3 | 1 | | | 1 | | | | | 2 | | | | 1 |
| CO5 | | | | | | | | | | | | | | | 1 |
| CO6 | | 2 | 1 | 1 | | | | | | | | 2 | | | 1 |

UNIT – I

Introduction: Machine perception, pattern recognition example, pattern recognition systems, the design cycle, learning and adaptation.

UNIT – II

Bayesian Decision Theory: Introduction, continuous features – two categories classifications, minimum error-rate classification- zero-one loss function, classifiers, discriminant functions, and decision surfaces.

UNIT – III

Maximum likelihood and Bayesian parameter estimation: Introduction, maximum likelihood estimation, Bayesian estimation, Bayesian parameter estimation–Gaussian case.

UNIT – IV

Un-supervised learning and clustering: Introduction, mixture densities and identifiability, maximum likelihood estimates, application to normal mixtures, K-means clustering. Data description and clustering – similarity measures, criteria function for clustering.

UNIT – V

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

Component analysis: Principal component analysis, non-linear component analysis; Low dimensional representations and multi-dimensional scaling.

UNIT-VI

Stochastic methods: Introduction, Stochastic search, Boltzmann learning

TEXT BOOKS:

1. **“Pattern classifications”**, Richard O. Duda, Peter E. Hart, David G. Stroke. Wiley student edition, Second Edition.

REFERENCE BOOKS:

1. **“Pattern Recognition and Image Analysis”** – Earl Gose, Richard John baugh, Steve Jost.
2. **“Introduction to Machine Learning”** by Ethem Alpaydin, PHI 2nd Edition.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

CLOUD INFRASTRUCTURE AND SERVICES

(Professional Elective-1)

OBJECTIVES:

- ❖ Explain the importance and benefits of Cloud computing and the need for its rapid adoption
- ❖ Explain roadmap for transformation from classic to cloud environment
- ❖ Identify and differentiate various infrastructure components of classic and virtualized data center
- ❖ Explain virtualization requirements and available tools at each layer of IT infrastructure
- ❖ Explain business continuity options in a virtualized environment
- ❖ Discuss effective cloud computing deployment model for businesses/IT organizations

OUTCOMES:

Upon successful completion of this course, participants should be able to:

- ❖ Explain the phases of transition from classic data center to virtual data center and then to the Cloud
- ❖ Describe virtualization technology at server, storage, network, desktop, and application layers of IT infrastructure
- ❖ Explain the key characteristics, services, and deployment models of Cloud
- ❖ Describe the Cloud infrastructure components and service management processes
- ❖ Describe Cloud security concerns and solutions
- ❖ List the key considerations for migration to the Cloud

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 1 | 2 | 1 | | 1 | | | | 1 | 1 | | 1 | | | |
| CO2 | 3 | 1 | 2 | | 2 | | | | 2 | 3 | | 1 | | | |
| CO3 | 2 | 1 | 1 | | 1 | | | | 1 | 2 | | 1 | | | |
| CO4 | 1 | 1 | 1 | | 1 | | | | 1 | 2 | | 1 | | | |
| CO5 | 3 | 3 | 3 | | 3 | | | | 2 | 1 | | 1 | | | |
| CO6 | 1 | 2 | 1 | | 2 | | | | 1 | 1 | | 1 | | | |

UNIT I:

Journey to the Cloud: This unit focuses on the business drivers, definition, essential characteristics, and phases of journey to the Cloud. Business drivers for Cloud computing, Definition of Cloud computing, Characteristics of Cloud computing as per NIST, Steps involved in transitioning from Classic data center to Cloud computing environment.

UNIT II:

Classic Data Center (CDC); This unit focuses on the key elements of CDC – compute, storage, and network, with focus on storage networking, business continuity, and data center management. Application, DBMS, Compute, Storage and Networking, Object based and Unified storage technologies,

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Business continuity overview and backup, Replication technologies, CDC Management.

UNIT III:

Virtualized Data Center (VDC) – Compute and Storage: VDC Compute: compute aspect of the VDC, fundamental concepts of compute virtualization and techniques, virtual machine (VM) components and management of compute resources, process to convert physical machine to VM.

VDC Storage: storage virtualization implementation, key underlying technologies, methods for providing virtual storage to compute systems in a VDC environment.

UNIT IV:

Virtualized Data Center (VDC) – Networking and desktop applications: VDC Networking: network virtualization in VDC, VDC network infrastructure and components, virtual LAN, and virtual SAN. key network traffic management techniques.

VDC Desktop and Application: the various aspects of desktop and application virtualization technologies.

Business Continuity in VDC: concepts and techniques employed for ensuring business continuity, mechanisms to protect single point of failure, various technology options for backup, replication, and migration of VMs and their data, various options for recovering from total site failure due to a disaster.

UNIT V:

Cloud Computing and Infrastructure: Cloud Computing Primer: essential characteristics of Cloud Computing, Cloud services and deployment models, the economics of Cloud.

Cloud Infrastructure and Management: Cloud infrastructure components, Cloud service creation processes. Cloud service management processes, delivery of Cloud services is aligned with business objectives, expectations of Cloud service consumers.

Unit VI:

Cloud Security and Migration to cloud: Cloud Security: Security concerns and counter measures in a VDC and Cloud environment, Key security concerns and threats, infrastructure security mechanisms in VDC and cloud environments, access control, identity management, governance, cloud security best practices.

Cloud Migration Considerations: considerations for migration to the cloud, details 'cloud models' suitable for different categories of users, governance, risk

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

and compliance aspects in Cloud, considerations for choosing applications suitable for Cloud, different phases to adopt the Cloud.

TEXT BOOKS:

1. **Cloud Computing: A Practical Approach** Author: Anthony T. Velte, Publisher: Tata Mcgraw Hill Education Private Limited (2009), ISBN: 0070683514

REFERENCE BOOKS:

1. **Cloud Computing For Dummies** Author: Halper Fern, Kaufman Marcia, Bloor Robin, Hurwit Judith, Publisher: Wiley India Pvt Ltd (2009), ISBN: 8126524871

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

Principles of Programming Languages

(Professional Elective-1)

OBJECTIVES:

- ❖ The main objective is that students will have a deep, working knowledge of the functional paradigm and the key ideas used in modern programming languages. It provides an exposure to core concepts and principles in contemporary programming languages

OUTCOMES:

- ❖ Apply the parse tree, ambiguity, semantics and syntax of a grammar and understanding the programming domains.
- ❖ Understanding arrays of different programming languages and variables.
- ❖ Understanding the statements, parentheses and control statements of different programming language.
- ❖ Apply the concepts of subprograms of programming languages.
- ❖ Understanding the Abstract data types and designs various kinds of programming languages.
- ❖ Understanding the logic programming and functional programming.

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 2 | 1 | 2 | | | | | | 2 | | | 1 | 1 | 1 | |
| CO2 | 2 | 1 | 1 | | | | | | 1 | | | 2 | | 2 | 1 |
| CO3 | 1 | | | | | | | | | | | 2 | | 2 | 2 |
| CO4 | 2 | 1 | 1 | | | | | | 1 | | | 2 | | 2 | 1 |
| CO5 | 2 | 1 | 2 | | | | | | 1 | | | 1 | | 2 | |
| CO6 | 2 | 1 | | | | | | | 1 | | | | | 1 | |

UNIT I

Preliminary Concepts: Reasons for studying concepts of programming languages, Programming domains, Language Evaluation Criteria Influences on language design, Language categories, Language Design Trades-Offs, Implementation Methods, Programming Environments Syntax and Semantics: general Problem of describing Syntax and Semantics, Formal Methods of Describing Syntax-BNF, EBNF.

UNIT II

Data types: Introduction, primitive, character, user defined, array, associative, record, union, design and implementation uses related to these types. Names, Variable, type checking, strong typing, type compatibility.

UNIT III

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation Assignment Statements, Control Structures: Statement Level, Compound Statements, Selection, Iteration, guarded commands.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****UNIT IV**

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, Design issues of subprograms and operations, parameter passing methods, generic sub-programs, user defined overloaded operators, co routines.

UNIT V

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, language examples, object oriented programming in small talk, C++, Java, C#. Exception handling: Exceptions, exception Propagation, Exception handler in Java, Ada.

UNIT VI

Logic Programming Language: Introduction and overview of logic programming, basic elements of prolog, application of logic programming. Functional Programming Languages: Introduction, fundamentals of FPL, The first FPL: LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

TEXT BOOKS:

1. Concepts of Programming Languages Robert W. Sebesta, Eighth Edition, Pearson Education, 2008.
2. Programming Language Design Concepts, D. A. Watt, Wiley Dreamtech, 2007.

REFERENCES:

1. Programming Languages, Second Edition, A.B. Tucker, R.E. Noonan, TMH.
2. Programming Languages, K. C. Louden, Second Edition, Thomson, 2003.
3. LISP, Patric Henry Winston and Paul Horn, Pearson Education.
4. Programming in Prolog, W.F. Clocksin and C.S. Mellish, Fifth Edition, Springer.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

Image Processing
(Professional Elective-1)**OBJECTIVES:**

- ❖ To learn the fundamentals of Image Processing.
- ❖ To learn sampling and reconstruction procedures.
- ❖ To learn the various transforms used in image Processing.
- ❖ To study various concepts of image enhancement, reconstruction and image compression.
- ❖ To design image processing systems.

OUTCOMES:

- Understand Image Representation and modeling
- Apply Image Transformation methods
- Implement Image processing algorithms
- Implement Image Segmentation algorithms
- Apply the Image processing algorithms for object recognition and detection

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 2 | 2 | 1 | | 2 | | | | 2 | 3 | | | | | |
| CO2 | 2 | 2 | 1 | | 3 | | | | 2 | 3 | | | | | |
| CO3 | 3 | 3 | 2 | | 3 | | | | 3 | 3 | | | | | |
| CO4 | 2 | 3 | 2 | | 3 | | | | 3 | 3 | | | | | |
| CO5 | 3 | 3 | 3 | | 3 | | | 3 | 3 | 3 | 3 | 3 | | | |

UNIT - I

Digital Image Fundamentals -- image model, image sampling and quantization, basic relationships between pixels, neighbors, distance measures – linear and nonlinear operations.

UNIT - II

Image enhancement in the spatial domain : gray-level transformation, histogram processing, enhancement using arithmetic and logic operators, basic spatial filtering, smoothing and sharpening spatial filters, combining the spatial enhancement methods.

UNIT – III

Image enhancement in the frequency domain: Fourier transform – one dimensional, two dimensional DFT, filtering – Smoothing frequency domain filters - lowpass filters – highpass filters – Homomorphic filtering.

UNIT-IV

Image restoration : A model of the image degradation/restoration process, noise models, restoration in the presence of noise–only spatial filtering, Weiner, constrained least squares filtering, geometric transforms.

UNIT - V

Image Compression : Fundamentals, image compression models, error-free compression, Lossy compression, Lossy predictive coding, transform coding, Wavelet Coding, image compression standards.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****UNIT - VI**

Image Segmentation : Detection of discontinuous, edge linking and boundary detection, thresholding, region-based segmentation, segmentation by morphological watersheds.

TEXT BOOK :

1. Digital Image processing – R.C. Gonzalez & R.E. Woods, Addison Wesley/ Pearson education, 2nd Edition, 2002.
2. Digital image processing by S.Jayaraman, S.Esakkirajan & T.Veera Kumar, Tata McGraw Hill, 2010.

REFERENCES :

1. Fundamentals of Digital Image processing – A.K.Jain , PHI.
2. Digital Image processing using MATLAB – Rafael C. Gonzalez, Richard E Woods and Steven L. Edition, PEA, 2004.
3. Digital Image Processing – William K. Pratt, John Wiley, 3rd Edition, 2004.
4. Fundamentals of Electronic Image Processing – Weeks Jr., SPIC/IEEE Series, PHI.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() Agile Software Development

(Open Elective-1)

Upon successful completion of the course, the student will be able to:

CO1: Understand the nature of agile software development to establish a professional software development environment and build teams

CO2: Analyze the customer role related problems in agile development environments.

CO3: Analyze the time related problems in agile development environments

CO4: : Apply measures for quality assurance

CO5: Apply measures for quality assurance and Test Driven Development in agile software development environments

CO6: Analyze the abstraction levels in agile software development and develop trust among team members in learning environment.

COPQ Table

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 1 | 2 | | | 2 | | | | 2 | 3 | | | 1 | 2 | 2 |
| CO2 | 1 | | | | 3 | | | | 2 | 3 | | | 1 | 2 | 2 |
| CO3 | 1 | 2 | 1 | | 3 | | | | 3 | 3 | | 2 | 1 | | 2 |
| CO4 | | | | | | | | | | | | 2 | | | 2 |
| CO5 | 2 | 2 | 1 | | 1 | | | | 3 | 2 | | 2 | 2 | | 2 |
| CO6 | 1 | | | | 2 | | | | 2 | 2 | | | 1 | 2 | 1 |

UNIT-I

Introduction to Agile Software Development-Overview, Objectives, Three Perspectives on Software Engineering, The Agile Manifesto, Application of Agile Software Development, Data About Agile Software Development, Agile Software Development in Learning

UNIT-II

Environments Teamwork- Overview, Objectives, A Role Scheme in Agile Teams, Dilemmas in Teamwork, Teamwork in Learning Environments

Customers and Users- Overview, Objectives, The Customer, The User, Customers and Users in Learning Environments

UNIT-III

Time- Overview, Objectives, Time-Related Problems in Software Projects, Tightness of Software Development Methods, Sustainable Pace, Time Management of Agile Projects, Time in Learning Environments

UNIT-IV

Measures- Overview, Objectives, Why Are Measures Needed?, Who Decides What Is Measured?, What Should Be Measured?, When Are Measures Taken?, How Are Measures Taken?, Who Takes the Measures?, How Are Measures Used?, Case Study- Monitoring a Large-Scale Project by Measures, Measures in Learning Environments.

UNIT-V

Quality- Overview, Objectives, The Agile Approach to Quality Assurance, Test-Driven Development, Measured TDD, Quality in Learning Environments.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

Learning- Overview, Objectives, How Does Agile Software Development Support Learning Processes, Learning in Learning Environments

UNIT-VI

Abstraction- Overview, Objectives, Abstraction Levels in Agile Software Development, Abstraction in Learning Environments Trust- Overview, Objectives, Software Intangibility and Process Transparency, Game Theory Perspective in Software Development, Ethics in Agile Teams, Diversity, Trust in Learning Environments

Text Book(s):

1 Hazza and Dubinsky, —Agile Software Engineering, Series: Undergraduate Topics in Computer Science, Springer, 2009.

Reference Books:

1.Craig Larman, —Agile and Iterative Development: A Managers Guide, Addison-Wesley, 2004.

2.Kevin C. Desouza, —Agile Information Systems: Conceptualization, Construction, and Management, Butterworth-Heinemann, 2007.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() OBJECT ORIENTED ANALYSIS AND DESIGN**(Open Elective –1)****OBJECTIVES:**

- ❖ Building block of UML . : things , relationships and diagrams
- ❖ Contents and common modeling techniques to model static aspects of any system using:
Class diagrams, object diagrams, deployment diagram, usecase diagram
- ❖ Contents and common modeling techniques to model dynamic aspects of any system using:
sequence diagram, collaboration diagram, activity diagram, state chart diagram
- ❖ Contents and common modeling techniques to model any system using component diagram to implement physically.

OUTCOMES:

- ❖ Analyze system requirements and model problem domains
- ❖ Evaluate quality of analysis
- ❖ Design and build object oriented systems
- ❖ Designs based on design principles patterns and heuristics
- ❖ Object-oriented code to correctly implement a design
- ❖ Read and write analysis and design documentation the Unified Modeling language

CO-PO MAPPING:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|-------|
| CO1 | 1 | 2 | 1 | | 3 | | | 2 | | | 1 | 2 | 3 | 2 | |
| CO2 | 1 | | 2 | 1 | | | | 3 | | | 2 | | 1 | 1 | |
| CO3 | 3 | | | 2 | | | | | 2 | | 1 | | | 2 | 2 |
| CO4 | | 2 | | 1 | | | | 1 | | 3 | | 2 | 2 | 1 | |
| CO5 | 2 | | 1 | | 3 | | 2 | | | | | | 1 | | 1 |
| CO6 | 1 | | 2 | | | 1 | | | | 2 | | 3 | | 1 | 1 |

UNIT – I

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, Conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT - II

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT - III

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

Basic Behavioral Modeling-: Interactions, Interaction diagrams. Use cases, Use case Diagrams, Activity Diagrams.

UNIT - IV

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

UNIT - VI

Case Study: The Unified Library application, ATM application.

TEXT BOOKS:

1. Grady Booch, James Rumbaugh, Ivar Jacobson: The Unified Modeling Language User Guide, Pearson Education.

REFERENCE BOOKS:

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEYDreamtech India Pvt. Ltd.
3. AtulKahate: Object Oriented Analysis & Design, The McGraw – Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML,TATAMcGrawHill
5. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.
6. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

3 3

() Computer Graphics

(Open Elective-1)

OBJECTIVES:

This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.

- ❖ The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.
- ❖ Course material is structured to meet the needs of both designers and users of interactive computer graphics systems
- ❖ Provide an understanding of how a computer draws the fundamental graphics primitives - lines and filled polygons in both 2-D and 3-D.
- ❖ Understand the fundamental mathematics involved in generating a 3-D scene. Includes coordinate systems, transformations, and vector operations.
- ❖ Understand the 3-D graphics pipeline, i.e. the steps taken to transform and draw an object. This includes 3-D transformations, lighting and shading, rasterization and texture mapping. Programmable shaders will be introduced.

OUTCOMES:**Upon completion of the course students will be able to:**

- ❖ Draw primitive objects (lines, circles, polygons) on a display.
- ❖ Demonstrate an understanding of contemporary graphics hardware. Be exposed to graphical input and output devices
- ❖ Master 2D & 3D modelling and transformations.
- ❖ Apply projection of 3-D objects on a 2-D plane.
- ❖ Master clipping, fill, and rendering techniques and be exposed to color and shading models.
- ❖ Understand the concepts of Animation techniques and languages

CO-PO MAPPING:

| CO /PO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|--------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | 3 | | | 2 | 1 | | | | | | | 1 | 1 | 3 | 2 |
| CO2 | | 2 | | | 3 | | | | | | 1 | | 2 | 1 | 3 |
| CO3 | | | 3 | 3 | | | 1 | 2 | | | | | 3 | 1 | 2 |
| CO4 | 3 | 2 | | | 1 | | | | | | | | 2 | 1 | 3 |
| CO5 | | 2 | | 3 | | | | 1 | | | | | 1 | 2 | 3 |
| CO6 | | | | | | | | | 2 | 3 | | 1 | 3 | 2 | 1 |

UNIT I

A Survey of Computer Graphics: Overview of graphics systems: Video-Display Devices, Raster-scan Systems, Random-scan Systems, Graphics Monitors and Work stations, Input devices, Hardcopy Devices and Graphics Software.

UNIT II

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Output Primitives: Points and lines, Line drawing algorithms- DDA, Bresenham's line algorithm, Circle generation algorithm and Ellipse Generating algorithms.

UNIT III

2-D Geometrical transforms: Basic Transformations, Matrix representations and Homogeneous coordinates, Composite transforms, Other Transformations, Transformations between coordinate systems.

UNIT IV

2-D Viewing: Definition of view port, clipping and window. The Viewing Pipeline, Viewing coordinate reference frame, Window to View-port coordinate transformation, 2D Viewing functions, Clipping Operation, Point Clipping, Line Clipping: Cohen-Sutherland and Liang - Barsky line clipping algorithms, Polygon Clipping: Sutherland - Hodgeman polygon clipping algorithm.

UNIT V

3-D Geometric and Modelling Transformations: Translation, Rotation, Scaling, other Transformations, Composite Transformations.

UNIT VI

3-D viewing: Viewing Pipeline, Viewing coordinates, Projections.

Computer Animation: Design of Animation Sequence, General Computer Animation functions, Raster Animation, Computer Animation Languages, Key-Frame systems, Motion Specifications.

TEXT BOOKS:

1. "Computer Graphics C version", Donald Hearn and M. Pauline Baker, Pearson education.

REFERENCES:

1. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.
2. "Computer Graphics Second edition", Zhigang Xiang, Roy Plastock, Schaum's outlines, Tata Mc Graw hill edition.
3. "Procedural elements for Computer Graphics", David F Rogers, Tata Mc Graw hill, 2nd edition.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C

1+2* 0.5

**() Campus to Corporate (CTC)
(Skill Development Course)****OBJECTIVES**

- To make the students aware of the GD session in selection process
- To learn the art of presentation and organizing meetings
- To learn about the benefits of team work at the work place
- To learn the process of interviews and also extempore sessions
- To motivate the students with the help of popular motivational stories

OUTCOMES

- The students can develop leadership skills, communication skills, interpersonal skill, analytical and lateral thinking.
- To apply the principles of a good presentation and develop the art of presenting effectively.
- The student can be a good team player by learning about the advantages of team building.
- The student would be able to perform well in interviews and extempore sessions.
- The student also learns the importance of leadership themes by successful stories.

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | | 2 | 1 | | 1 | | 1 | | 3 | 1 | | | 3 | 1 |
| CO2 | | | | | | | 1 | | 1 | 2 | | 2 | | 1 | |
| CO3 | | | | 1 | 2 | | | 2 | | | 1 | | | | |
| CO4 | | | 2 | | 1 | 1 | | | | 2 | | | | | 2 |
| CO5 | | | | | | 2 | | 1 | 3 | | | 1 | | 1 | |

UNIT-I

Group Discussion: Introduction – Concept of GD, Types of GD's, Importance of GD in selection, Do's and Don'ts in GD -GD Tips- Difference between GD and Debate - Mock GD's and Debate - Practical session on GD.

UNIT-II

Presentation Skills: Presentation & Evaluation - Just a minute speeches - Creating a power point presentation - Body language – Conclusions - Planning a meeting-Analyzing a meeting-Analyzing agendas-Round table discussions-Small group presentation-Shaking hands-Logging silences-Talent search-To speak or not to speak-relation ships

UNIT-III

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

Team Work Skills: Dimensions of team building-Components of team building-Purpose of teams-Building blocks for team-Types of team-Team leader skills

UNIT-IV

Interview Skills: Introduction – concept – Types of Interviews – Characteristics of Interviewer –Characteristics of Interviewee – Recruitment interview – Appraisal interview – Research interview

UNIT – V

Extempore: Introduction to Extempore - Common Extempore Topics – SWOT Analysis

UNIT – VI

Leadership Content Themes: Leader – Characteristics – Leader Vs. Manager – Leadership styles – Entrepreneur leadership style – Role of Women as leaders – Success stories of Leadership.

Reference Books:

1. Master the Group Discussion & Personal Interview by Sheetal Desarda, Notion Press
2. Leadership wisdom by Robin Sharma
3. Organisational Behaviour, Stephen P. Robbins, Pearson Education
4. Principles of Management, Koonz, Weihrich and Aryasri, Tata McGraw Hill,2004.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

T C
2

Constitution of INDIA
(Mandatory Learning Course)

Course Objectives: Students will be able to

- ❖ Understand the structure and composition of Indian Constitution
- ❖ Understand and analyze federalism in the Indian context.
- ❖ Analyze Panchayathi Raj institutions as a medium of decentralization
- ❖ Understand and analyze the three organs of the state in the contemporary scenario.

Course Outcomes: Students will be able to

- ❖ Understand historical background of the constitutional making and its importance for building a democratic India.
- ❖ Able to analyze the History, features of Indian constitution, the role Governor and Chief Minister, role of state election commission, the decentralization of power between central, state and local self-government.
- ❖ Aware of Indian government, the structure of state government, the local Administration.
- ❖ Able to evaluate Preamble, Fundamental Rights and Duties, Zilla Panchayat, block level organization, various commissions..

Unit-I

History of Indian Constitution: History of Making of the Indian Constitution - History Drafting Committee - Composition & Working of Constitution.

Unit-II

Philosophy of the Indian Constitution: Preamble Salient Features of Indian Constitution.

Unit-III

Contours of Constitutional Rights & Duties: Fundamental Rights: Right to Equality - Right to Freedom - Right against Exploitation - Right to Freedom of Religion - Cultural and Educational Rights - Right to Constitutional Remedies - Directive Principles of State Policy.

Unit-IV

Organs of Governance: Parliament - Composition - Qualifications and Disqualifications Powers and Functions of Executive - President - Governor - Council of Ministers - Judiciary - Qualifications, Appointment and Transfer of Judges.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

Unit-V

Local Administration: Role and Importance of Municipal Corporation Role and Importance Pachayati raj: Role and Importance Zilla Pachayat: Position and role - Village level: Role of Elected and Appointed officials - Importance of grass root democracy.

Unit-VI

Election Commission: Role and Functioning of Election Commission Role and Functioning of Chief Election Commissioner and Election Commissioners - Role and Functioning of State Election Commission.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

P C

3 1.5

() C# & .NET FRAMEWORK LAB**OBJECTIVE:**

- ❖ The student will gain knowledge in the concepts of the .NET framework as a whole and the technologies that constitute the Framework.
- ❖ The student will gain programming skills in C# both in basic and advanced levels.
- ❖ By building sample applications, the student will get experience and be ready for large-scale projects.

OUTCOMES:

- ❖ Write, compile and debug programs in C# language.
- ❖ To learn the basics of object oriented programming.
- ❖ To get knowledge of windows programming.
- ❖ To get knowledge on server side programming.
- ❖ To gain knowledge on web services and dynamic link libraries.

CO-PO MAPPING:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|-------|
| CO1 | 1 | 1 | 1 | 1 | 2 | 1 | | | 1 | 1 | | 2 | 2 | 2 | 2 |
| CO2 | 2 | 2 | 1 | 1 | 2 | | | | 1 | | 1 | 2 | 1 | 2 | 1 |
| CO3 | 2 | 2 | 2 | 2 | 2 | 1 | | | 2 | | | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 1 | 1 | 3 | | | | 1 | 1 | | 2 | | 2 | 1 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 1 | | | 2 | | | 1 | 1 | 2 | 2 |

LAB-1

1. Write a program to C# to find the smallest single digit factor for a given value.
2. Write a program in C# to print a number if it is prime; otherwise display the largest factor of that number.
3. Write a program in C# to find the magnitude of a number.

LAB-2

4. Write a C# program for addition and multiplication of two matrices.
5. Write a C# program to display the digits of an integer in words.
6. Write a C# program to which reads a set of strings into the rows a two dimensional array and then prints the string having more number of vowels..

LAB-3

7. Write a C# programs to demonstrate the concepts of Structures and Enumerations.
8. Write a C# programs to demonstrate the concepts of Constructors and Inheritance.
9. Write a C# programs to demonstrate the concepts of Polymorphism.

LAB-4

10. Write a C# programs to demonstrate the concepts of Partial classes and Extension methods.
11. Write a C# programs to demonstrate the concepts of Delegates.

LAB-5

12. Write a C# programs to demonstrate the concepts of Label, Text Box and Button controls.
13. Write a C# programs to demonstrate the concepts of Combo Box and List Box controls.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING****LAB-6**

14. Create a Windows application in C# for registration form and fill the details and when you click the submit button it display the details in the message box.
15. Create a Windows application in C# having two text boxes and three buttons named as factorial, prime, factorial series. When you click any button the resultant value will be displayed on the second textbox.

LAB-7

16. Create a ADO.NET application in C# to verify if the connection is established with OLEDB and MS-ACCESS.
17. Create a ADO.NET applications in C# to demonstrate the Data Reader, Data Set, Data Adapter and Data View Objects.

LAB-8

18. Develop the Static Web pages using HTML and some validations along with Java Script.
19. Design an ASP.NET Webpage to demonstrate the Label, Button and Textbox controls.

LAB-9

20. Design an ASP.NET Webpage to work with Cross page and Post back Submissions.
21. Design an ASP.NET Webpage to work with Dropdown list and ListBox controls.

LAB-10

22. Develop a Registration Form with all Validation Controls.
23. Create a Web Service for all Arithmetic operations.

LAB-11

24. Write a C# program to implement Assemblies.
25. Write a C# program to implement Multi Threading and Thread Synchronization.

REFERENCES:

1. Programming in C#, E. Balagurusamy, Tata McGraw-Hill, 2004.
2. Programming C#, J. Liberty, 2nd Edition., O'Reilly, 2002.
3. C# and the .NET Platform, Andrew Trolesen, 2nd Edition, Dreamtech Press
4. Sams Teach Yourself the C# Language in 21 Days', Bradley L Jones, 1st edition, 2001.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS
COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

P C

3 1.5

()Android Programming Lab**OBJECTIVES:**

- ❖ Understand how Android applications work, their life cycle, manifest, Intents, and using externalresources
- ❖ Design and develop useful Android applications with compelling user interfaces by using, extending,and creating yourown layouts and Views and using Menus.
- ❖ Secure, tune, package, and deploy Android applications
- ❖ Use Android's communication APIs for SMS, telephony, network management, and internet resources(HTTP).

OUTCOMES:

- ❖ Display proficiency in coding on a mobile programming platform.
- ❖ Understand the limitations and features of developing for mobile devices.
- ❖ Creating a complete Mobile app with a significant programming component, involving the sensors andhardware features of the phone.
- ❖ Practice existing state of mobile app development via researching existing apps, meeting with industryprofessionals, and formulating new ideas.
- ❖ Display proficiency in coding on a mobile programming platform.
- ❖ Good knowledge of economics and features of the app marketplace by offering the app for download.

CO-PO MAPPING:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------|-------|-------|
| CO1 | | 2 | 1 | | | | | | | 3 | | | 1 | 1 | |
| CO2 | 1 | | | | | | | 3 | | | 2 | | 2 | 3 | 1 |
| CO3 | | 1 | | | | | | | 2 | | 1 | | 2 | 1 | 2 |
| CO4 | | | | 1 | | | 2 | | | | | | 1 | | 1 |
| CO5 | 2 | | 1 | | 3 | | | | | | | | | 1 | 1 |
| CO6 | | | | | | 1 | | | | 2 | | | 2 | 2 | 2 |

EXPERIMENTS:

1. a) Create an android application to display RGM CET Text Message.
b) Create an android application to display RGM CET Message by using Button.
2. Create an android application to call different activities by using Implicit and Explicit Intents.
- 3 a) Create an android application to select item from given list by using
AutoCompleteTextView (ACTV).
b) Create an android application to display dropdown menu items and pick one
item by using Spinner Component.
- 4 a) Create an android application to display internal storage data using Array
Adapter.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

- b) Create an android application to display internal storage data in vertical format by using Custom Adapter.
- 5. Create an android application to display WhatsApp videos in grid view by using Custom Adapter.
- 6. Create an android application to display webpage by using Web view Component.
- 7. Create an android application to display different webpages in fragments by using Fragments Component.
- 8. Create an android application to store the data by using Shared Preferences.
- 9. Create an android application to demonstrate concept of SQLite Database Storage method.
- 10. Create an android application to perform different types of operations (Send SMS, Making call and sending email) by using Telephony app.
- 11. Write an android program to develop Media player application.
- 12 a) Write an android program to develop Video view application
b) Write an android program to develop Audio Recording application.
- 13 a) Write an android program to develop Video Recording application.
b) Write an android program to develop Camera and Gallery application.
- 14 a) Create an android application to get latitude and longitude value by using Location Service.
b) Create an android application to display X, Y Sensor values by using Sensor Service.
- 15 a) Create an android application to get the notifications on Notification Bar by Using Notification Service.
b) Create an android application to display available Wi-Fi devices and Paired Wi-Fi devices by using Wi-Fi Service.
- 16 a) Create an android application to get the Bluetooth devices and list of devices using Bluetooth and Vibrator Service.
b) Create an android application to get the System Announcements by using Broadcast Receiver.
- 17. Create an android application to share the data between multiple applications by using Content Provider.
- 18. Create an android application to display different Dialog Boxes.
- 19. Create an android application to display current location on Google maps by using

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501

AUTONOMOUS

COMPUTER SCIENCE AND ENGINEERING

Google-Maps Service.

REFERENCES:

1. Android Application Development (with Kitkat Support), Black Book by Pradeep Kothari.
2. Beginning Android 4 Application Development by Wei-Meng Lee.
3. Android Application Development for Dummies by Michael Burton

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

P C

3 1.5

() Mini Project**Objectives**

To give exposure to real world environment and enhance capabilities in students for solving societal / industrial / research problems using latest technologies for better employability

Course Outcome: At the end of this course, students will be able to:

1. Students will be able to practice acquired knowledge within the chosen area of technology for project development.
2. Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.
3. Reproduce, improve and refine technical aspects for engineering projects.
4. W324. Work as an individual or in a team in development of technical projects.
5. Communicate and report effectively project related activities and findings.

CO-PO Table

| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PS O-1 | PSO 2 | PSO 3 |
|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|--------|-------|-------|
| CO 1 | 3 | 3 | | | | 3 | 3 | | 3 | 3 | 3 | | | 3 | 3 |
| CO 2 | 3 | 3 | | | 2 | | | 3 | 2 | | 3 | 3 | | 3 | 3 |
| CO 3 | 3 | 3 | | 2 | | | | | 2 | 3 | 3 | 3 | | 3 | 3 |
| CO 4 | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 |
| CO 5 | | | | | 3 | | | 2 | 3 | 3 | 3 | 3 | | 3 | 3 |

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

P

C

0

0.5

() Comprehensive viva voce

Course outcomes

Comprehensive Viva-Voce enables a successful student to

CO1.Demonstrate knowledge in the subjects covered in the semester.

CO2.Present his views cogently and precisely.

CO3.Exhibit professional etiquette suitable for career progression.

CO PO Table

| | Po 1 | po 2 | po 3 | po 4 | po 5 | po 6 | po 7 | po 8 | po 9 | po1 0 | po1 1 | po1 2 | pso -1 | pso -2 | pso -3 |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|-----------|-----------|-----------|
| co 1 | 3 | 3 | - | - | - | - | - | - | - | 2 | - | - | - | 2 | 2 |
| co 2 | 3 | 2 | | | | | | | | 3 | 3 | 3 | | 2 | 3 |
| co 3 | 3 | 3 | | | | | | | | 2 | 3 | 3 | | 3 | 3 |

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG.& TECH., NANDYAL-518 501**AUTONOMOUS****COMPUTER SCIENCE AND ENGINEERING**

III B.Tech. II-Sem (CSE)

P C

0 1

() Internship

The outcome of a student participating in an internship are to:

After successful completion of the course, student will be able to

- ❖ To get the real time exposure to Industry's best practices and System Development Life Cycles
- ❖ Develop industry based projects
- ❖ Understand how to work with team and what skill set they need to work in industry

Students have to work in IT industry for 4-6 weeks.

The students have to start internship during the specified semester

(vacation/weekdays/weekend/holidays). The student needs to complete required work in minimum 4 weeks (28 days).

Students can work with any IT industry and they have to submit the certificate from the authorized person of the organization regarding successful completion of the service.

This certificate will be the basis for completion of the course.

- Students have to submit the report of their work.
- Final evaluation will be done by the faculty panel.