MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

Sponsored by CMR Educational Society

(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade- ISO 9001:2015 Certified)

Maisammaguda, Dhulapally (Post Via. Kompally), Secunderabad – 500100, Telangana State, India.

Contact Number: 7207034237/9133555162, E-Mail ID: mrcet2004@gmail.com, website: www.mrcet.ac.in

BACHELOR OF TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

ACADEMIC REGULATIONS

(Batches admitted from the academic year 2024 - 25)

Note: The regulations hereunder are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already pursuing the program) as may be decided by the Academic Council.

PRELIMINARY DEFINITIONS AND NOMENCLATURES

- ” Autonomous Institution /College” means an institution/college designated as autonomous institute / college by University Grants Commission (UGC), as per the UGC Autonomous College Statutes.

- “Academic Autonomy” means freedom to the College in all aspects ofconducting its academic programs, granted by the University for promoting excellence.

- “Commission” means University Grants Commission.

- “AICTE” means All India Councilfor Technical Education.

- “University” the Jawaharlal Nehru Technological University, Hyderabad.

- “College” means Malla Reddy College of Engineering & Technology, Secunderabad unless indicated otherwise by the context.

- “Program” means:
  - Bachelor of Technology (B.Tech) degree program
  - UG Degree Program: B.Tech

- “Branch” means specialization in a program like B.Tech degree program in Electronics & Communication Engineering, B.Tech degree program in Computer Science and Engineering etc.

- “Course” or “Subject” means a theory or practical subject, identified by its course – number and course-title, which is normally studied in a semester.

- T–Tutorial, P–Practical, D–Drawing, L-Theory, C-Credits

FOREWORD

The autonomy is conferred on Malla Reddy College of Engineering & Technology (MRCET) by UGC based on its performance as well as future commitment and competency to impart quality education. It is a mark of its ability to function independently in accordance with the set norms of the monitoring bodies like UGC and AICTE. It reflects the confidence of the UGC in the autonomous institution to uphold and maintain standards it expects to deliver on its own behalf and thus awards degrees on behalf of the college. Thus, an autonomous institution is given the freedom to have its own curriculum, examination system and monitoring mechanism, independent of the affiliating University but under its observance.

Malla Reddy College of Engineering & Technology (MRCET) is proud to win the credence of all the above bodies monitoring the quality of education and has gladly accepted the responsibility of sustaining, and also improving upon the values and beliefs for which it has been striving for more than a decade in reaching its present standing in the arena of contemporary technical education. As a follow up, statutory bodies like Academic Council and Boards of Studies are constituted with the guidance of the Governing Body of the College and recommendations of the JNTUH Hyderabad to frame the regulations, course structure and syllabi under autonomous status.

The autonomous regulations, course structure and syllabi have been prepared after prolonged and detailed interaction with several experts drawn from academics, industry and research, in accordance with the vision and mission of the college which reflects the mindset of the institution in order to produce quality engineering graduates to the society.

All the faculty, parents and students are requested to go through all the rules and regulations carefully. Any clarifications, if needed, are to be sought at appropriate time with principal of the college, without presumptions, to avoid unwanted subsequent inconveniences and embarrassments. The cooperation of all the stakeholders is sought for the successful implementation of the autonomous system in the larger interests of the institution and brighter prospects of engineering graduates.

"Athoughtbeyond the horizons of success committed for educational excellence"

PRINCIPAL

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)
Sponsored by CMR Educational Society
(Affiliated to JNTU,Hyderabad, Approved by AICTE - Accredited byNBA &NAAC – 'A' Grade- ISO 9001:2015 Certified)
Maisammaguda,Dhulapally (PostVia. Kompally), Secunderabad – 500100, Telangana State,India.
Contact Number: 7207034237/9133555162, E-Mail ID:mrcet2004@gmail.com, website: www.mrcet.ac.in

VISION

- To establish a pedestal for the integral innovation, team spirit, originality and competence in the students, expose them to face the global challenges and become technology leaders of Indian vision of modern society.

MISSION

- To become a model institution in the fields of Engineering, Technology and Management.
- To impart holistic education to the students to renderthem as industry ready engineers.
- To ensure synchronization of MRCET ideologies with challenging demands of International Pioneering Organizations.

QUALITY POLICY

- To implement best practices in Teaching and Learning process for both UG and PG courses meticulously.
- Toprovide state of art infrastructure andexpertise to impart quality education.
- To groom the students to become intellectually creative and professionally competitive.
- To channelize the activities and tune them in heights of commitment and sincerity, the requisites to claim the never - ending ladder of **SUCCESS** year after year.

Graduates Attributes (GAs) as per NBA

❖ **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

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

❖ **Design/ Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

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

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

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

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

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

❖ **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

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

❖ **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one‟s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

❖ **Life-long Learning:** Recognize the need for and have the preparation and ability to Engage in independent and life- long learning in the broadest context of technological Change.

ENGINEERING
GRADUATE

R24 ACADEMIC REGULATIONS FOR B. TECH (REGULAR)

Applicable for the students of B. Tech. (Regular) from the Academic Year 2024-25 and onwards.
The college affiliating to JNTUH, Hyderabad offers a 4-year (8 semesters) Bachelor of Technology (B.Tech.) degree programme, under Choice Based Credit System (CBCS) for the following branches of Engineering.

- **Award of B. Tech. Degree**

A student will be declared eligible for the award of B. Tech. Degree if he fulfills the following academic regulations:

- The candidate shall pursue a course of study for not less than four academic years and not more than eight academic years.
- After eight academic years of course of study, the candidate is permitted to write the examinations for two more years.
- **The candidate shall register for 160 credits and secure 160 credits (With CGPA ≥ 5.0)**
- In addition to 1.3, the candidate has to register for Mandatory courses (Non-credit course) in which 50% of scoring is required for the award of the degree.

2.0 The students, who fail to fulfill all the academic requirements for the award of the degree within ten academic years from the year of their admission, shall forfeit their seats in B. Tech. course.

1. **Courses of study**

The following courses of study are offered at present as specializations for the B. Tech. Course:

S.No	Department	Department Code
01	Aeronautical Engineering	21xx
02	Computer Science Engineering	05xx
03	Computer Science Engineering (AIML)	66xx
04	Computer Science Engineering (DS)	67xx
05	Computer Science Engineering (CS)	62xx
06	Electronics & Communication Engineering	04xx
07	Mechanical Engineering	03xx
08	Electrical and Electronics Engineering	02xx

2. **Credits**

Particulars	Semester	
	* Periods perweek	Credits
Theory	04	04
	03	03
Practical	02	01
Drawing (Theory)	02	02
Drawing (Practical)	02	01
Industry Oriented Mini Project	04	02
Application Development	04	02
Project Phase-I	06	03
Project Phase-II	20	10

***Duration of each period is 60 minutes.**

3. **Distribution and Weightage of Marks**

- The performance of a student in each semester shall be evaluated subject-wise for a maximum of 100 marks for a theory and 100 marks for a practical subject. In addition, Industry Oriented Mini Project and Major Project work shall be evaluated for 100 and 300 marks, respectively.

- For theory subjects the distribution shall be 40 marks for Internal Evaluation and 60 marks for the End-Examination. For theory subjects, during a semester there shall be 2 mid-term examinations. Each mid- term examination consists of i) **Part – A** for 10 marks,

1. **Part – B** for 20 marks with a total duration of 2 hours as follows:

    - Mid_Term Examination for 30 marks:
        - Part - A : Objective/quiz paper for 10 marks.
        - Part – B : Descriptive paper for 20 marks.

The remaining 10 marks of Continuous Internal Assessment (out of 40) are distributed for Assignment/Subject Viva-Voce/Seminar/Case Study on a topic in the concerned subject.

The first Assignment should be submitted before the conduct of the first mid- examination, and the second Assignment should be submitted before the conduct of the second mid-examination. While the first mid-term examination shall be conducted from 1 to • 5 units of the syllabus, the second mid-term examination shall be conducted from the remaining units. The total marks secured by the student in each mid-term examination are evaluated for 30 marks and the average of the two mid-term examinations shall be taken as the final marks secured by each candidate.

However, if any student is absent/scoring internal marks less than 35% in any subject of a mid-term examination he/she will be given a chance to write the internal exam once again after he/she re-registering for the internal exam in the concerned subject and paying stipulated fees as per the norms.

The end examination will be conducted for 60 marks with 5 questions consisting of two parts each (a) and (b), out of which the student has to answer either (a) or (b), not both and each question carrying 12 marks.

- For practical subjects, there shall be a continuous evaluation during a semester for 40 sessional marks and 60 end semester examination marks. Out of the 40 marks for internal evaluation,
    - A write-up on day-to-day experiment in the laboratory (in terms of aim, components/procedure, expected outcome) which shall be evaluated for 15 marks
    - 5 marks for viva-voce **(**or) tutorial (or) case study (or) application (or) poster presentation of the course concerned.
    - Internal practical examination conducted by the laboratory teacher concerned shall beevaluated for 20 marks.
    - The Internal marks shall be evaluated after completion of laboratory course and before semester end practical examination.

  The Semester End Examination for 60 marks shall be conducted with an external examiner and the laboratory teacher. The external examiner shall be appointed from the cluster / other colleges which will be decided by the examination branch of the Institution on par with the affiliating University.

There shall be two internal lab examinations in a Semester and theaverage of the two shall be considered for the award of marks for internal evaluation.

For the subject having design and/or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing) and Estimation, the distribution shall be 40 marks for internal evaluation (20 marks for day-to-day work and 20 marks for internal tests) and 60marks for end semester examination. There shall be two internal tests in a Semester and the average of the two shall be considered for the award of marks for internal tests.

- **There shall be an Industry Oriented Project to be taken in II-year II Semester examination which carries 2 credits. The Mini Project shall be submitted in a report form and presented before the committee. It shall be evaluated for 100 marks out of which 40 marks for Internal and 60 marks External evaluation. The committee consists of an External Examiner, Head of the Department, and the Supervisor of the Mini Project and a Senior Faculty member of the department.**

- Out of a total of 300 marks for the Major Project work which is implemented in two phases i.e., Project I and Project II out of which Project I has to be implemented in IV Year I Semester for which 100 marks shall be allotted. Out of the 100 marks, 40 marks for Internal and 60 marks for External evaluation. Project I shall carry 3 credits and the Internal evaluation shall be on the basis of one seminar given by each student on the topic of his/her project.

- Project II has to be implemented in IV Year II Semester for which 200 marks shall be allotted. Out of the 200 marks, 80 marks are for Internal and 120 marks are for External evaluation. The End Semester Examination of the Major Project work shall be conducted by the same committee as appointed for the Project I. In addition, the project supervisor shall

also be included in the committee. The evaluation of project work shall be made at the end of the IV year. The Internal Evaluation shall be on the basis of two seminars given by each student on the topic of his/her project.

- The Laboratory marks and the sessional marks awarded by the College are subject to scrutiny and scaling by the college wherever necessary. In such cases, the sessional and laboratory marks awarded by the College will be referred to College Academic Committee. The College Academic Committee will arrive at a scaling factor and the marks will be scaled accordingly. The recommendations of the College Academic Committee are final and binding. The laboratory records andinternal test papers shall be preserved in the College as per the Affiliation University rules and produced before the Committees/Academic Council as and when asked for.

4. **Attendance Requirements**

- A student is eligible to write the University examinations only if he acquires a minimum of 75% of attendance in aggregate of all the subjects.
- Condonation of shortage of attendance in aggregate up to 10% (65% and above, and below 75%) in each semester may be granted by the College Academic Committee
- **Shortage of Attendance below 65% in aggregate shall not be condoned.**
- A student who is short of attendance in semester may seek re-admission into that semester when offered within 4 weeks from the date of the commencement of class work.
- **Students whose shortage of attendance is not condoned in any semester are not eligible to write their end semester examination of that class and their registration stands cancelled.**
- A stipulated fee as determined by the examination branch shall be payable towards condonation of shortage of attendance.
- **A student will be promoted to the next semester if he/she satisfies the attendance requirement of the present semester, as applicable, including the days of attendance in sports, games, NCC and NSS activities.**
- **The candidate fulfills the attendance requirement in the present semester, he/she shall not be permitted for readmission into the same class.**

1. **Course Registration:**

- Every student has to register for a set of Courses in each Semester, with the total number of their Credits being limited by considering the permissible weekly Contact Hours (typically: 30/Week); For this, an average Course Registration of minimum 15 Credits/Semester (e.g., 6-7 Courses) and a maximum of 24 credits are generally acceptable on recommendation of concerned academic advisor by satisfying the pre-requisite conditions.
- Approval of the Course Registration will be informed by the concerned Head of the Department on the beginning of the semester by taking the number of students registered (minimum **one-third** students per class) and availability of the faculty into consideration.
- Dropping of the Course Registration can be permitted up to two weeks from the commencement of the semester. Thereafter no droppings are permitted.

- Interchanging of Course Registrations are not permitted.

- The Pre-requisite conditions for the additional course(s) registration by the students are based on the slots available in the Time Table, Class rooms and Faculty availability.

- **Minimum Academic Requirements**

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item no.6.

- A student is deemed to have satisfied the minimum academic requirements if he has earned the credits allotted to each theory/practical design/drawing subject/project and secures not less than 35% of marks in the mid examination (rounded to 14 marks out of 40 marks) and also not less than 35% in end semester examination and minimum 40% of marks in the sum total of the mid-term and end semester exams put together.

- A student will be eligible to be promoted from I year to II year, upon fulfilling the academic requirements of 50 % credits up to I year II semester examinations and secures prescribed minimum attendance in I year.

- A student will be eligible to be promoted from II year to III year, upon fulfilling the academic requirements of 50 % credits up to II year II semester examinations and secures prescribed minimum attendance in II year.

- A student will be eligible to be promoted from III year to IV year, upon fulfilling the academic requirements of 50 % credits up to III year II semester examinations and secures prescribed minimum attendance in III year.

- A student shall register and put up minimum attendance in all 160 credits and shall earn total 160 credits for the award of B.Tech degree. Further, marks obtained in the 160 credits shall be considered for the calculation of percentage of marks as well as overall CGPA.

- Students who fail to earn 160 credits as indicated in the course structure within ten academic years (8 years of study + 2 years additionally for appearing for exams only) from the year of their admission, shall forfeit their seat in B.Tech course and their admission stands cancelled.

- **Course pattern**

- The entire course of study is for four academic years. I, II, III and IV years shall be on semester pattern.

- A student, eligible to appear for the end examination in a subject, but absent for it or has failed in the end semester examination, may write the exam in that subject during the period of supplementary exams.

- When a student is detained for lack of credits/shortage of attendance, he/she will not be promoted to the next semester for that particular academic year. However, the academic regulations under which he was first admitted shall continue to be applicable to him.

1. **Grading Procedure**

2. Marks will be awarded to indicate the performance of student in each theory subject, laboratory/practicals, seminar, UG mini project and UG major project. Based on the percentage of marks obtained (Continuous Internal Evaluation plus

Semester End Examination, both taken grade together) as specified in item 8 above, a corresponding letter shall be given.

3. As a measure of the performance of student, a 10-point absolute grading system using the following letter grades (as per UGC/AICTE guidelines) and corresponding percentage of marks shall be followed.

4. Letter Grades and Grade Points:

The UGC recommends a 10-point grading system with the following letter grades as given below:

Letter Grade	Points	% of Marks secured in a subject or course (Class Intervals)
O (Outstanding)	10	Greater than or equal to 90
A+(Excellent)	9	80 and less than 90
A(Very Good)	8	70 and less than 80
B+(Good)	7	60 and less than 70
B(Average)	6	50 and less than 60
C(Pass)	5	40 and less than 50
F(Fail)	0	Below 40
Ab (Absent)	0	-

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination

5. Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

Credit points (CP) = grade point (GP) x credits …. For a course

- The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

$$SGPA\ (Si) = \Sigma(Ci \times Gi) / \Sigma Ci$$

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

- The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$CGPA = \Sigma(Ci \times Si) / \Sigma\ Ci$$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

- The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

10.5. A student obtaining 'F' grade in any subject shall be deemed to have 'failed' and is required to reappear as a 'supplementary student' in the semester end examination, as and when offered. In such cases, internal marks in those subjects will remain the same as those obtained earlier.

- A student who has not appeared for examination in any subject '**Ab'** grade will be allocated in that subject, and student shall be considered **'failed'**. Student will be required to reappear as a 'supplementary student' in the semester end examination, as and when offered.

- A letter grade does not indicate any specific percentage of marks secured by the student, but it indicates only the range of percentage of marks.

- A student earns grade point (GP) in each subject/ course, on the basis of the letter grade secured in that subject/ course. The corresponding 'credit points' (CP) are computed by multiplying the grade point with credits for that particular subject/ course.

Creditpoints (CP) = grade point (GP) x credits …. For a course

- The student passes the subject/ course only when **GP 5 ('C' grade or above)** **Illustration of calculation of SGPA**

Course/Subject	Credits	Letter Grade	Grade Points	Credit Points
Course 1	4	A	8	4 x 8 = 32
Course 2	4	O	10	4 x 10 = 40
Course 3	4	C	5	4 x 5 = 20
Course 4	3	B	6	3 x 6 = 18
Course 5	3	A+	9	3 x 9 = 27
Course 6	3	C	5	3 x 5 = 15
	21			152

SGPA = 152/21 = 7.24

Illustration of calculation of CGPA:

Course/Subject	Credits	Letter Grade	Grade Points	Credit Points
I Year I Semester				
Course 1	4	A	8	4 x 8 = 32
Course 2	4	A+	9	4 x 9 = 36
Course 3	4	B	6	4 x 6 = 24
Course 4	3	O	10	3 x 10 = 30
Course 5	3	B+	7	3 x 7 = 21
Course 6	3	A	8	3 x 8 = 24

I Year II Semester				
Course 7	4	B+	7	4 x 7 = 28
Course 8	4	O	10	4 x 10 = 40
Course 9	4	A	8	4 x 8 = 32
Course 10	3	B	6	3 x 6 = 18
Course 11	3	C	5	3 x 5 = 15
Course 12	3	A+	9	3 x 9 = 27
	Total Credits = 42			Total Credit Points = 327

CGPA = 327/42 = 7.79

- For merit ranking or comparison purposes or any other listing, **only** the **'rounded off'** values of the CGPAs will be used.

- For calculations listed in regulations 10.4 to 10.9, performance in failed subjects/ courses (securing **F** grade) will also be taken into account, and the credits of such subjects/courses will also be included in the multiplications and summations. After passing the failed subject(s) newly secured letter grades will be taken into account for calculation of SGPA and CGPA. However, mandatory courses will not be taken into consideration.

- **Passing standards**

- Student shall be declared successful or 'passed' in a semester, if student secures a GP ≥ 5 ('C' grade or above) in every subject/course in that semester (i.e. when student gets an SGPA ≥5.00 at the end of that particular semester); and a student shall be declared successful or 'passed' in the entire under graduate programme, only when gets a CGPA ≥5.00 for the award of the degree as required.
- After the completion of each semester, a grade card or grade sheet (or transcript) shall be issued to all the registered students of that semester, indicating the letter grades and credits earned. It will show the details of the courses registered (course code, title, no. of credits, and grade earned etc.), credits earned, SGPA, and CGPA.

- **Declaration of results**

- Computation of SGPA and CGPA are done using the procedure listed in 10.4 to 10.9.
- For final percentage of formula marks equivalent to the computed final CGPA, the following formula maybe used.

% of Marks = (final CGPA – 0.5) x 10

- **Award of Degree**

In assessing the performance of the students in examinations, the usual approach is to award marks based on the examinations conducted at various stages (sessional, mid-term, end-semester etc.,) in a semester. As per UGC Autonomous guidelines, the following system is implemented in awarding the grades and CGPA under the **Choice Based Credit System (CBCS).**

- A student shall register and put up minimum attendance in all 160 credits and shall earn a total of 160 credits for the award of B.Tech degree. Further, marks obtained in the 160 credits shall be considered for the calculation of percentage of marks as well as overall CGPA ≥ 5.0, within 8 academic years from the date of commencement of the first academic year, shall be declared to have **'qualified'** for the award of the B.Tech. Degree in the chosen branch of Engineering as selected at the time of admission.

- A student who qualifies for the award of the degree as listed in 13.1 shall be placed in the following classes.

- Students with final CGPA (at the end of the under graduate programme) ≥ 7.50, and shall be placed in **'First class with Distinction'**.

- Students with final CGPA (at the end of the under graduate programme) ≥ 6.50 but < 7.50, shallbeplaced in **'Firstclass'**.

- Students with final CGPA (at the end of the under graduate programme) ≥ 5.50 but < 6.50, shall be placed in **'Second class'.**

- All the other students who qualify for the award of the degree (as per item 13.1), with final CGPA (at the end of the under graduate programme) ≥ 5.00 but < 5.50, shall be placed in **'pass class'** provided they secure a total of 160 credits.

- A student with final CGPA (at the end of the under graduate programme) < 5.00 will not be eligible for the award of the degree.
- Students fulfilling the conditions listed under item 13.3 alone will be eligible for award of **'University Rank'** and **'Gold Medal'.**
- **Award of 2-Year UG Diploma Certificate**
- **A student is awarded 2-Year UG Diploma Certificate in the concerned engineering branch on completion of all the academic requirements and earned all the 80 credits (within 4 years from the date of admission) up to B. Tech II Year – II Semester, if the student want to exit the 4-Year B. Tech. program. The student once opted and awarded for 2-Year UG Diploma Certificate, the student will not be permitted to join in B. Tech. III Year – I Semester and continue for completion of remaining years of study for 4-Year B. Tech. Degree.**
- **Withholding of results**
- If the student has not paid the fees to the university/ college at any stage, or has dues pending due to any reason whatsoever, or if any case of indiscipline is pending, the result of the student may be withheld, and student will not be allowed to go into the next higher semester. The award or issue of the degree may also be withheld in such cases.
- **Transitoryregulations.**
- A student who has discontinued for any reason, or has been detained for want of attendance or lack of required credits as specified, or who has failed after having undergone the degree programme, may be considered eligible for readmission to the same subjects/ courses (or equivalent subjects/ courses, as the case may be), and same professional electives/ open electives (or from set/category of electives or equivalents suggested, as the case may be) as and when they are offered (within the time-frame of 8 years from the date of commencement of student's first year first semester).
- After the revision of the regulations, the students of the previous batches will be given two chances for passing in their failed subjects, one supplementary and the other regular. If the students cannot clear the subjects in the given two chances, they shall be given equivalent subjects as per the revised regulations which they have to pass in order to obtain the required number of credits.
- In case of transferred students from other Universities, the credits shall be transferred to JNTUH as per the academic regulations and course structure of the MRCET.

The students seeking transfer to colleges affiliated to JNTUH from various other Universities/Institutions, have to pass the failed subjects which are equivalent to the subjects of prescribed curriculum of the institute, and also pass the subjects of prescribed curriculum of the institute which the candidates have not studied at the earlier Institution on their own without the right to sessional marks. Further, though the students have passed some of the subjects at the earlier institutions, if the same subjects are prescribed in different semesters of prescribed curriculum of the institute, the candidates have to

study those subjects in prescribed curriculum of the institute in spite of the fact that those subjects are repeated.

16 Minimum Instruction Days

The minimum instruction days for each semester shall be 90 days.

- **General**
- Wherever the words he, him, his, occur in the regulations, they include she, her, hers.
- The academic regulation should be read as a whole for the purpose of any interpretation.
- In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Principal is final.
- The regulations hereunder are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already pursuing the program) as may be decided by the Academic Council.
- **Scope**
- The academic regulations should be read as a whole, for the purpose of any interpretation.
- In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic senate is final.
- The college may change or amend the academic regulations, course structure or syllabi at any time, and the changes or amendments made shall be applicable to all students with effect from the date notified by the academic senate of the college.

Academic Regulations for B.Tech. (Lateral Entry Scheme) w.e.f the AY 2024-25

1. **Eligibility for award of B. Tech. Degree (LES)**
   The LES students after securing admission shall pursue a course of study for not less than three academic years and not more than six academic years.

2. The student shall register for 120 credits and secure total 120 credits with CGPA ≥ 5.0 from II year to IV year B.Tech. programme (LES) for the award of B.Tech. degree.

3. The students, who fail to fulfill the requirement for the award of the degree in six academic years from the year of admission, shall forfeit their seat in B.Tech.

4. The attendance requirements of B. Tech. (Regular) shall be applicable to B.Tech. (LES).

5. **Promotion rule**

1. A student is deemed to have satisfied the minimum academic requirements if he has earned the credits allotted to each theory/practical design/drawing subject/project and secures not less than 35% of marks in the mid examination (rounded to 14 marks out of 40 marks) and also not less than 35% in end semester examination and minimum 40% of marks in the sum total of the mid-term and end semester exams put together.
2. A student will be eligible to be promoted from II year to III year, upon fulfilling the academic requirements of 50 % credits up to II-year II semester examinations and secures prescribed minimum attendance in II year.
3. A student will be eligible to be promoted from III year to IV year, upon fulfilling the academic requirements of 50 % credits up to III-year II semester examinations and secures prescribed minimum attendance in III year.

6. **All the other regulations as applicable to B. Tech. 4-year degree course (Regular) will hold good for B. Tech. (Lateral Entry Scheme). LES Students are not eligible for 2 Year UG Diploma Certificate.**

MALPRACTICES RULES

DISCIPLINARY ACTION FOR IMPROPER CONDUCT IN EXAMINATIONS

S.No	Nature of Malpractices/Improper conduct	Punishment
	If the candidate:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been

		impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already
		appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Using objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.

6.	Refuses to obey the orders of the Chief Superintendent/Assistant Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that
	by visible representation, assaults the officer-incharge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.

8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including
		practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.

12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

1. Punishments to the candidates as per the above guidelines.
2. Punishment for institutions: (if the squad reports that the college is also involved in encouraging malpractices)
    - A show cause notice shall be issued to the college.
    - Impose a suitable fine on the college.
    - Shifting the examination centre from the college to another college for a specific period of not less than one year.

* * * * *

Department of Computer Science & Engineering Vision

To acknowledge quality education and instill high patterns of discipline making the students technologically superior and ethically strong which involves the improvement in the quality of life in human race.

Mission of the Department

- To achieve and impart holistic technical education using the best of infrastructure, outstanding technical and teaching expertise to establish the students into competent and confident engineers.
- Evolving the center of excellence through creative and innovative teaching learning practices for promoting academic achievement to produce internationally accepted competitive and world class professionals.

Quality Policy of the Department

To pursue continual improvement of teaching learning process of Undergraduate and Post Graduate programs in Engineering & Management vigorously.
To provide state of art infrastructure and expertise to impart the quality education.

Program Educational Objectives (PEOs)

PEO1 – ANALYTICAL SKILLS
To facilitate the graduates with the ability to visualize, gather information, articulate, analyze, solve complex problems, and make decisions. These are essential to address the challenges of complex and computation intensive problems increasing their productivity.
PEO2 – TECHNICAL SKILLS
To facilitate the graduates with the technical skills that prepare them for immediate employment and pursue certification providing a deeper understanding of the technology in advanced areas of computer science and related fields, thus encouraging to pursue higher education and research based on their interest.
PEO3 – SOFT SKILLS
To facilitate the graduates with the soft skills that include fulfilling the mission, setting goals, showing self-confidence by communicating effectively, having a positive attitude, get involved in team-work, being a leader, managing their career and their life.
PEO4 – PROFESSIONAL ETHICS
To facilitate the graduates with the knowledge of professional and ethical responsibilities by paying attention to grooming, being conservative with style, following dress codes, safety codes, and adapting themselves to technological advancements.

PROGRAMME OUTCOMES: ENGINEERING GRADUATES WILL BE ABLE TO
PO1: Engineering Knowledge
Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2:Problem Analysis
Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3: Design / Development of Solutions
Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4: Conduct Investigations of Complex Problems
Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5: Modern Tool Usage
Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6: The Engineer and Society
Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7: Environment and Sustainability
Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PROGRAMME OUTCOMES: ENGINEERING GRADUATES WILL BE ABLE TO
PO8: Ethics
Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9: Individual and Team Work
Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10: Communication
Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11: Project management and finance
Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12: Life-long learning
Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

After the completion of the course, B. Tech Computer Science and Engineering, the graduates will have the following Program Specific Outcomes:

1. **Fundamentals and critical knowledge of the Computer System:-** Able to Understand the working principles of the computer System and its components , Apply the knowledge to build, asses, and analyze the software and hardware aspects of it .

2. **The Comprehensive and Applicative knowledge of Software Development:** Able to demonstrate the comprehensive skills of Programming Languages, Software process models, methodologies, and ability to plan, develop, test, analyze, and manage the software and hardware intensive systems in heterogeneous platforms.

3. **Applications of Computing Domain & Research:** Able to use the professional, interdisciplinary skill set, and domain specific tools in development processes, identify the research gaps and provide innovative solutions to them.

MALLAREDDY COLLEGE OF ENGINEERINGANDTECHNOLOGY

(Autonomous Institution – UGC,Govt. of India)

BTECH – COMPUTER SCIENCE AND ENGINEERING- R24 - COURSE STRUCTURE

I Year B. Tech - CSE – ISemester

S.No	Subject Code	SUBJECT (S)	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R24A0001	English for skill Enhancement	2	0	0	2	40	60
2	R24A0023	Linear Algebra and Ordinary Differential Equations	3	1	0	4	40	60
3	R24A0201	Applied Physics	3	0	0	4	40	60
4	R24A0301	Computer Aided Engineering Graphics	2	0	3	3	40	60
5	R24A0501	Programming for Problem Solving	3	0	0	3	40	60
6	R24A0081	English Language and Communication Skills Lab	-	0	2	1	40	60
7	R24A0282	Applied Physics Lab	-	0	3	1.5	40	60
8	R24A0581	Programming for Problem Solving Lab	-	0	3	1.5	40	60
9	R24A0004	Environmental Science	2	0	0	0	100	-
		Total	**15**	**1**	**11**	**20**	**420**	**480**

***Mandatory course: Non-credit course, 50% of scoring is required for theaward of thedegree**

I Year B. Tech - CSE – II Semester

S.No	Subject Code	SUBJECT(S)	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R24A0024	Numerical Methods and vector calculus	3	1	0	4	40	60
2	R24A0201	Principles of Electrical and Electronics Engineering	3	1	0	4	40	60
3	R24A0022	Engineering Chemistry	3	0	0	3	40	60
4	R24A0502	Data Structures and Algorithms	3	0	0	3	40	60
5	R24A0082	Engineering Chemistry Lab	-	0	3	1.5	40	60
6	R24A0582	Data Structures and Algorithms Lab	-		3	1.5	40	60
7	R24A0581	Principles of Electrical and Electronics Engineering Lab	-	0	3	1.5	40	60
8	R24A0084	Engineering and Computing Hardware Workshop	-	0	3	1.5	40	60
9	R24A0003	Human Values and Professional Ethics	2	0	0	0	100	-
		Total	**14**	**2**	**12**	**20**	**420**	**480**

***Mandatory course: Non-credit course, 50% of scoring is required for theawardof thedegree.**

MALLAREDDY COLLEGE OF ENGINEERINGAND TECHNOLOGY

(Autonomous Institution – UGC,Govt. of India)

BTECH – COMPUTER SCIENCE AND ENGINEERING- R24 - COURSESTRUCTURE

II Year B. Tech - CSE – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R24A0503	Object Oriented Programming through Java	3	0	0	3	40	60
2	R24A0504	Database Management System	3	0	0	3	40	60
3	R24A0505	Software Engineering	3	0	0	3	40	60
4	R24A0506	Design and Analysis of Algorithms	3	0	0	3	40	60
5	R24A0026	Probability, Statistics and Queuing Theory	3	1	0	4	40	60
6	R24A0583	Object Oriented Programming through Java Lab	-	0	2	1	40	60
7	R24A0584	Database Management System lab	-	0	2	1	40	60
8	R24A0585	Software Engineering Lab	-	0	2	1	40	60
9	R24A0586	programming workshop-I (C programming)	-	0	2	1	40	60
10	R24A0061	Public Policy and Governance	2	0	0	0	100	-
		Total	**17**	**2**	**6**	**20**	**420**	**480**

Mandatory course: Non-credit course, 50% of scoring is required for the awardof the degree

II Year B. Tech - CSE – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R24A0028	Discrete Mathematics	3	0	0	3	40	60
2	R24A0507	Full Stack Development	3	0	0	3	40	60
3	R24A0508	Computer Organization	3	0	0	3	40	60
4	R24A0509	Operating Systems	3	0	0	3	40	60
5	R24A0XXX	Business Economics and Financial Analysis	3	0	0	3	40	60
6	R24A0587	Full Stack Development lab	0	0	2	1	40	60
7	R24A0588	Operating Systems Lab	0	0	2	1	40	60
8	R24A0589	Programming Workshop-II(C++ programming)	0	0	2	1	40	60
9	R24A0590	Industry Oriented Project	-	0	4	2	40	60
10	R24A0005	Foreign Language: French	2	0	0	0	100	-
		Total	**17**	**1**	**8**	**20**	**420**	**480**

***Mandatory course: Non-credit course, 50% of scoring is required for theawardof thedegree.**

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T/P/C 2/0/0/2**

(R24A0001) ENGLISH FOR SKILL ENHANCEMENT

Course Objectives: This course will enable the students to:

1. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
2. Develop study skills and communication skills in various professional situations.
3. Equip students to study engineering subjects more effectively and critically using the Theoretical and practical components of the syllabus.

Course Outcomes: Students will be able to:

1. Understand the importance of vocabulary and sentence structures.
2. Choose appropriate vocabulary and sentence structures for their oral and written communication.
3. Demonstrate their understanding of the rules of functional grammar.
4. Develop comprehension skills from the known and unknown passages.
5. Take an active part in drafting paragraphs, letters, essays, abstracts, précis and reports in various contexts.
6. Acquire basic proficiency in reading and writing modules of English.

UNIT-I

Chapter entitled '*Toasted English*' by R.K.Narayan **from** *"English: Language, Context and Culture"* **published by Orient Black Swan, Hyderabad.**

Vocabulary **: T**he Concept of Word Formation

Grammar **:** Articles and Prepositions.

Reading **:** Reading and Its Importance-Techniques for Effective Reading.

Writing **:** Sentence Structures-Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation-Techniques for writing precisely–Paragraph Writing–Types, Structures and Features of a Paragraph – Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT-II

Chapter entitled **'Appro JRD' by Sudha Murthy** from ***"English: Language ,Context and Culture" published*** by Orient Black Swan, Hyderabad.

Vocabulary **:** Words Often Miss pelt- Homophones, Homonyms and Homographs

Grammar **:** Noun- pronoun Agreement and Subject- verb Agreement.

Reading **:** Sub- Skills of Reading– Skimming and Scanning– Exercises for Practice

Writing **:** Defining/ Describing People, Objects, Places and Events–Classifying-Providing Examples or Evidence.

UNIT-III

Chapter entitled **'Abraham Lincoln's Letter to His Son's Teacher'**

Vocabulary **:** Idioms & Words Often Confused.

Grammar **:** Misplaced Modifiers and Tenses.

Reading **:** Intensive Reading and Extensive Reading – Exercises for Practice.

Writing **:** Format of a Formal Letter-Writing Formal Letters E.g.., Letter of Complaint, Letter of Requisition, Email Etiquette, Job Application with CV/Resume.

UNIT-IV

Chapter entitled **'Artand Literature 'by Abdul Kalam** from***"English: Language, Contextand Culture"*** published by Orient Black Swan, Hyderabad.

Vocabulary **:** Standard Abbreviation sin English

Grammar **:** Transitive and Intransitive and Voices

Reading **:** Survey, Question, Read, Recite and Review (SQ3RMethod)-Exercises for Practice

Writing **:** Writing Practices-Essay Writing-Writing Introduction and Conclusion-Précis Writing.

UNIT-V

Chapter entitled **'Go, Kiss the World' by Subroto Bagchi** fro ***"English:Language,Context and Culture"*** published by Orient Black Swan, Hyderabad.

Vocabulary **:** Technical Vocabulary and their Usage

Grammar **:** Direct and Indirect Speech and Degrees of Comparison

Reading **:** Reading Comprehension-Exercises for Practice

Writing **:** Technical Reports- Introduction – Characteristics of a Report – Categories of Reports Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

<u>Note</u>: Listening and Speaking Skills which are given under Unit-6 in AICTE Model Curriculum are covered in the syllabus of ELCS Lab Course.

- **<u>Note</u>: 1**. As the syllabus of English given in AICTE *Model Curriculum-2018 for B.Tech First Year is* ***Open-ended,*** besides following the prescribed textbook, it is required to prepareteaching/learningmaterials**bytheteacherscollectively**intheformofhandoutsbasedont heneedsofthestudentsintheirrespective colleges for effective teaching/learning in the class.
- **<u>Note</u>**: **2**.Based on the recommendations of NEP2020, teachers are requested to be flexible to adopt Blended Learning in dealing with the course contents .They are advised to teach 40percentofeachtopicfromthe syllabus in blended mode.

TEXTBOOK:

1. English: Language, Context and Culture" by Orient Black Swan Pvt. Ltd, Hyderabad.2022.Print.

REFERENCEBOOKS:

1. Effective Academic Writing by Liss and Davis(OUP)
2. Richards, Jack C. (2022) Interchange Series. Introduction, 1,2,3.CambridgeUniversityPress
3. Wood,F.T.(2007).Remedial English Grammar Macmillan.
4. Chaudhuri, Santanu Sinha.(2018).Learn English: A Fun Book of Functional Language, Grammar and Vocabulary.(2nd ed.,).Sage Publications India Pvt. Ltd.
5. (2019).Technical Communication. Wiley India Pvt. Ltd.
6. Vishwamohan,Aysha.(2013).EnglishforTechnicalCommunicationforEngineeringStudents.Mc Graw-HillEducationIndia Pvt.Ltd.
7. Swan, Michael. (2016).Practical English Usage. Oxford University Press. Fourth Edition.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T/P/ C**
3/1/0/ 4

(R24A0023) LINEAR ALGEBRA AND ORDINARY DIFFERENTIAL EQUATIONS
(Common to All Branches)

Course Objectives: To learn

1. The concept of a Rank of the matrix and applying the concept to know the consistency and solving the system of linear equations.
2. The concept of Eigen values, Eigen vectors and Diagonolisation.
3. The maxima and minima of functions of several variables.
4. The Applications of first order ordinary differential equations.
5. The methods to solve higher order differential equations.

UNIT I: Matrices **[10 hours]**

Introduction, Types of matrices, Rank of a matrix - Echelon form and Normal form, Consistency of system of linear equations (Homogeneous and Non-Homogeneous)-Gauss elimination method and LU Decomposition method.

UNIT II: Eigen values and Eigen vectors **[12 hours]**

Linear dependence and independence of vectors, Eigen values and Eigen vectors and their properties(without proof), Diagonalisation of a matrix. Cayley-Hamilton theorem(without proof), finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT III: Multi Variable Calculus (Differentiation) **[10 hours]**

Functions of two variables-Limit, Continuity, Partial derivatives, Total differential and differentiability, Derivatives of composite and implicit functions, Jacobian-functional dependence and independence, Maxima and minima and saddle points, Method of Lagrange multipliers, Taylors theorem for two variables.

UNIT IV: First Order Ordinary Differential Equations **[12hours]**

Exact, Equations reducible to exact form, Applications of first order differential equations - Orthogonal Trajectories(Cartesian form),Newton's law of cooling, Law of natural growth and decay,.

UNIT V: Differential Equations of Higher Order **[11 hours]**

Linear differential equations of second and higher order with constant coefficients: Non-homogeneous term of the type f(x) = e^{ax}, sinax, cosax, x^n, e^{ax} V and x^n V - Method of variation of parameters.

Text Books:

i. Higher Engineering Mathematics by B V Ramana., Tata McGraw Hill.
ii. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
iii. Advanced Engineering Mathematics by Kreyszig ,John Wiley & Sons .

Reference Books :

i. Advanced Engineering Mathematics by R.K Jain & S R K Iyenger, Narosa Publishers.
ii. Ordinary and Partial Differential Equations by M.D. Raisinghania, S.Chand Publishers
iii. Engineering Mathematics by N.P Bali and Manish Goyal.

Course Outcomes: After learning the concepts of this paper the student will be able to

1) Analyze the solution of the system of linear equations and to find the Eigen values and Eigen vectors of a matrix.
2) Reduce the quadratic form to canonical form using orthogonal transformations.
3) Find the extreme values of functions of two variables with / without constraints.
4) Solve first order, first degree differential equations and their applications.
5) Solve higher order differential equations.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L / T / P / C**
3 / 1 / 0 / 4

(R24A0021) APPLIED PHYSICS

COURSE OBJECTIVES:

1 To understand the basic principles of lasers and optical fibers.
2 To interpret dual nature of the matter quantum mechanically and classify the solids based on electrical conductivity.
3 To understand the concepts of semiconductors and devices.
4 To analyze dielectric, magnetic and superconducting properties of the materials.
5 To understand the properties of nano materials and analyze its characterization techniques.

UNIT – I

LASERS & FIBER OPTICS **(15 Hours)**

Lasers: Characteristics of lasers, Absorption, Spontaneous and Stimulated emissions, Einstein's coefficients, Meta stable state, Population inversion, Types of pumping, Components of Laser, Lasing action, Construction and working of Ruby Laser, He-Ne Laser, Semiconductor diode Laser, Applications of lasers.

Fiber Optics: Introduction to optical fiber, Construction and working principle of an Optical Fiber, Acceptance angle and Numerical aperture, Types of Optical fibers - Mode and index profile, Optical Fibers in Communication System, Applications of optical fibers.

UNIT – II

QUANTUMMECHANICS AND FREE ELECTRON THEORY OFSOLIDS **(15 Hours)**

Introduction, wave and particle, de-Broglie's hypothesis, Matter waves, Davisson and Germer's experiment, Heisenberg's uncertainty principle, Schrodinger's time-independent wave equation-Physical significance of wave function, Particle in one dimensional square well potential.

Classical free electron theory-Assumptions and drawbacks, Quantum free electron theory-Assumptions and drawbacks, Fermi-Dirac statistical distribution, Fermi level , Electron in a periodic potential - Bloch's theorem(qualitative), Kronig–Penny model (qualitative), E-k curve, Effective mass of an electron ,Origin of energy bands in solids, Classification of materials: Metals, semiconductors and insulators.

UNIT-III

SEMICONDUCTOR PHYSICS **(15Hours)**

Intrinsic and Extrinsic semiconductors, Carrier concentration of electrons and holes in intrinsic and extrinsic semiconductors. Dependence of Fermi level on carrier concentration and temperature, Formation of PN Junction, V-I characteristics of PN Junction diode, Energy Diagram of PN diode, Hall effect, Construction and working of LED, Solar cell.

UNIT – IV

DIELECTRICS, MAGNETIC AND SUPERCONDUCTING MATERIALS (12 Hours)

Dielectrics: Introduction, Types of polarizations – Electronic, Ionic polarizations and calculation of polarizabilities, Internal field, Clausius Mossotti relation.

Magnetic materials: Introduction, Bohr magneton, Classification of Dia, Para, Ferro magnetic materials based on magnetic moment, Properties of Anti-Ferro and Ferri magnetic materials, Hysteresis curve , Soft and Hard magnetic materials.

Super conductivity: Introduction, Meissener effect, Types of superconductors.

UNIT-V

NANO SCIENCE & NANO TECHNOLOGY (8 Hours)

Nano scale, Types of Nano materials , Surface to volume ratio, Quantum confinement, Bottom-up synthesis : Precipitation, Sol-gel method, Top-down synthesis: Ball milling, Physical vapor deposition (PVD), Chemical vapor deposition (CVD),Characterization techniques - XRD, SEM, Applications of nano materials.

COURSE OUTCOMES:

At the end of the course students,

1 Can apply the principles of lasers and optical fibers in various industrial applications.
2 Basic principles of quantum mechanics can be applied to analyze the band structure of solids.
3 Concepts of semiconductors can be applied to predict the importance of electronic devices relevant to engineering domains.
4 Examine the dielectric, magnetic and superconducting properties of the materials and apply them in engineering material technology.
5 Can identify and compare the nano fabrication methods and gaining insight to the nano materials.

TEXT BOOKS:

1. Engineering Physics by Kshirsagar & Avadhanulu, S. Chand publications.
2. Engineering Physics - B.K.Pandey, S.Chaturvedi, Cengage Learning
3. Essentials of Nano science & Nano technology by Narasimha Reddy Katta,Typical Creative's NANODIGEST,1st Edition,2021.

REFERENCES:

1. Engineering Physics – R.K. Gaur and S.L. Gupta, DhanpatRai Publishers.
2. A.K.Bhandhopadhya- Nano Materials, New Age International, 1st Edition, 2007.
3. Engineering physics 2nd edition –H.K. Malik and A.K. Singh.
4. Engineering Physics – P.K. Palaniswamy, Scitech publications.
5. Physics by Resnick and Haliday.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T/P/C 2/0/2/3**

(R24A0301) COMPUTER AIDED ENGINEERING GRAPHICS

Course Objectives:

1. To learn basic engineering graphics and Auto CAD concepts.
2. To learn the 2D principles of orthographic projections and Multiple views of the same
3. To know the planes and solid Projection
4. To gain the capability of designing 3D objects with isometric principles by usingcomputer aided sketches
5. To know the conversion of Orthographic Views to isometric Views and isometric to Orthographic views

UNIT-I

Introduction to Auto CAD: Introduction to software interface, Standard toolbar/menu; Understanding the co-ordinate systems-2D and 3D Visualization; Setting the Paper sizes and title block importance, printing and plotting; Draw commands: line, arc, circle, rectangle, polygons, ellipse, polyline, splines, text; Modify commands: copy, mirror, offset, arrays, move, extend, break, trim, lengthen, chamfer, fillet, etc.; Constraints: horizontal, vertical, parallel, concentric, perpendicular, symmetric, equal, collinear; Dimensioning Commands: Dimensioning and Dimension Style; Division: Line division, and circle division; Polygons: Constructing regular polygons - inscribed and circumscribed methods and general method**.**

UNIT-II

Projection of Points: Introduction to reference planes, four quadrants, importance of reference lines; Projection of points in all the four quadrants.

Projection of Lines: Parallel to both the reference planes, Parallel to one plane and perpendicular to other plane, Inclined to one plane and parallel to other plane, Inclined to both planes.

UNIT-III

Projection of Planes: Introduction to Regular planes, Parallel/Perpendicular to one reference plane, Inclined to one reference plane, Inclined to both the reference planes.

Projection of Solids: Introduction - Prisms, Pyramids, Cone and Cylinder, Axis parallel and perpendicular to one reference plane, Axis inclined to one reference plane.

UNIT-IV

Isometric Projection: Introduction, Isometric projection of simple plane figures, Solids - right regular prisms, pyramids, cylinder, cone on H.P, V.P.

UNIT -V

Conversions: Conversion of Isometric Views to Orthographic Views and Orthographic Views to Isometric Views.

TEXT BOOKS:

1. Engineering Drawing – N.D. Bhatt & V.M. Panchal, 48th edition, 2005 Charotar Publishing House, Gujarat.
2. "Computer Aided Engineering Drawing" by Dr. M H Annaiah, Dr C N Chandrappa and Dr B Sudheer Prem Kumar Fifth edition, New Age International Publishers

REFERENCE BOOKS:

1. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.
2. Engineering Graphics - K.R. Gopalakrishna, 32nd edition, 2005- Subash Publishers, Bangalore.

COURSE OUTCOMES:

After the completion of course the student will be able:

1. To produce geometric construction, dimensioning & Curves and detail drawings.
2. To compile Projections of points, lines, then create virtual drawing by using computer
3. To sketch the Planes and Solid Projections
4. To develop isometric drawings of simple objects reading the orthographic projections of those objects.
5. To understand and visualize the 3-D view of engineering objects. Elaborate the conversions of 2D -3D and Vice-Versa.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T/P/C**
3/0/0/3

(R24A0501) Programming for Problem Solving

COURSE OBJECTIVES:

The students will be able

1. To understand basics of programming.
2. To learn how to use conditional statements and loops.
3. To structure Python programs using arrays.
4. To know the need and usage of functions
5. To learn file operations and exception handling

UNIT – I

Introduction to Programming – Computer Systems, Computer Languages, Algorithms andFlowcharts

Introduction to Python Language: Introduction to Python Language, Features of Python,Comments in Python.

Tokens- Keywords, Identifiers, Constants, Variables, Python Input and Output Statements

Basic Data Types: int, float, boolean, complex and string and its operations.

Collection Data Types: List, Tuples, Sets and Dictionaries. Data Type conversions,

UNIT – II

Operators in Python: Arithmetic operators, Assignment operators, Comparison operators, Logical operators, Identity operators, Membership operators, Bitwise operators, Precedence of operators, Expressions.

Control Flow and Loops: Indentation, if statement, if-else statement, nested if else, chained conditional if- elif -else statement, Loops: while loop, for loop using ranges, Loop manipulation using break, continue and pass.

UNIT- III

Arrays: Definition**,** Advantages of Arrays, Creating an Array, Operations on Arrays, Arrays vs List, Importing the Array Module, Indexing and Slicing on Arrays,

working with arrays using numPy - Creating arrays using numpy, numpy Attributes and functions, Matrices in numpy.

UNIT-IV

Functions: Defining a function, Calling a Function, Passing parameters and arguments, Python Function arguments: Positional Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Scope of the Variables in a Function–Local and Global Variables.

Recursive functions, Anonymous functions, Higher order functions - map(),filter() and reduce() functions in Python, command-line arguments.

UNIT-V

File Handling in Python: Introduction to files, Text files and Binary files, Access Modes, Writing Data to a File-write() and writelines(), Reading Data from a File-read(),readline() and readlines(), Random access file operations-seek() and tell().

Error Handling in Python: Introduction to Errors and Exceptions: Compile-Time Errors, Logical Errors, Runtime Errors, Types of Exceptions, Python Exception Handling Using try, except and finally statements.

COURSE OUTCOMES:

Upon completion of the course, students will be able to

1. Express proficiency in handling data types in python.
2. Understand the syntax and semantics of python control flow statements
3. Develop programs using arrays
4. Know how to write modular programs using functions.
5. Perform file operations and handle exceptions

TEXT BOOKS

1. "Mastering C", K R Venugopal, S R Prasad, Tata McGraw Hill Education (India) Private Limited.
2. R.NageswaraRao,"Core Python Programming", Dreamtech.
3. Allen B. Downey,``Think Python: How to Think Like a Computer Scientist" 2nd edition, Updated for Python3, Shroff/O'Reilly Publishers,2016.
4. Python Programming: A Modern Approach, Vamsi Kuramanchi,Pearson.

REFERENCEBOOKS:

1. Core Python Programming,W.Chun,Pearson.
2. Introduction to Python,Kenneth A. Lambert, Cengage.
3. Learning Python, Mark Lutz,Orielly.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T/P/C**
-/0/2/1

(R24A0081)English Language and Communication Skills Lab

The English Language and Communication Skills (ELCS) Lab focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

1. To facilitate computer-assisted multi-media instruction enabling individualized and Independent language learning
2. To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm
3. To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
4. To improve the fluency of students in spoken English and neutralize the impact of dialects.
5. To train students to use language appropriately for public speaking, group discussions and interviews

Course Outcomes: Students will be able to:

1. Understand the nuances of English language through audio- visual experience and group activities
2. Neutralize their accent for intelligibility
3. Speak with clarity and confidence which in turn enhances their employability skills

Syllabus: English Language and Communication Skills Lab (ELCS) shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

Listening Skills:

Objectives

1. To enable students develop their listening skills so that they may appreciate the role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening, so that they can comprehend the speech
   of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the rig ht intonation in sentences.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

Speaking Skills:

Objectives

1. To involve students in speaking activities in various contexts
2. To enable students express themselves fluently and appropriately in social and professional contexts

- Oral practice
- Describing objects/situations/people
- Role play – Individual/Group activities
- Just A Minute (JAM) Sessions

The following course content is prescribed for the **English Language and Communication Skills**

Lab.

Exercise – I

CALL Lab:

Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers- Effective Listening.

Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants – Minimal Pairs Consonant Clusters- Past Tense Marker and Plural Marker- Testing Exercises

ICS Lab:

Understand: Spoken vs. Written language- Formal and Informal English.

Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave –Introducing Oneself and Others.

Exercise – II

CALL Lab:

Understand: Structure of Syllables – Word Stress– Stress pattern in sentences – Intonation.

Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms- Stress pattern in sentences – Intonation - Testing Exercises

ICS Lab:

Understand: Features of Good Conversation – Strategies for Effective Communication.

Practice: Situational Dialogues – Role Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III

CALL Lab:

Understand: Errors in Pronunciation-Neutralising Mother Tongue Interference (MTI).

Practice: Common Indian Variants in Pronunciation – Differences between British and American Pronunciation -Testing Exercises

ICS Lab:

Understand : Descriptions- Narrations- Giving Directions and Guidelines – Blog Writing

Practice : Giving Instructions – Seeking Clarifications – Asking for and Giving Directions – Thanking and Responding – Agreeing and Disagreeing – Seeking and Giving Advice – Making Suggestions.

Exercise – IV

CALL Lab:

Understand : Listening for General Details.

Practice : Listening Comprehension Tests - Testing Exercises

ICS Lab:

Understand : Public Speaking – Exposure to Structured Talks - Non-verbal Communication Presentation Skills.

Practice : Making a Short Speech – Extempore- Making a Presentation.

Exercise – V

CALL Lab:

Understand : Listening for Specific Details.

Practice : Listening Comprehension Tests -Testing Exercises

ICS Lab:

Understand : Group Discussion

Practice : Group Discussion

Minimum Requirement of infrastructural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab:

The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 Systems, with one Master Console, LAN facility and English language learning software for self-study by students.

System Requirement (Hardware component):

Computer network with LAN facility (minimum 40 systems with multimedia) with the following Specifications:

i) Computers with Suitable Configuration

ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab:

The Interactive Communication Skills Lab: A Spacious room with movable chairs and audiovisual aids with a Public Address System, a T. V. or LCD, a digital stereo –audio & video system and camcorder etc.

Source of Material (Master Copy):

Exercises in Spoken English. Part 1,2,3. CIEFL and Oxford University Press

Note: Teachers are requested to make use of the master copy and get it tailor-made to suit the contents of the syllabus.

Suggested Software:

- Cambridge Advanced Learners' English Dictionary with CD.
- Grammar Made Easy by Darling Kindersley.
- Punctuation Made Easy by Darling Kindersley.
- Oxford Advanced Learner's Compass, 10th Edition.
- English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.
- English Pronunciation in Use (Elementary, Intermediate, Advanced) Cambridge University
- Press.
- English Vocabulary in Use (Elementary, Intermediate, Advanced) Cambridge University
- Press.
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS).
- Digital All
- Orell Digital Language Lab (Licensed Version)

REFERENCE BOOKS:

1. (2022). English Language Communication Skills – Lab Manual cum Workbook.Cengage Learning India Pvt. Ltd.
2. Shobha, KN &Rayen, J. Lourdes. (2019). Communicative English – A workbook. Cambridge University Press
3. Kumar, Sanjay &Lata, Pushp. (2019). Communication Skills: A Workbook. Oxford University Press
4. Board of Editors. (2016). ELCS Lab Manual: A Workbook for CALL and ICS Lab Activities. Orient Black Swan Pvt. Ltd.
5. Mishra, Veerendra et al. (2020). English Language Skills: A Practical Approach. Cambridge University Press

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T/P/C**
-/0/3/1.5

(R24A0082)Applied Physics Lab

COURSE OBJECTIVES:

1. To experience the mechanical oscillations and resonance phenomena.
2. To verify the basic concepts of magnetism
3. To understand the concepts of laser and optical fibers.
4. To analyze voltage/current phase behavior of RC and LCR circuits.
5. To study the characteristics of semiconductor devices.

LIST OF EXPERIMENTS:

1. Melde's experiment –Frequency of electrical vibrator.
2. Stewart and Gee's method- Variation of magnetic field along the axis of current carrying coil.
3. Laser-Wavelength of light by using Diffraction grating.
4. CR circuit – Time constant of an RC circuit.
5. LCR Circuit- Quality factor and resonant frequency of LCR circuit.
6. LED -Characteristics of LED.
7. Solar cell -Characteristics of a Solar cell.
8. Optical fiber- Numerical aperture of an optical fiber.
9. Semiconductor-Energy gap of a given semiconductor.
10. Hall Effect – Hall coefficient of semiconducting samples.

REFERENCE BOOKS:

1. Practical physics by Dr. Aparna, Dr K.V Rao, V.G.S. Publications.
2. Engineering physics practical lab manual – MRCET.

COURSE OUTCOMES:

1. Students can analyze how stationary waves are produced to determine the frequency of vibrating bar in different modes.
2. Students can realize Tangent and Biot-Savart law of magnetism.
3. Wavelength of the given laser can be determined by using diffraction phenomenon.
4. By understanding basic electrical principles, Time constant of RC and resonance phenomenon of LCR circuits can be analyzed.
5. Energy gap and V-I characteristics of various semiconductor devices can be illustrated.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM **L/T /P /C**
-/0/3/1.5

(R24A0581) Programming for Problem Solving Lab

COURSE OBJECTIVES:

This course will enable the students:

1) to understand syntax and semantics of different data types in python
2) to learn categories of operators andcontrol structures.
3) to know how to use arrays in python scripts.
4) to learn usage of functions.
5) to know how to handle Files and exceptions in Python.

Week 1:

Introduction to OS

Steps for creating and running python code

Week 2:

Programs using output statement

Simple programs on usage of variables and constants

Programs to read different kinds of data from user

Week 3:

Programs on creation of strings and its methods

Programs on List creation, indexing and slicing and methods

Week 4:

Programs on tuples, sets and dictionaries

Week 5 & 6:

Programs on different categories of operators and conditional statements

Week 7 & 8:

Programs using iterative statements

Week 9 & 10:

Programs on arrays using array module and numpy module

Week 11 & 12:

Programs using functions

Week 13 & 14:

Implementation of operations on files and exception handling

TEXT BOOKS:

1. R. Nageswara Rao, “Core Python Programming”, dream tech
2. Allen B. Downey , “ Think Python: How to Think Like a Computer Scientist”, Second Edition,Updated for Python 3, Shroff/O’Reilly Publishers, 2016.

COURSE OUTCOMES:

After completion of the course, Students will be able to**:**

1. Build basic programs using python statements and expressions.
2. Usepythondatastructures like lists, tuples and dictionaries to represent compound data.
3. Implement conditional and loop statements in python programs.
4. Express usageofarrays andfunctions in code
5. Understand and summarize different file handling operations and exceptions.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B.TECH –I-SEM **L/T/P/C**
2/0/0 /0

(R24A0004) ENVIRONMENTAL SCIENCES
(Mandatory Course)

Course Objectives: On successful completion of this course, students will be able:

1. To differentiate the inter relationship between biotic and abiotic component.
2. To categorize various types of natural resources available on the earth surface.
3. To detect the causes, and control measures for various environmental pollution.
4. To articulate the issues related to solid waste and its management.
5. To understand the importance of ecological balance for sustainable development.

UNIT-I ECOSYSTEM (6 hours)

Definition: Scope, and Importance of ecosystem. **Classification**: natural and artificial ecosystems, **Structure**- abiotic and biotic component, functions of an ecosystem, food chains, food webs and ecological pyramids, biomagnification and bioaccumulation, ecosystem value, services and carrying capacity.

Activities: Case studies, poster making

UNIT-II NATURAL RESOURCES (6 hours)

Classification of Resources: Definition of natural resource, renewable and non -renewable resources.

Renewable resources: water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Land resources:** Forest functions and deforestation. **Energy resources:** growing energy needs-solar energy, hydro energy, biogas and biofuel.

Non-Renewable Resources: Fossil fuels, refining of coal, petroleum, and natural gas.

Activities: Case studies, News articles

UNIT-III ENVIRONMENTAL POLLUTION AND CONTROL MEASURES (6 hours)

Definition, Types of pollution: **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards, control measures of air pollution and prevention techniques. **Water pollution:** causes, effects, control measures and techniques.

Activities: Work sheets, Debate

UNIT-IV SOLID WASTE MANAGEMENT AND GLOBAL ISSUES (6 hours)

Definition of Solid waste, characteristics of solid waste, solid waste management: collection to disposal methods, e-waste management techniques. **Global environmental Issues and efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting

substances (ODS).**International conventions/protocols:** Earth summit, Kyoto protocol, and Montreal Protocol, NAPCC-GOI Initiatives.

Activities: Quiz, seminars

UNIT-V SUSTAINABLE DEVELOPMENT (6 hours)

Introduction to concept of sustainable development: Sustainable development goals, threats and strategies to achieve sustainability. Sustainable developmental activities: Green building concept, Crazy Consumerism, Ecological Foot Print, Low carbon life style.

Activities: Seminars, slogans

SUGGESTED TEXT BOOKS

1. Textbook of Environmental Studies for Undergraduate Courses by ErachBharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.
3. Textbook of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
4. Dr. P. D Sharma, “Ecology and Environment”, Rastogi Publications, New Delhi, 12 Edition, 2015.

REFERENCE BOOKS

1. Environmental Studies by AnubhaKaushik, 4 Edition, New age international publishers.
2. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Pvt. Ltd, New Delhi.
3. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHL Learning Pvt. Ltd, New Delhi.
4. Environmental Science by Daniel B. Botkin& Edward A. Keller, Wiley INDIA edition.

COURSE OUTCOMES: The basic concepts included in this course will help the student to:

1. Gain knowledge and appreciate the interdependence of environment with ecosystem.
2. Learn about natural resource, its importance and environmental impacts of human activities on natural resources.
3. Understand severity of environmental pollution, its impact on environment and evaluate relevant practices.
4. Develop empathy towards environment and apply the knowledge of recycling techniques associated with waste management.
5. Adopting sustainability as a practice into their lifestyle on the basis of ecological principles.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM **L / T / P / C**

3 / 1/ 0 /4

(R24A0024) NUMERICAL METHODS AND VECTOR CALCULUS

Course Objectives: To Learn

1) Numerical methods which provide systematic methods for solving problems in a numerical form using the given initial data, also used to find the roots of an equation and to solve differential equations.
2) The Concept of interpolation to find an unknown function which approximates the given data points and the objective of curve fitting is to find the relation between the variables x and y from given data and such relationships which exactly pass through the data (or) approximately satisfy the data under the condition of sum of least squares of errors.
3) The concept of multiple integrals.
4) The physical quantities involved in engineering field related to vector valued functions.
5) The basic properties of vector-valued functions and their applications to line, surface and volume integrals.

UNIT – I: Interpolation and Curve fitting **[12 hrs]**

Interpolation: Introduction, errors in polynomial interpolation, Finite differences - Forward differences, Backward differences, central differences. Newton's formulae for interpolation, Gauss's central difference formulae, Interpolation with unevenly spaced points - Lagrange's Interpolation.

Curve Fitting: Fitting a straight line, second degree curve, exponential curve, power curve by method of least squares.

UNIT – II: Numerical Methods **[12 hrs]**

Solution of algebraic and transcendental equations: Introduction, Bisection Method, Method of false position, Newton Raphson method and their graphical interpretations.

Numerical integration: Generalized quadrature formula - Trapezoidal rule, Simpson's $1/3^{rd}$ and Simpson's $3/8^{th}$ rules.

Numerical solution of ordinary differential equations: Solution by Taylor's series method, Euler's method, Euler's modified method, Runge - Kutta fourth order method.

UNIT - III: Double and Triple Integrals **[12 hrs]**

Double integrals (Cartesian and polar), Change of order of integration in double integrals, Change of variables (Cartesian to polar), Triple integrals (Cartesian form). Applications: Areas (by double integrals) and volumes (by triple integrals).

UNIT-IV: Vector Differentiation **[8hrs]**

Introduction, Scalar point function and Vector point function, Gradient, Directional derivative, Divergence and Curl- Solenoidal and irrotational vectors,Vector identities.

UNIT-V: Vector Integration **[10hrs]**

Line integral - Work done, Surface integrals, Volume integral. Vector integral theorems - Green's theorem, Stoke's theorem and Gauss's Divergence theorems (Statement & their Verification).

Text Books:

i) Higher Engineering Mathematics by B V Ramana ., Tata McGraw Hill.
ii) Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
iii) Mathematical Methods by S.R.K Iyenger,R.K.Jain,Narosa Publishers.

Reference Books:

i) Elementary Numerical Analysis by Atkinson-Han, Wiley Student Edition.
ii) Advanced Engineering Mathematics by Michael Greenberg –Pearson publishers.
iii) Introductory Methods of Numerical Analysis by S.S. Sastry, PHI

Course Outcomes: After learning the contents of this paper the student will be able to

1. Find the roots of algebraic, non-algebraic equations and predict the value at an intermediate point from a given discrete data.
2. Find the most appropriate relation of the data variables using curve fitting andthis method of data analysis helps engineers to understand the system for better interpretation and decision making.
3. Evaluate multiple integrals.
4. Find Gradient, Divergence, Directional Derivative and Curl.
5. Evaluate the line, surface, volume integrals and converting themfrom one to another using vector integral theorems.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM **L/T/P/C 3/1/0/4**

(R24A0201) PRINCIPLES OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSEOBJECTIVES:

1. To understand the basic concepts of electrical circuits and analyze Circuits using Network Theorems.
2. To get overview of single phase A.C. Circuits.
3. To introduce the concept of DC Machines and Single-Phase Transformers.
4. To study the concepts of p-n diodes, rectifiers and Zener diodes.
5. To study the concepts of BJTs, JFET and MOSFETs.

UNIT – I: **INTRODUCTION TO ELECTRICAL CIRCUITS**:Concept of Circuit and Network, R-L-C Parameters, Ohms law and its limitations, Kirchhoff's Laws-KVL, KCL.

NETWORK ANALYSIS(D. C EXCITATION): Series and parallel connections of Resistive Networks, voltage division and current division, Mesh analysis, Nodal analysis.

UNIT–II: NETWORK THEOREMS: Thevenin's Theorem, Norton's Theorem and Superposition Theorem (for independent sources).

SINGLE PHASE A.C. CIRCUITS: Average value, R.M.S. value, Form factor and Peak factor for sinusoidal wave form. Concept of phase, Phasor representation of sinusoidal quantities, Phase difference, Active power, Reactive power and Apparent power. Sinusoidal response of pure R, pure L and pure C.

UNIT-III: MACHINES:

DC GENERATOR: Principle of operation and working, constructional features, basic concept of Lap and wave windings, emf equation.

DC MOTOR: Principle of operation, Back emf and its significance, torque equation-Gross torque and Shaft torque.

SINGLE PHASE TRANSFORMER: Principle of operation, emf equation, transformation ratio, problems on emf equation.

UNIT–IV:

P-N JUNCTION DIODE: P-N junction diode, symbol and forward biased and reverse biased conditions, V-I characteristics of P-N junction diode, Half wave, Full wave-Centre tap and Bridge rectifiers. **ZENER DIODE**: Symbol, construction, principle of operation and its applications.

UNIT–V:

BIPOLAR JUNCTION TRANSISTOR: Symbols, types, Construction and Principle of Operation of N-P-N and P-N-P transistors,Amplifying Action, Common Emitter, Common Base and Common Collector configurations.

JFET: Symbol, Construction, Principle of operation, and its Characterstics, MOSFET (Enhancement and Depletion mode): Symbol, Construction, Principle of Operation and its Characteristics.

TEXTBOOKS:

1. Engineering Circuit Analysis - William Hayt, Jack E. Kemmerly, S M Durbin, Mc GrawHill Companies.
2. Electric Circuits - A. Chakrabarhty, Dhanipat Rai & Sons.
3. Electrical Machines – P.S.Bimbra, Khanna Publishers.
4. "Electronic Devices & Circuits", Special Edition–MRCET, McGrawHillPublications,2017.
5. Integrated Electronics Analog Digital Circuits, Jacob Millman and D.Halkias, Mc GrawHill.
6. Electronic Devices and Circuits, S.Salivahanan, N.Sureshkumar, McGrawHill.

REFERENCEBOOKS

1. Network Analysis by M.E Van Valkenburg, PHI learning publications.
2. Network Analysis - N.C Jagan and C. Lakhminarayana, BS publications.
3. Electrical Circuits by A. Sudhakar, Shyammohan and S Palli, Mc Graw Hill Companies.
4. Electrical Machines by I.J. Nagrath & D. P. Kothari, Tata Mc Graw-Hill Publishers.
5. Electronic Devices and Circuits, K.LalKishore, B.S Publications
6. Electronic Devices and Circuits, G.S.N.Raju, I.K.International Publications, New Delhi, 2006.

COURSEOUTCOMES:

After the course completion the students will be able to

1. Apply the basic RLC circuit elements and its concepts to networks and circuits.
2. Analyze the circuits by applying network theorems to solve them to find various electrical parameters.
3. Illustrate the single-phase AC circuits along with the concept of impedance parameters and power.
4. Understand the Constructional Details and Principle of Operation of DC Machines and Transformers
5. To understand the concepts of p-n junction diode, rectifiers and Zener diode
6. To understand the concepts of BJTs, JFET and MOSFETs

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM **L/T/P/C**
3/0/0/3

(R24A0022) ENGINEERING CHEMISTRY

COURSE OBJECTIVES: The students will be able

1. To analyze water for its various parameters for sustainable living and interpret different problems involved in industrial utilization of water.
2. To acquire the knowledge on fundamental aspects of battery chemistry, significance of corrosion and it's control to protect the metallic structures.
3. To identify different types of polymers and their applications in various engineering fields.
4. To understand the basic concepts of fuels and its products.
5. To gain knowledge on wide variety of engineering materials like composite materials, smart materials and lubricants which have excellent engineering properties.

Unit –I Water and its treatment: **(8 hours)**

Introduction – hardness of water – causes of hardness; Types of hardness - temporary and permanent – expression and units of hardness-numerical problems on hardness; Potable water and its specifications - Steps involved in the treatment of potable water-Disinfection of potable water by chlorination and break-point chlorination.

Boiler troubles: Sludges, Scales and Caustic embrittlement. Internal treatment of Boiler feed water - Calgon conditioning - Phosphate conditioning; External treatment methods - Softening of water by ion-exchange process. Desalination of water – Reverse osmosis.

Unit–II Battery Chemistry & Corrosion: **(8 hours)**

Introduction - Classification of batteries-primary, secondary and reserve batteries with examples. Basic requirements for commercial batteries. Construction and working of Lithium ion battery; Applications of Li-ion battery to electrical vehicles. Fuel Cells- Differences between battery and a fuel cell, Construction and applications of Methanol Oxygen fuel cell. Solar cells - Introduction and applications of Solar cells.

Corrosion: Causes and effects of corrosion – theories of chemical (oxidation) and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, waterline and pitting corrosion. Factors affecting rate of corrosion- nature of metal (position, passivity, purity, relative areas of anode and cathode); nature of environment (temperature, pH and humidity); Corrosion control methods- Cathodic protection –Sacrificial anode and impressed current methods.

Unit-III: Polymeric materials: **(8 hours)**

Definition–Classification of polymers based on source with examples–Types of polymerization– characteristics of addition and condensation polymerization with examples.

Plastics: Definition and characteristics-thermoplastic and thermosetting plastics, Preparation, properties and engineering applications of PVC, Teflon and Bakelite.

Fibers: preparation, properties and applications of Nylon 6,6.

Rubbers: Natural rubber and its vulcanization.

Conducting polymers: Characteristics and classification with examples-mechanism of conduction in trans-polyacetylene and applications of conducting polymers.

Biodegradable polymers: Concept and advantages – preparation, properties of Polylactic acid and its applications.

Unit-IV: Energy Sources: (8 hours)

Introduction- Calorific value of fuel – HCV and LCV. Classification- solid fuels: coal – analysis of coal – proximate and ultimate analysis and their significance. Liquid fuels – petroleum and its refining, cracking types – moving bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol - Fischer-Tropsch's process; Gaseous fuels – composition and uses of natural gas, LPG and CNG.

Unit- V Engineering Materials: (8 hours)

Composite materials: Introduction-Fiber reinforced plastics (FRPs) - Glass fiber reinforced plastics, Carbon fiber reinforced plastics and their applications.

Smart materials and their engineering applications

Shape memory materials- Poly L–Lactic acid. Thermo-responsive materials-Polyacryl amides, Polyvinyl amides.

Lubricants: Classification of lubricants with examples-characteristics of a good lubricant - properties of lubricants- definition and significance of viscosity, cloud and pour point, flash and fire point.

Suggested Text Books:

1. Engineering Chemistry by P.C. Jain & M. Jain: Dhanpat Rai Publishing Company (P) Ltd, New Delhi. 16th Edition, 2010.
2. Engineering Chemistry by Prasanta Rath, B. Rama Devi, C. H. Venkata Ramana Reddy, Subhendu Chakroborty, Cengage Learning Publication, India Private Limited, 2018.
3. Engineering Analysis of Smart Material Systems by Donald J. Leo, Wiley, 2007.

Reference Books:

1. Engineering Chemistry by Shashi Chawla, Dhanpat Rai Publishing Company (P) Ltd, New Delhi.
2. Engineering Chemistry, by S. S. Dara, S. Chand & Company Ltd, New Delhi.
3. P.W. Atkins, J.D. Paula, "Physical Chemistry", Oxford, 8thedition (2006).
4. B.R. Puri, L.R. Sharma and M.S. Pathania, "Principles of Physical Chemistry", S. Nagin Chand & Company Ltd., 46th edition (2013).

COURSE OUTCOMES: At the end of the course the student is expected to know the fundamental principles of Engineering Chemistry required for solving engineering problems.

The students will be able

1. To identify water as an engineering material and develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
2. To relate the knowledge of operating principles of batteries and different corrosion control techniques for sustainable development.
3. To recognize the significance of polymeric compounds in various engineering applications and biodegradable polymers to reduce environmental pollution.
4. To analyze the importance of various energy resources in day to day life.
5. To interpret the role of engineering materials for technological improvements in various sectors.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH –II-SEM **L/T /P/C**

3/0/0/3

(R24A0502) Data structures and Algorithms

COURSE OBJECTIVES:

This course will enable students to

1. Understand Algorithm complexities and build program logic on Array-Based Search and Sorting Techniques.
2. Learn Object Oriented Programming concepts in Python.
3. Understand the usage of linear data structures.
4. Implement graphs and its traversal techniques in Python.
5. Analyse how non- linear data structures will work.

UNIT – I

Data Structures: Introduction to Algorithm and their properties, Concepts of Analysis of algorithm with asymptotic notations (Big Oh) and their properties, time and space complexities
Types of Data Structures in Python: Built-in and user-defined data structures.
Searching - Linear Search and Binary Search
Sorting - Bubble Sort, Selection Sort, Merge Sort, Quick Sort - efficiency of algorithms - notation of time and space complexity; notations of best, worst and average case performance analysis.

UNIT – II

Oops Concepts - class, object, constructors, types of variables, types of methods. Inheritance: single, multiple, multi-level, hierarchical, hybrid, Polymorphism: with functions, with class methods, with inheritance, Abstraction: abstract classes.

UNIT – III

Stacks - Overview of Stack, Implementation of Stack (List), Applications of Stack
Queues: Overview of Queue, Implementation of Queue (List), Applications of Queues,
Linked Lists – Implementation of Singly Linked Lists, Doubly Linked Lists, Circular Linked Lists. Implementation of Stack and Queue using Linked list.

UNIT – IV

Non-linear Data Structure - **Graphs** - Introduction, Characteristics of a Graphs, Graph Traversals: Breadth First Search, Depth First Search - Applications of Graphs.

UNIT –V

Non-linear Data Structure: Trees- Tree Terminologies, Characteristics of Trees, Operations on Binary Trees and Binary Search Trees: find, insert and delete.
Tree traversal techniques: Inorder, Preorder, Postorder Traversal, Applications of Trees.

TEXTBOOKS:

1. Core Python Programming -Second Edition ,R. Nageswara Rao, Dreamtech Press
2. Data structures and algorithms in python by Michael T. Goodrich
3. Data Structures and Algorithmic Thinking with Python by Narasimha Karumanchi

REFERENCE BOOKS:

1. Hands-On Data Structures and Algorithms with Python: Write complex and powerful code using the latest features of Python 3.7, 2nd Edition by Dr. Basant Agarwal, Benjamin Baka.
2. Data Structures and Algorithms with Python by Kent D. Lee and Steve Hubbard.
3. Problem Solving with Algorithms and Data Structures Using Python by Bradley N Miller and David L.Ranum.

COURSE OUTCOMES:

The students should be able to:

1. Interpret the concepts of Object-Oriented Programming as used in Python.
2. Know the usage of various searching and sorting techniques
3. Design programs using linear and non-linear data structures, including stacks, queues and Linked lists
4. Develop few Graph traversal techniques
5. Design programs for implementing Tree data structure.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B.TECH -II-SEM **L/T /P /C**
-/0/3/1.5

(R24A0083)Engineering Chemistry Lab

COURSE OBJECTIVES:

The students will be able:

1. To understand and explain scientifically the various chemistry related problems in the industry/engineering and develop experimental skills for building technical competence.
2. To familiarize with the practical implementation of fundamental concepts.
3. To gain hands on experience in handling the instruments.
4. To demonstrate the digital and instrumental methods of analysis.
5. To correlate the practical aspect with theoretical concepts.

List of Experiments

Titrimetry:

1. Estimation of Hardness of water by EDTA method.
2. Estimation of Ferrous ion by Dichrometry

Instrumental Methods

Conductometry:

3. Estimation of concentration of HCl by Conductometric titrations.
4. Estimation of concentration of Acetic acid by Conductometric titrations.

Potentiometry:

5. Estimation of amount of $Fe^{2+}$by Potentiometric titration using $KMnO_4$.

pH Metry:

6. Determination of an acid concentration using pH meter.

Preparation

7. Preparation of a Polymer-**Bakelite**

Physical Property

8. Determination of Surface Tension of a given liquid by Stalagmometer.
9. Determination of Viscosity of a given liquid using Ostwald's Viscometer.

Corrosion control method

10. Electroplating of Copper on an Iron object.

Virtual lab experiments

1. Construction of Fuel cell and it's working.
2. Smart materials for Biomedical applications
3. Batteries for electrical vehicles.
4. Functioning of solar cell and its applications.

Text Book:

1. In organic quantitative analysis, Vogel
2. A text book on experiments and calculation in Engineering Chemistry by S.S.Dara

Suggested Readings:

1. Lab manual for Engineering chemistry by B.Ramadevi and P.Aparna, S Chand Publications, New Delhi (2022)
2. Practical Engineering Chemistry by K.Mukkanti, etal, B.S.Publications, Hyderabad.

Course outcomes:

The students will be able:

1. To estimate the total hardness present in a sample of water.
2. To know the strength of an acid by conductometry, potentiometry and pHmetry.
3. To prepare a thermo setting polymer.
4. To determine the surface tension and viscosity of a given liquid.
5. To understand the electroplating method for corrosion protection of metals.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM **L / T / P / C**

- /0 /3/1.5

(R24A0582) Data Structures And Algorithms Lab

COURSEOBJECTIVES:

1. To simulate searching and sorting techniques.
2. To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
3. To know how linear data structures work
4. To illustrate non-linear data structures.
5. To develop programs for performing operations on Trees and Graphs.

LIST OF PROGRAMS:

1. a. Write a program to implement Linear Search
   b. Program on Binary search using oops concepts in python (iterative or non recursive function)

2. a. Write a program to arrange the following list in ascending order using bubble sort
   b. Write a program to arrange all the alphabets of “CSIPLEARNING” hubinto descending order using bubble sort

3. a. Write a python program to sort the following data using Selection sort
   b. Write a python program to sort the following data using Selection sort
   14, 21, 27, 41, 43, 45, 46, 57, 70

4. Write a Python program for implementation of MergeSort

5. a. Write a python program to implement Quick Sort Algorithm
   b. Write a python program to implement Quick sort using following list
   50, 23, 9, 18, 61, 32

6. a. Write a simple program to create class and object to access the class members
   b. Write a python program to Create Student Class
   c. Write a python program to Create Student Class with Constructor and Destructor

7. a. Write a program to implement single Inheritance
   b.Write a python program to implement multiple or multilevel inheritance
   c. Write a program to implement abstract classes

8. a. Write a program to implement Method Overloading
   b. Write a program to implement Method Overriding
   c. Write a python program to implement operator Overloading

9. Implement the following stack operations in python
   a. Insertion b. Deletion c. Display
   d. Implement a python program to reverse a string using stack

10. Implement the following Queue operations in python
    a. Insertion b. Deletion c. Display
11. Write a python program to implement a following singly linked list operations.
    a. Create a singly linked list
    b. Add the elements in single linked list
    c. Access elements from the singly linked list
    d. Remove elements from the singly linked list

12. Write a python program to implement a doubly linked list.
    a. Create a doubly linked list
    b. Add elements to a doubly linked list
    c. Access elements from the doubly linked list
    d. Remove elements from the doubly linked list.

13. a. Write a python program to implement stack a using list
    b. Write a python program to implement Queue using list

14. a. Write a program to implement any one operation on Binary Search Tre
    b.Write a python program to implement Binary tree traversal
    i. Preorder ii. Inorder iii. Postorder

COURSE OUTCOMES:

After completion of the course, the students should be able to:
1. Illustrate how searching and sorting can be done.
2. Interpret the concepts of Object-Oriented Programming as used in Python.
3. Implement stacks, queues and linked list.
4. Implement Non-Linear data structures like graphs
5. Solve problems using various trees

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM **L/T/P/C**

-/0/ 3/1.5

(R24A0281) PRINCIPLES OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB

COURSE OBJECTIVES:

1. To design an electrical systems.
2. To analyze a given network by applying various circuit laws and network theorems.
3. To expose the students to the operation of DC machine and transformer.
4. To exhibit the students to the operation of PN junction diode and Zener diode.
5. To expose the students to the operation of Rectifier.

Among the following experiments any 10 are to be conducted

1. Verification of KVL and KCL.
2. Verification of Thevenin's theorem.
3. Verification of Norton's theorem.
4. Verification of Super position theorem.
5. Magnetization characteristics of DC shunt generator.
6. Speed control of DC shunt motor using armature control method.
7. Speed control of DC shunt motor using flux control method
8. Load test on single phase transformer.
9. PN Junction diode characteristics.
10. Zener diode characteristics.
11. Half wave rectifier.
12. Full wave rectifier.

COURSE OUTCOMES:

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

1. Explain the concept of circuit laws and network theorems and apply them to laboratory measurements.
2. Be able to systematically obtain the equations that characterize the performance of an electric circuit as well as solving them.
3. Perform the required tests on transformers and DC motors.
4. Plot the characteristics of Zener diodes.
5. Determine the working of rectifiers in detail.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM **L/T/P/C**
-/0/3/1.5

(R24A0084) Engineering and Computing Hardware Workshop

It is consisting of 2 parts: **Part I**: Computing Hardware Workshop
Part II: Engineering Workshop

COURSE OBJECTIVES:

- Understand the internal structure of computer system and learn to diagnose minor problems with the computer functioning.
- Know the proper usage and threats of the World Wide Web & Study in detail about the various features of Ms-Word, Excel, PowerPoint and Google Forms
- To obtain the knowledge about Electrical wiring and Soldering – Desoldering procedures.
- To provide hands on experience in usage of different engineering materials, tools equipments and processes which are common in the engineering field.
- To develop professional attitude, team work, precision and safety practices at workplace.

Part I: COMPUTING HARDWARE WORKSHOP

Task- 1: PC HARDWARE

Identification of the peripherals of a computer, components in a CPU and its functions. Block diagram of the CPU along with the configuration of each peripheral. Functions of Motherboard. Assembling and Disassembling of PC. Installation of OS. Basic Linux commands.

Task- 2: TROUBLESHOOTING

Hardware Troubleshooting: Students are to be given a PC which does not boot due to proper assembly or defective peripherals and the students should be taught to identify and correct the problem.

Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition.

Task 3: INTERNET

Web Browsers, Access of websites, Surfing the Web, Search Engines, Customization of web browsers, proxy settings, bookmarks, search toolbars, pop-up blockers. Antivirus downloads, Protection from various threats.

MS OFFICE

Task 4: MICROSOFT WORD

Overview of MS word features. Usage of Hyperlink, Symbols, Spell Check, Track Changes. Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word. Using Word tocreate Project Certificate, Project Abstract, News Letter, Resume.

Task 5: MICROSOFT EXCEL

Overview of Excel Features Excel formulae & Functions, conditional formatting, Charts, Hyper linking, Renaming and Inserting worksheets, Data Analysis functions.
Creating a Scheduler (Features: - Gridlines, Format Cells, Summation, auto fill, Formatting)
Calculating GPA (Features: - Cell Referencing, Formulae and functions in excel

Task 6: MICROSOFT POWER POINT

Overview of PowerPoint features, Insertion of images, slide transition, Custom animation, Hyperlinks.

Task 7: GOOGLE FORMS

Google forms introduction, opening Google forms, editing forms, add questions, copy duplicate questions, delete questions, required questions, more button, form color and themes, preview form, advance form settings, send form, view responses, close form

PART II: ENGINEERING WORKSHOP

A. LIST OF EXPERIMENTS:

1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent lamp wiring
3. Stair case wiring
4. Soldering and Desoldering practice – components, devices and circuits using general Purpose PCB.

Note: Minimum ONE experiment need to be conducted in each trade

B. TRADES FOR EXERCISES:

At least two exercises from each trade:

1. **Carpentry:**
   To prepare T-Lap Joint, Dovetail Joint.
   To pre pare Mortise & Tenon Joint.
2. **Fitting:**
   To prepare V-Fit, Dovetail Fit & Semi-circular fit.
3. **Tin-Smithy:**
   To make Square Tin, Rectangular Tray & Conical Funnel.
   Note: Minimum ONE experiment need to be conducted in each trade

Trades to demonstrate:

1. Plumbing
2. Foundry
3. Welding
4. Black smithy
5. Metal cutting (Water Plasma)

Note: Minimum a total of 3 trades to be demonstrated.

TEXT BOOKS – IT WORKSHOP

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education
2. Excel Functions and Formulae, Bernd held, Theodor Richardson, Third Edition

TEXT BOOKS – ENGINEERING WORKSHOP

1. Workshop Manual, P. Kannaiah and K. L. Narayana, 3rd Edition, Scitech,2015
2. Printed Circuit Boards - Design, Fabrication, Assembly and Testing, R. S. Khandpur,Tata McGraw-Hill Education, 2005.

COURSE OUTCOMES:

- Ability to identify, assemble and troubleshoot the major components of a computerand perform the installation of Operating System.
- Capacity to make effective usage of the internet for academics and developprofessional documents, spreadsheets and presentations.
- Students will be able to understand the domestic, illumination, stair-case wiringprocedures and soldering de soldering practice
- The student will have hands-on experience on manufacturing of components usingdifferent trades of engineering processes
- The student will be able to perform in a team, adhering to industrial safety practicesand follow professional working standards.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B.TECH –II-SEM **L/T/P/C**

2/0/0 /0

(R24A0003) HUMAN VALUES AND PROFESSIONAL ETHICS

COURSE OBJECTIVES:

This introductory course input is intended:

1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
2. To facilitate the development of a holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of value based living in a natural way.
3. To highlight plausible implications of such a holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

UNIT - I:

Course Introduction -Need, Basic Guidelines, Content and Process for Value Education.

Self-Exploration – Definition, content and process., A look at basic Human Aspirations- Continuous Happiness and Prosperity, Right understanding of Relationships and Physical Facilities, Method to fulfill the above human aspirations. Understanding and living in harmony at various levels.

UNIT - II:

Understanding Harmony in the Human Being - Harmony in Myself, Understanding human being as a co-existence of the sentient 'I' and the material 'Body'. Understanding the needs of Self ('I') and 'Body'. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer).

Understanding the harmony of I with the Body- Sanyam and Swasthya, Programs to ensure Sanyam and Swasthya.

UNIT - III:

Understanding Harmony in the Family and Society- Understanding harmony in the Family- Understanding values in human - human relationship, Meaning of Nyaya and program for its fulfillment to ensure Ubhay- tripti, Trust (Vishwas) and Respect (Samman) as the foundational values of relationship.

Understanding the harmony in the society- Samadhan, Abhay, Sah-astiva as comprehensive Human Goals, Undivided Society (Akhand Samaj), Universal Order.

UNIT - IV:

Understanding Harmony in the Nature and Existence - Understanding the harmony in the Nature-Interconnectedness and mutual fulfillment among the four orders of nature. Recyclability and self-regulation in nature. Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all- pervasive space. Holistic perception of harmony at all levels of existence.

UNIT - V:

Implications of the above Holistic Understanding of Harmony on Professional Ethics: Basic concepts of Professional Ethics, Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Competence in Professionalethics, Ethical dilemmas, Role of Emotional intelligence in ethical decision-making

TEXT BOOKS:

1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rdEdition.

REFERENCE BOOKS:

1. Ivan IIlich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
2. E. F. Schumancher, 1973, Small is Beautiful: a study of economics as if people mattered. Blond & Briggs, Britain.
3. A Nagraj, 1998 Jeevan Vidya ek Parichay, Divya Path Sansthan, Amarkantak.
4. Sussan George, 1976, How the Other Half Dies, Penguin Press, Reprinted 1986,1991.
5. P. L. Dhar, R. R. Gaur, 1990, Science and Humanism, Common wealth Publishers. A. N. Tripathy, 2003, Human Values, New Age International Publishers.
6. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati.
7. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth - Club of Rome's report, Universe Books.
8. E G Seebauer & Robert L.Berry, 2000, Fundamentals of Ethics for Scientists & Engineers, Oxford University Press.
9. M Govindrajan, S Natrajan & V. S Senthil kumar, Engineering Ethics (including Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, http://www.uptu.ac.in
2. Story of Stuff, http://www.storyofstuff.com
3. AI Gore, An Inconvenient Truth, Paramount Classics, USA
4. Charle Chaplin, Modern Times, United Artists, USA
5. IIT Delhi, Modern Technology - the Untold Story

COURSE OUTCOMES:

1. The students will be able to obtain happiness and prosperity in their life.
2. They will develop harmony at all levels.
3. They can have satisfying human behavior throughout their life

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech.CSE- ISem **L/T/P/C**

3/-/-/3

(R24A0503)

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

COURSEOBJECTIVES:

1. To understand object oriented principles like abstraction, encapsulation,inheritance,polymorphism andapply them in solving problems.
2. Tounderstand the implementation of packages andinterfaces.
3. To understand the concepts of exception handling, multithreading and collection classes.
4. Tounderstand how to connect tothe database using JDBC.
5. To understand the design of Graphical User Interface using applets and swing controls.

UNIT-I

Java Programming- History of Java, comments, Java Buzz words, Data types, Variables, Constants,Scope and Lifetime of variables, Operators, Type conversion and casting, Enumerated types, Control flow- block scope, conditional statements, loops, break and continue statements, arrays,simple java standalone programs, class, object, and its methods constructors, methods, static fields and methods, access control, this reference, overloading constructors, recursion, exploring string class, garbage collection.

UNIT – II

Inheritance – Inheritance types, super keyword, preventing inheritance, final classes and methods.

Polymorphism – method overloading and method overriding, abstract classes and methods**. Interfaces-** Interfaces Vs Abstract classes, defining an interface, implement interfaces, accessing implementations through interface references, extending interface, inner class.

Packages-Defining, creating and accessing a package, importing packages.

UNIT-III

Exception handling-Benefits of exception handling, the classification of exceptions - exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws andfinally, creating own exception subclasses.

Multithreading – Differences between multiple processes and multiple threads, thread life cycle, creating threads, interrupting threads, thread priorities, synchronizing threads, inter-thread communication, producer consumer problem.

UNIT-IV

Collection Framework in Java – Introduction to java collections, Overview of java

collection framework, Commonly used collection classes- Array List, Vector, Hashtable, Stack, Lambda Expressions.

Files- Streams- Byte streams, Character streams, Text input/output, Binary input/output, File management using File class.

Connecting to Database – JDBC Type 1 to 4 drivers, Connecting to a database, querying a database and processing the results, updating data with JDBC,Data Access Object (DAO).

UNIT-V

GUI Programming with Swing - The AWT class hierarchy, Introduction to Swing, Swing Vs AWT, Hierarchy for Swing components, Overview of some Swing components – Jbutton, JLabel, JTextField, JTextArea, simple Swing applications, Layout management – Layout manager types –border, grid and flow.

Event Handling- Events, Event sources, Event classes, Event Listeners, Delegation event model, Examples: Handling Mouse and Key events, Adapter classes.

TEXT BOOK:

1. Java Fundamentals–A Comprehensive Introduction,Herbert Schildt and Dale Skrien,TMH.
2. Core Java: An Integrated Approach – Dr R Nageswara Rao

REFERENCE BOOKS:

1. Java forProgrammers, P.J.Deiteland H.M.Deitel, PEA (or) Java: How to Program ,P.J.Deiteland H.M.Deitel,PHI
2. ObjectOrientedProgrammingthroughJava,P.RadhaKrishna,UniversitiesPress.
3. Thinking in Java, Bruce Eckel,PE
4. Programming in Java, S. Malhotra and S. Choudhary, Oxford Universities Press.
5. Design Patterns Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides.

COURSE OUTCOMES:

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

1. Understand the use of OOP's Concepts.
2. Implement Packages and interfaces in java
3. Develop and Understand exception handling ,multithreaded applications with synchronization
4. Understandthe use of Collection Framework
5. Design GUI based applications using AWT and Swings

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech.CSE- ISem **L/T/P/C**

3/-/-/3

(R24A0504) DATABASEMANAGEMENT SYSTEMS

COURSE OBJECTIVES:

- To study the physical and logical database designs, database modeling, relational, hierarchical, and network models
- To understand and use data manipulation language to query, update, and manage a database
- To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server(Database Server),Data Warehousing.
- To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
- Familiar with basic database storage structures and access techniques: file and page organizations

UNIT I:

Database System Applications, Purpose of Database Systems, View of Data–Data Abstraction – Instances and Schemas–Database Languages– database Access for applications Programs– Database Users and Administrator–Transaction Management–Database Architecture–Storage Manager–the Query Processor.

Data Models: Introduction to the Relational Model– Structure – Database Schema, Keys – Schema Diagrams. Database design– Other Models, ER diagrams – ER Model -Entities, Attributes and Entity sets – Relationships and Relationship sets – ER Design Issues – Concept Design – Conceptual Design with relevant Examples. Relational Query Languages, Relational Operations.

UNIT II:

Relational Algebra–Selection and projection set operations–renaming–Joins–Division Examples of Algebra overviews – Relational calculus – Tuple Relational Calculus (TRC) –Domain relational calculus(DRC).

Overview of the SQL Query Language – Basic Structure of SQL Queries, Set Operations, Aggregate Functions–GROUPBY–HAVING, Nested Subqueries, Views, Triggers, Procedures.

UNIT III:

Normalization – Introduction, Non loss decomposition and functional dependencies, First, Second, and third normal forms – dependency preservation, Boyce/Codd normal form.Higher Normal Forms - Introduction, Multi-valued dependencies and Fourth normal form, Join dependencies and Fifth normal form

UNIT IV:

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent Executions – Serializability- Recoverability – Implementation of Isolation – Testingforserializability-Lock–BasedProtocols–TimestampBasedProtocols-Validation-BasedProtocols–MultipleGranularity.

UNIT V:

Recovery and Atomicity– Log– Based Recovery – Recovery with ConcurrentTransactions– CheckPoints-BufferManagement–Failurewithlossofnonvolatilestorage.

TEXTBOOKS:

2. DatabaseSystemConcepts,Silberschatz,Korth,McGrawhill,SixthEdition.(All units except IIIrd)
3. Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition.

REFERENCEBOOKS:

2. Fundamentals of Database Systems, Elmasri Navathe Pearson Education.
3. An Introduction to Database systems, C.J. Date, A.Kannan, S.Swami Nadhan, Pearson, Eight Edition for UNITIII.

COURSE OUTCOMES:

Atthe end of this course, students will be able to:

1. Demonstrate the basic elements of a relational database management system
2. Ability to identify the data models for relevant problems
3. Ability to design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries.
4. Apply normalization forthe given database
5. Understandthe various Recovery Mechanisms

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech.CSE- ISem **L/T/P/C**

3/-/-/3

(R24A0505) SOFTWARE ENGINEERING

COURSE OBJECTIVES

- The aim of the course is to provide an understanding of the working knowledge of the techniques 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.

UNIT-I

Introduction to Software Engineering: The evolving role of software, changing nature of software, software myths.

AGeneric view of process: Software engineering-a layered technology, a process framework, the capability maturity model integration(CMMI).

Process models: The waterfall model, Spiral model and Agile methodology

UNIT -II

Software Requirements: Functional and non- functional requirements, user requirements, system requirements, interface specification, the software requirements document.

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

UNIT-III

Design Engineering: Design process and design quality, design concepts, the design model. Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design, conceptual model of UML, basic structural modeling, class diagrams, sequence diagrams, collaboration diagrams, usecase diagrams, component diagrams.

UNIT-IV

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, black-box and white-box testing, validation testing, system testing, the art of debugging.

Metrics for Process and Products: Software measurement,metrics forsoftware quality.

UNIT-V

Risk management: Reactive Vs proactive risk strategies, software risks, risk identification, risk

projection, risk refinement,RMMM.

Quality Management: Quality concepts, software quality assurance, software reviews, formal technical reviews, statistical software quality assurance, software reliability, the ISO 9000 quality standards.

TEXTBOOKS:

2. SoftwareEngineering,Apractitioner'sApproach-RogerS.Pressman,6thedition,McGrawHillInternationalEdition.
3. SoftwareEngineering-Sommerville,7thedition,PearsonEducation.

Course Outcomes

- Understand software development life cycle Ability to translate end-user requirements into system and software requirements.
- Structure the requirements in a Software Requirements Document and Analyze Apply various process models for a project, Prepare SRS document for a project
- Identify and apply appropriate software architectures and patterns to carry out high level design of a system and be able to critically compare alternative choices.
- Understand requirement and Design engineering process for a project and Identify different principles to create an user interface
- Identify different testing methods and metrics in a software engineering project and Will have experience and/or awareness of testing problems and will be able to develop a simple testing report

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- ISem **L/T/P/C 3/0/-/3**

(R24A0506) DESIGN ANDANALYSIS OF ALGORITHMS

COURSE OBJECTIVES:

2. To analyze performance of algorithms.
3. To choose the appropriate data structure and algorithm design method for a specified application.
4. To understand how the choice of data structures and algorithm design methods impacts the performance of programs.
5. To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound.
6. To understand the differences between tractable and intractable problems and to introduce P and NP classes.

UNIT I

Introduction: Algorithms, Pseudocode for expressing algorithms, performance analysis-Space complexity, Time Complexity, Asymptotic notation- Big oh notation, omega notation, theta notation and little oh notation.

Divide and Conquer: General method. Applications- Binary search, Quick sort, merge sort, Strassen's matrix multiplication.

UNIT II

Disjoint set operations, Union and Find algorithms, AND/OR graphs, Connected components, Bi-connected components.

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

UNIT III

Dynamic Programming: General method, applications-Matrix chained multiplication, Optimal binary search trees,0/1 Knapsack problem, All pairs shortest path problem, Traveling sales person problem.

UNIT IV

Backtracking: General method Applications-n-queues problem, Sum of subsets problem, Graph coloring, Hamiltonian cycles.

UNIT V

Branch and Bound: General method, applications- Travelling sales person problem,0/I k Knapsack problem LC branch and Bound solution, FIFO branch and bound solution.

NP-Hard and NP-Complete Problems: Basic concepts, Non deterministic algorithms, NP-Hard and NP-Complete classes, NP-Hard problems,Cook'stheorem.

TEXTBOOKS:

2. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharan, Universities press
3. DesignandAnalysis of Algorithms, P.h.Dave,2ndedition,PearsonEducation.

REFERENCES:

2. Introductiontothe Design And Analysis of Algorithms ALevitin Pearson Education
3. Algorithm Design foundations Analysis and Internet examples, M.T.Goodrich and R Tomassia John Wiley and sons
4. Design and Analysis of Algorithms, S.Sridhar, Oxford Univ.Press
5. Design and Analysis of Algorithms, Aho,Ulman and Hopcraft, Pearson Education.
6. Foundations of Algorithms,R.NeapolitanandK.Naimipour,4thedition

COURSE OUTCOMES:

1. Ability toanalyze the performance of algorithms.
2. Ability tochoose appropriate algorithm designtechniques forsolving problems.
3. Ability to understand how the choice of data structures and the algorithm design methods to impact the performance of programs.
4. Describe the dynamic programming paradigm and explain when an algorithmic design situation calls for it. Synthesize dynamic programming algorithms and analyze them.
5. Describes NP hard and NP complete classes and also about the importance of Cook's theorem.

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- ISem **L/T/P/C**

3/1/- /4

(R24A0026) PROBABILITY, STATISTICS AND QUEUEINGTHEORY

Course Objectives:

- To understand a random variable that describes randomness or an uncertainty in certain realistic situation. It can be either discrete or continuous type.
- To learn important probability distributions like: in the discrete case, study of the Binomial and the Poisson Distributions and in the continuous case the Normal Distributions.
- To Understand linear relationship between two variables and also to predict how a dependent variable changes based on adjustments to an independent variable.
- To learn the types of sampling, sampling distribution of means and variance, Estimations of statistical parameters.
- Use of probability theory to make inferences about a population from large and small samples.
- To understand different queuing models.

UNIT – I: Basic Probability and Random Variables

Basic Probability: Definition, The axioms of probability and basic problems.

Single Random Variables: Discrete and Continuous. Probability distribution function, Probability mass and density functions, mathematical expectation and variance.

Multiple Random variables: Discrete and Continuous, Joint probability distributions-Joint probability mass and density functions, Marginal probability mass and density functions.

UNIT-II: Probability Distributions

Binomial distribution – properties, mean, variance and recurrence formula for Binomial distribution, Poisson distribution – Poisson distribution as Limiting case of Binomial distribution, properties, mean variance and recurrence formula for Poisson distribution, Normal distribution – mean, variance, median ,mode and characteristics of Normal distribution.

UNIT -III: Correlation and Regression

Correlation -Coefficient of correlation, Rank correlation, Regression- Regression coefficients, Lines of regression.

Multiple correlation and regression- Coefficient of multiple Correlation, multiple regression, Multiple linear regression equations.

UNIT –IV: Testingof Hypothesis

Sampling: Definitions, Standard error. Estimation - Point estimation and Interval estimation.

Testing of hypothesis: Null and Alternative hypothesis - Type I and Type II errors, Critical region - confidence interval - Level of significance, One tailed and Two tailed test.

Large sample Tests: Test of significance - Large sample test for single mean, difference of means, single proportion, and difference of proportions.

Small samples: Test for single mean, difference of means, paired t-test, test for ratio of variances (F-test) ,Chi-square test for goodness of fit and independence of attributes.

UNIT V: Queuing Theory

Queuing theory –Structure of a queuing system and its characteristics-Arrival pattern and service pattern- Pure birth and Death process.

Terminology of Queuing systems-queuing models and its types - M/M/1 Model of infinite queue(without proofs) and M/M/1 Model of finite queue(without proofs).

Suggested Text Books:

i) Fundamental of Statistics by S.C. Gupta,7th Edition,2016.
ii) Fundamentals of Mathematical Statistics by SC Gupta and V.K.Kapoor
iii) Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers, 35th Edition,2000.
iv) R. A. Johnson, Miller and Freund's "Probability and Statistics for Engineers", Pearson Publishers, 9th Edition, 2017.

References:

i) Introduction to Probability and Statistics for Engineers and Scientists by SheldonM.Ross.
ii) Probability and Statistics for Engineers by Dr. J. Ravichandran.

Course Outcomes:

After learning the contents of this paper the student must beable to

1. Describe randomness in certain realistic situation which can be either discrete or continuous type and compute statistical constants of these random variables.
2. Provide very good insight which is essential for industrial applications by learning probability distributions.
3. Make objective, data-driven decisions by using correlation and regression.
4. Draw statistical inference using samples of a given size which is taken from a population.
5. To design balanced systems that serve customers quickly and efficiently but it is not cost effective.

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- ISem **L/T/P/C**

-/0/2/1

(R24A0583) OBJECT ORIENTED PROGRAMMINGTHROUGH JAVA LAB

COURSE OBJECTIVES:

1. To prepare students to become familiar with the Standard Java technologies ofJ2SE
2. To provide Students with a solid foundation in OOP fundamentals required to solve programming problems and also to learn Advanced Java topics like J2ME, J2EE, JSP, JavaScript
3. To train Students with good OOP programming breadth so as to comprehend, analyze, design and create novel products and solutions for the real life problems.
4. To inculcate in students professional and ethical attitude, multidisciplinary approach and an ability to relate java programming issues to broader application context.
5. To provide student with an academic environment aware of excellence, written ethical codes and guidelines and lifelong learning needed for a successful professional career

WEEK 1:

a) Write a java program to find the Fibonacci series using recursive and non-recursive functions

b) Write a program to multiply two given matrices.

c) Write a program for Method overloading and Constructor overloading

WEEK 2:

a) Write a program to demonstrate execution of static blocks, static variables & static methods.

b) Write a program to display the employee details using Scanner class

c) Write a program for sorting a given list of names in ascending order

WEEK 3:

a) Write a program to implement single and Multi-level inheritance

b) Write a program to implement Hierarchical Inheritance.

c) Write a program to implement method overriding.

WEEK 4:

a) Write a program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.

b) Write a program to implement Interface.

c) Write a program to implement multiple and Hybrid Inheritance

WEEK 5:

a) Write a program to create inner classes

b) Write a program to create user defined package and demonstrate various access modifiers.

c) Write a program to demonstrate the use of super and final keywords.

WEEK 6 :

a) Write a program if number is less than 10 and greater than 50 it generate the exception out of range. else it displays the square of number.

b) Write a program with multiple catch Statements.

c) write a program to implement nested try

WEEK 7:

a) Write a Program to implement simple Thread by extending Thread class and implementing runnable interface.

b) Write a program that implements a multi-thread application that has three threads

c) write a program to set and print thread priorities

WEEK 8:

Write a program to implement following collections

a) array List b) Vector c)Hash table d)Stack

WEEK 9:

a) Write a program to demonstrate lambda expressions.

b) Write a program for producer and consumer problem using Threads

WEEK 10:

a) Write a program to list all the files in a directory including the files present in all its sub directories.

b) Write a Program to Read the Content of a File Line by Line

WEEK 11:

a) Write a program that connects to a database using JDBC display all records in a table.

b) Write a program to connect to a database using JDBC and insert values into it.

c) Write a program to connect to a database using JDBC and delete values from it

WEEK 12:

Write a program that works as a simple calculator. Use a Grid Layout to arrange Buttons for digits and for the + - * % operations. Add a text field to display the result.

COURSE OUTCOMES:

Upon successful completion of this course, the students will be able to:

1. Analyze the necessity for Object Oriented Programming paradigm and over structured programming and become familiar with the fundamental concepts in OOP.
2. Demonstrate an ability to design and develop Java programs, analyze, and interpret object oriented data and report results.
3. Analyze and distinguish between various types of inheritance.
4. Demonstrate an ability to design an object oriented system, AWT components or multithreaded process as per needs and specifications.
5. Demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks like console and windows applications for standalone programs.

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech.CSE- ISem **L/T/P/C**
-/0/2/1

(R24A0584) DATABASE MANAGEMENT SYSTEMS LAB

COURSE OBJECTIVES:

1. Introduce ER data model, database design and normalization
2. Learn SQL basics for data definition and data manipulation
3. To enable students to use Non-Relational DBMS and understand the usage of document oriented and distributed databases.
4. To enable the students to use TCL and DCL Commands and perform all states of Transaction operations.
5. To familiarize issues of concurrency control and transaction management

List of Experiments:

1. Concept design with E-R Model
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. A. Querying (using ANY, ALL, UNION, INTERSECT, JOIN, Constraints etc.)
   B. Nested, Correlated subqueries
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger, delete trigger, update trigger)
9. Procedures
10. Usage of Cursors
11. Installation of MySQL / MongoDB and practicing DDL, commands

TEXT BOOKS:

1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3 rd Edition
2. Database System Concepts,Silberschatz, Korth, McGraw Hill, V edition.

REFERENCE BOOKS:

1. Database Systems design,Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, Pearson Education

3. Introduction to Database Systems, C.J. Date, Pearson Education
4. Oracle for Professionals, The X Team, S. Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

COURSE OUTCOMES:

1. Design database schema for a given application and apply normalization
2. Acquire skills in using SQL commands for data definition and data manipulation.
3. Develop solutions for database applications using procedures.
4. Develop solutions for database applications using cursors ..
5. Develop solutions for database applications using triggers.

MALLAREDDYCOLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech.CSE- ISem **L/T/P/C**
0/0/2/1

(R24A0585) SOFTWARE ENGINEERING LAB

Prerequisites

- A course on "Programming for Problem Solving".

Co-requisite

- A Course on "Software Engineering".

Course Objectives:

1. Understand the principles and practices of software engineering through hands-on projects.
2. Apply software development life cycle (SDLC) models to real-world software projects
3. Use tools and techniques for requirement gathering, design, implementation, testing, and documentation.
4. To enable students to learn and apply UML diagrams for modeling and designing software systems.
5. To learn how to develop test cases for systematically validating software requirements.

List of Experiments

Do the followings even exercises for any two projects given in the list of sample projects or any other Projects:

1. Development of problem statements.
2. Preparation of Software Requirement Specification Document, Design Documents and Testing Phase related documents.
3. Preparation of Software Configuration Management and Risk Management related documents.
4. Study and usage of any Design phase CASE tool
5. Performing the Design by using any Design phase CASE tools.
6. Develop test cases for unit testing and integration testing
7. Develop test cases for various white box and black box testing techniques.

Sample Projects:

1. Passport automation System
2. Book Bank
3. Online Exam Registration
4. Stock Maintenance System
5. Online course reservation system
6. E-ticketing
7. Software Personnel Management System
8. Credit Card Processing
9. E-book management System.
10. Recruitment system

TEXT BOOKS:

1. Software Engineering, A practitioner's Approach- RogerS. Pressman, 6thedition, McGraw Hill International Edition.
2. SoftwareEngineering-Sommerville,7thedition,PearsonEducation.
3. The unified modeling language userguide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

REFERENCE BOOKS:

1. Software Engineering, an Engineering approach- James F. Peters,Witold Pedrycz, John Wiley.
2. Software Engineering principles and practice-Waman SJawadekar

Course Outcomes:

1. Analyse and specify software requirements for a given problem.
2. Design software using UML and other modeling tools, adhering to software engineering principles.
3. Implement software components using modern development tools and practices.
4. Develop and execute test cases to validate software functionality and performance.
5. Use version control systems and collaboration platforms effectively during team-based software projects.
6. Prepare project reports and deliver effective presentations demonstrating project development processes and outcomes.

MALLAREDDYCOLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- ISem **L/T/P/C**

0/0/2/1-

(R24A0586)

PROGRAMMING WORKSHOP- I (C PROGRAMMING)

Course Objectives:

1. To write basic C programs using input output statements, datatypes and operators
2. To be able to write programs using conditional statements
3. To decompose a problem into functions and to develop modular, reusable code.
4. To understand the usage of derived datatypes - arrays, pointers and strings.
5. To be able to use user defined data types like structures and unions
6. To understand need of files in programming

List of Experiments

S. No	List of Experiments
WEEK 1	Programs using input and output statements.
WEEK 2	Programs on Operators
WEEK 3	Programs on Conditional Branching Statements.
WEEK 4-5	Programs on Loop statements (while, for, do while loop) Programs on Unconditional Branching statements.
WEEK 6	Programs on Functions
WEEK 7-8	Programs on One Dimensional Arrays. Programs on Two Dimensional Arrays.
WEEK 9	Implementation of String functions with and without built-in functions.
WEEK 10-11	Programs on User defined types (Structure, union and enum)
WEEK 12	Programs on Pointers (DMA functions).
WEEK 13-14	Programs on files.

Course Outcomes:

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

1. Write simple programs using input and output functions
2. Design programs on decision and control constructs.
3. Develop programs on code reusability using functions.
4. Implement various concepts of arrays and strings and pointers
5. Create programs using user defined datatypes
6. Implement various concepts of files.

MALLAREDDYCOLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- ISem **L/T/P/C**
2/-/-/-

(R24A0061) PUBLICPOLICY & GOVERNANCE

Course objectives:

1. To make the students understand in-depth analysis of public policy and to solve its ills prevailing in the society.
2. To provide an opportunity for the students to learn the basic areas of public policy analysis, implementation and evaluation.
3. To make understand the process and various approaches in public policy making.
4. To understand the theories and issues of social coordination and the nature of all patterns of rule.
5. To make the students understand the techniques of governance and emerging trends in public and private governance its policy-making and implementation.

Unit-I

Introduction of Public Policy: Definition, Nature, Scope and Importance of Public Policy, Evolution of Public Policy and Policy Sciences, Public Policy and Public Administration. **Approaches to Public Policy Analysis:** The Process Approach, The Logical Positivist Approach, The Phenomenological Approach, The Participatory Approach and Normative Approach

Unit-II

Theories and Process of Public Policy Making: Theories and Models of Policy Making, Perspectives of Policy Making Process, Institutions of Policy Making.

Unit-III

Policy Implementation and Evaluation: Concept of Policy Implementation, Techniques of Policy Implementation, Concept of Policy Evaluation, Constraints of Public Policy Evaluation

Unit-IV

Introduction of Governance: Definitions, Issues and Controversies, Reinventing Government, Reforming Institutions: The State, Market and Public domain. **State and Governance:** Origin and types of State, Democratic State and Democratic Administration, Neo-Liberalism and Rolling Back State and Governance as Government.

Unit-V

Citizen and Techniques of Governance: Rule of Law and Human Rights, Accountability, Participation, Representation. **Techniques of Governance**: Openness and Transparency, Citizen

Charter, Social Audit. **Emerging Trends in Public and Private Governance:** An Overview, Market, Civil Society, Information and Communication Technology.

TEXT AND REFERENCE BOOKS:

1. Introductionto Public Policy- Charles Wheelan, Naked Economics 2010.
2. Birkland Thomas A., (2005), An Introduction to The Policy Process: Theories, Concepts, And Models of Public Policy Making, Armonk; M.E. Sharpe.
3. AndersonJ.E., (2006) Public Policy-Making: An Introduction, Boston, Houghton
4. Bardach, Eugene (1977), The Implementation Game: What Happens After a Bill Becomes a Law, Cambridge, MA: MIT.
5. Bell, S., and Hind moor, A. (2009) Rethinking Governance: The Centrality of the State in Modern Society, Cambridge: Cambridge University Bell, Stephen and Andrew Hind moor.
6. Joyee M. Mitchell & William C. Mitchell, Political Analysis & Public Policy: An Introduction to Political Science, Thomson Press Limited, New Delhi, 1972.
7. R.K. Sapru, Public Policy, Art and Craft of policy Analysis, PHI learning private limited, New Delhi, 2011.
8. Brian W. Hogwood & Lewis A. Gunn, Policy Analysis forthe Real world, Oxford University, Press, 1986.

COURSE OUTCOMES

After completion of the course, student will be able to

1. Understand public policy analysis and they will be able to understand policy evaluation and implementation.
2. Understandthe public policy and governance on the largest gamut of its canvas.
3. Students will understand the what are emerging trends in public and private governance
4. Students will understand various theories in public policy making.
5. Students will understand Rule of Law and Human Rights.

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- II Sem **L/T/P/C**
3/-/-/3

(R24A0028) DISCRETE MATHEMATICS

COURSE OBJECTIVES:

- Introduces elementary discrete mathematics for computer science and engineering.
- Topics include formal logic notation,
- Introduces methods of proof, induction, sets, relations, algebraic structures,.
- Introduces elementary graph theory, permutations and combinations, counting principles;
- Introduces recurrence relations and generating functions.

UNIT – I

Mathematical logic: Introduction, Statements and Notation, Connectives, Truth tables, Well formed formulas, Tautology, Contradiction, Contingency, Logical equivalence, Normal Forms, Theory of Inference for the Statement Calculus, The Predicate Calculus, Inference Theory of the Predicate Calculus.

UNIT – II

Set theory: Introduction, Basic Concepts of Set Theory, Representation of Discrete Structures, Relations, Types of relations, Partial order relation, POSET, External elements in POSET, Lattices, Functions, Types of functions, inverse of functions, invertible functions and Composition of functions

UNIT – III

Algebraic Structures: Introduction, Algebraic Systems, Semi groups, Monoids, Group, Abelian group, Some particular Groups-Klein 4- group, Additive group of modulo n, Multiplicative group of modulo p. Homomorphism and isomorphism in Groups.

UNIT – IV

Combinatorics: . Permutation and combination, Principle of Inclusion and Exclusion. Recurrence relations, Generating functions,Solving of recurrence relations of first,second and higher order Homogeneous and Non homogeneous using characteristic equation and generating functions.

UNIT-V

Graph Theory: Basic Concepts, Types of graphs, Sub graphs, Isomorphism, Walk, Trail and Path, Hamiltonial and Eulerian Graphs, Planar Graphs, Euler's Formula, Multi-graph, Chromatic Numbers, The Four-Color Problem. Trees and their Properties, Spanning Trees, Directed Trees, Binary Trees.

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science: J.P. Tremblay, R. Manohar, McGraw-Hill, 1st ed.
2. Discrete Mathematics for Computer Scientists & Mathematicians: Joe l. Mott, Abraham Kandel, Teodore P. Baker, Prentis Hall of India, 2nd ed.

REFERENCE BOOKS:

1. Discrete and Combinatorial Mathematics - an applied introduction: Ralph.P. Grimald, Pearson education, 5th edition.
2. Discrete Mathematical Structures: Thomas Kosy, Tata McGraw Hill publishing co.

COURSE OUTCOMES:

- Understand and construct precise mathematical proofs
- Apply logic and set theoryto formulate precise statements
- Analyze and solve counting problems on finite and discrete structures
- Describe and manipulate sequences
- Applygraph theory in solving computing problems

MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- II Sem **L/T/P/C**
3/0/0/3

(R24A0507) Full Stack Development

COURSE OBJECTIVES:

1. To become knowledgeable about the most recent web development technologies.
2. Idea for creating two tier and three tier architectural web applications.
3. Students will become familiar to implement fast, efficient, interactive and scalable web applications using run time environment provided by the full stack components
4. Design and Analyze real time web applications. and Constructing suitable client and server side applications.
5. To learn core concept of both front end and back end programming.

UNIT - I

Web Development Basics: Understanding the Basic Web Development Framework- User, Browser, Webserver, Backend Services, **HTML Basics:** Headings, Paragraphs, Links, Images, Lists, Tables, Div Element, Forms, **Cascading Style Sheets**: Syntax, Types, Selectors, Background, Border, Font, Text, Table**,** box model, **Version Control:** Getting Started with Git, Git Basics, Git Branching and Merging, working with remote repositories.

UNIT - II

JavaScript and jQuery: JavaScript basics, Functions, form validation, OOPS Aspects of JavaScript, JQuery Framework, jQuery events, AJAX for data exchange with server, JSON data format.

UNIT - III

Angular: importance of Angular, Understanding Angular, creating a Basic Angular Application, Angular Components, Expressions, Data Binding, Built-in Directives, Custom Directives, Implementing AngularServices in Web Applications.

React:

Need of React, Simple React Structure, The Virtual DOM, React Components, Introducing React Components, Creating Components in React, Data and Data Flow in React, Rendering and Life Cycle Methods in React, Working with forms in React, integrating third party libraries, Routing in React.

UNIT – IV

Node js: Getting Started with Node.js, Using Events, Listeners, Timers, and Callbacks in Node.js, Handling Data I/O in Node.js, Accessing the File System from Node.js, Implementing Socket Services in Node.js.

UNIT - V

MongoDB:

Understanding NoSQL and MongoDB**,** Getting Started with MongoDB**,** Getting Started with MongoDB and Node.js**,** Manipulating MongoDB Documents from Node.js**,** Accessing MongoDB from Node.js**,** Using Mongoose for Structured Schema and Validation**,** Advanced MongoDB Concepts.

TEXT BOOKS:

1. Web Design with HTML, CSS, JavaScript and JQuery Set Book by Jon Duckett Professional JavaScript for Web Developers Book by Nicholas C. Zakas. **(Unit-I, II).**
2. ProGit, 2nd Edition, Apress publication by Scott Chacon and Straub. **(Unit I).**
3. Mark Tielens Thomas, React in Action, 1st Edition, Manning Publications. **(Unit-III).**
4. Brad Dayley, Brendan Dayley, Caleb Dayley., Node.js, MongoDB and Angular Web Development, 2nd Edition, Addison-Wesley, 2019. **(Unit-III, Unit-IV, Unit-V)**.

REFERENCE BOOKS:

1. Vasan Subramanian, Pro MERN Stack, Full Stack Web App Development with Mongo, Express, React, and Node, 2nd Edition, Apress, 2019.
2. Chris Northwood, The Full Stack Developer: Your Essential Guide to the Everyday Skills Expected of a Modern Full Stack Web Developer', 1st edition, Apress, 2018.
3. Kirupa Chinnathambi, Learning React: A Hands-On Guide to Building Web Applications Using React and Redux, 2nd edition, Addison-Wesley Professional, 2018.

COURSE OUTCOMES:

1. UnderstandFullstack components for developing web application.
2. Students are able to develop a dynamic webpage by the use of java script and jQuery.
3. Design faster and effective single page applications using Angular and Create interactive user interfaces with react components
4. Apply packages of NodeJS to work with Data, Files, Http Requests and Responses.
5. Use MongoDB data base for storing and processing huge data and connects with NodeJS application.

II Year B.Tech. CSE- II Sem L/T/P/C 3/-/-/3

(R24A0508) COMPUTER ORGANIZATION

COURSE OBJECTIVES:

To expose the students tothe following:

1. How Computer Systems work & the basic principles
2. Instruction Level Architecture and Instruction Execution
3. The current state of art in memory system design
4. How I/O devices are accessed and its principles.
5. Toprovide the knowledge onInstruction Level Parallelism

UNIT I

Basic Functional units of Computers: Functional units, basic Operational concepts, Bus structures. Software, Performance, Multiprocessors, Multicomputer. **Data Representation:** Signed number representation, fixed and floating point Representations.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms. Error detection and correction codes.

UNIT II

Register Transfer Language and Micro Operations: RTL- Registers, Register transfers, Bus and memory transfers. Micro operations: Arithmetic, Logic, and Shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design: Computer Registers, Computer instructions, Instruction cycle. Instruction codes, Timing and Control, Types of Instructions: Memory Reference Instructions, Input – Output and Interrupt.

UNIT III

Central Processing Unit organization: General Register Organization, Stack organization, Instruction formats, Addressing modes, Data Transfer and Manipulation, Program Control, CISC and RISC processors

Control unit design: Design approaches, Control memory, Address sequencing, micro program example, design of CU, Micro Programmed Control.

UNIT IV

Memory Organization: Semiconductor Memory Technologies**,** Memory hierarchy,

Interleaving, Main Memory-RAM and ROM chips, Address map, Associative memory-Hardware organization. Match logic. Cache memory-size vs. block size, Mapping functions-Associate, Direct, Set Associative mapping. Replacement algorithms, write policies. Auxiliary memory- Magnetic tapes etc.

UNIT V

Input –Output Organization: Peripheral devices, Input-output subsystems, I/O device interface, I/O Processor, I/O transfers–Program controlled, Interrupt driven, and DMA, interrupts and exceptions. I/O device interfaces – SCII, USB

Pipelining and Vector Processing: Basic concepts, Instruction level Parallelism Throughput and Speedup, Pipeline hazards.

TEXT BOOKS:

Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.

ComputerSystems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI

REFERENCE BOOKS:

"Computer Architecture and Organization", 3rd Edition by John P. Hayes, WCB/McGraw- Hill
"Computer Organization and Architecture: Designing for Performance", 10th Edition by William Stallings, Pearson Education.
"Computer System Design and Architecture", 2nd Edition by Vincent P. Heuring and Harry F. Jordan, Pearson Education.

COURSE OUTCOMES:

After completion of the course, Students will be able to:
Student will learn the concepts of computer organization for several engineering applications.
Student will develop the ability and confidence to use the fundamentals of computer organization as a tool in the engineering of digital systems.
Anability toidentify, formulate, and solve hardware and software computer engineering problems using sound computer engineering principle
To impart the knowledge on micro programming
Comprehendthe concepts of advanced pipelining techniques

MALLAREDDYCOLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- II Sem **L/T/P/C**

3/-/-/3

(R24A0509) OPERATING SYSTEMS

COURSEOBJECTIVES:

1. To understand the fundamental concepts and techniques of Operating Systems.
2. To study the concepts of LINUX OS and process scheduling.
3. To understand the concepts in deadlocks and process management.
4. To understand the techniques in memory managements and IPC mechanism.
5. To study file system concepts and sockets.

UNIT - I

Operating System-Introduction, Structures-Simple Batch, Multi-programmed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services.

Introduction to Linux operating system, Linux file system,Linux Utilities

UNIT - II

Linux: Introduction toshell, Types of Shell's, example shell programs.

Process and CPU Scheduling - Process concepts and scheduling, Operations on processes, Cooperating Processes, Threads, Scheduling Criteria, Scheduling Algorithms, Multiple - Processor Scheduling.

UNIT - III

Deadlocks - System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock

Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors.

UNIT - IV

Inter process Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory implementation in Linux. Corresponding system calls.

Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Page Replacement, Page Replacement Algorithms.

UNIT - V

File System Interface and Operations -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, kernel support for files, system calls for file I/O operations open, create, read, write, close, lseek, stat, ioctl

Disk Management: Disk Scheduling Algorithms-FCFS, SSTF, SCAN, C-SCAN

TEXT BOOKS:

1. Beginning Linux Programming –NeilMathew, Richard Stones 4th Edition, Wiley
2. Operating System Principles- Abraham Silberschatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
3. Unix System Programming using C++, T. Chan, PHI.
4. Unix Concepts and Applications, 4th Edition, SumitabhaDas,TMH,2006.
5. Advanced programming in the UNIX environment, W.R. Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI
2. Operating System A Design Approach- Crowley, TMH.
3. ModernOperating Systems, Andrew S. Tanenbaum 2nd edition, Pearson/PHI
4. UNIXprogramming environment, Kernighan and Pike, PHI/ Pearson Education
5. UNIXInternals -The New Frontiers, U. Vahalia, Pearson Education.

COURSE OUTCOMES:

At the end of the course students should have:

1. Ability toapply concepts of operating system.
2. Ability towrite shellprograms and simulate process scheduling algorithms.
3. Skills to analyze memory management and deadlocks situations.
4. An ability todevelop programs using system calls and utilities.
5. Capability to compare various file systems.

0/0/2/1

(R24A0587) FULL STACK DEVELOPMENT LAB

COURSE OBJECTIVES:

This course willenable the students:

1. Usage of various front and back end Tools
2. They can understand and create applications on their own
3. Demonstrate andDesigning of Websites can be carried out.
4. Developweb based application using suitable client side and serverside code.
5. Implement web based application using effective database access.

PROGRAMS:

Week-1. Designing following static WebPages required foran Online Book Store website.

Week-2. Designing a webpage using CSS Which includes different styles.

Week-3. Write a JavaScript to implement the following various events.

Week-4. Write a program tocreate and Builda Password StrengthCheck using JQuery.

Week-5. Write a program to create and Build a star rating system using JQuery.

Week-6. Write a program for sending request to a server by using AJAX.

Week-7. Develop an Angular JS application that displays a list of shopping items. Allow users to add and remove items from the list using directives and controllers. Note: The default values of items may be included in the program.

Week-8. Write a program to create a simple calculator Application using React JS.

Week-9. Write a program to create a voting application using React JS.

Week-10. Write a serverside program for Accessing MongoDB from Node.js.

Week-11. Write a serverside program for Manipulating MongoDB from Node.js.

COURSE OUTCOMES:

Students will be able to understand

1. Usage of various front and back end Tools
2. They can understand and create applications on their own
3. Demonstrate andDesigning of Websites can be carried out.
4. Developweb based application using suitable client side and server side code.
5. Implement web based application using effective database access.

-/-/2/1

(R24A0588) OPERATING SYSTEMS LAB

COURSE OBJECTIVES:

1. To provide an understanding of the design aspects of operating system concepts through simulation
2. Introduce basic Linux commands, system call interface forprocess management, inter-process communication and I/O in Unix.
3. Student will learn various process and CPU scheduling Algorithms through simulation programs
4. Studentwillhave exposure toSystem calls andsimulate them.
5. Student will learn deadlocks and process management & Inter Process communication and simulate

WEEK 1:

Practice File handling utilities, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities.

WEEK 2:

Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or directory and reports accordingly. Whenever the argument is a file it reports no of lines present in it.

WEEK 3:

Simulate the following CPU scheduling algorithms. a) FCFS b) SJF c) Round Robin
d) Priority.

WEEK 4:

Simulate Bankers Algorithm for Dead Lock Avoidance; Simulate Bankers Algorithm for Deadlock Prevention.

WEEK 5:

a) Writea C program tosimulate the concept of Dining-philosophers problem.
b) Write a C program to simulate producer-consumerproblem using Semaphores

WEEK 6:

a) Write a program that illustrates communication between twoprocess using named pipes or FIFO.

b) Writea C program that receives a message from message queue anddisplay them.

Writea C program that illustrates two processes communicating using Shared memory.

WEEK 8:

Simulate all page replacement algorithms a) FIFO b) LRU c) OPTIMAL

WEEK 9:

Write a C program that takes one or more file/directory names as command line input and reports following information A)File Type B)Number Of Links C)Time of last Access D)Read, write and execute permissions

WEEK 10:

Write a C program to simulate disk scheduling algorithms. a) FCFS b) SCAN c) C-SCAN

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Advanced programming in the Unix environment, W.R.Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles, William Stallings, Fifth Edition– 2005, Pearson Education/PHI
2. Operating System - A Design Approach-Crowley, TMH.
3. ModernOperating Systems, Andrew S Tanenbaum,2nd edition, Pearson/PHI
4. UNIX Programming Environment, Kernighan and Pike,PHI/Pearson Education
5. UNIXInternals: The New Frontiers, U. Vahalia, Pearson Education

COURSE OUTCOMES :

1. Gain a comprehensive understanding of operating system design principles through practicalsimulations.
2. Learn essential Linux commands and the system call interface for process management.
3. Mastervarious process and CPU scheduling algorithms through hands-on simulation programs.
4. Acquire knowledge on deadlocks and process management
5. Learntosimulate inter-process communication concepts.

II Year B.Tech. CSE-II Sem **L/T/P/C**

-/-/2/1

(R24A0589)

PROGRAMMING WORSHOP-II (C++ PROGRAMMING) LAB

Course Objectives:

1. To strengthen problem solving ability by using the characteristics of an object-oriented approach.
2. To learn the concepts of Classes and objects.
3. To understand the concepts of inheritance and polymorphism.
4. To understand Exception Handling in programs.
5. To enable students to understand generic programming using templates.

<table>
<tr><th>S. No</th><th>List of Experiments</th></tr>
<tr><td>WEEK 1</td><td>Basic C++ Programs</td></tr>
<tr><td>WEEK 2</td><td>a) Write a C++ programto find the sum of individual digits of a positive integer.
b) Write a C++ programto generate the first n terms of the sequence.</td></tr>
<tr><td>WEEK 3</td><td>a) Write a C++ program to generate all the prime numbers between 1 and n, where n is a values applied by the user.
b) Write a C++ programto find both the largest and smallest number in a list of integers.</td></tr>
<tr><td>WEEK 4</td><td>a) Write a C++ program to sort a list of numbers in ascending order.
b) Write a Program to illustrate New and Delete Keywords for dynamic memory allocation</td></tr>
<tr><td>WEEK 5</td><td>a) Write a program Illustrating Class Declarations, Definition, and Accessing Class Members.
b) Programto illustrate default constructor, parameterized constructor and copy constructors
c) Write a Program to Implement a Class STUDENT having Following Members:
<table>
<tr><th>Member</th><th>Description</th></tr>
<tr><td colspan="2">Data members</td></tr>
<tr><td>S name</td><td>Name of the student</td></tr>
<tr><td>Marks array</td><td>Marks of the student</td></tr>
<tr><td>Total</td><td>Total marks obtained</td></tr>
<tr><td>T max</td><td>Total maximum marks</td></tr>
<tr><td colspan="2">Member functions</td></tr>
<tr><td>Member</td><td>Description</td></tr>
<tr><td>assign()</td><td>Assign Initial Values</td></tr>
<tr><td>compute()</td><td>To Compute Total, Average</td></tr>
<tr><td>display()</td><td>To Display the Data.</td></tr>
</table></td></tr>
</table>

WEEK 6	a) Write a Program to Demonstratethe i) Operator Overloading. ii) Function Overloading. b) Write a Programto Demonstrate Friend Function and Friend Class.
WEEK 7	a) Write a Program to Access Members of a STUDENT Class Using Pointer to Object Members. b) Write a Programto Generate Fibonacci Series use Constructor to Initialize the Data Members.
WEEK 8	Write a C++ program to implement the matrix ADT using a class. The operation supported by this ADT are: a) Reading a matrix. b) Addition of matrices. c) Printing a matrix. d) Subtraction of matrices. e) Multiplication of matrices
WEEK 9	Write C++ programs that illustrate how the following forms of inheritance are supported: a) Single inheritance b) Multiple inheritance c) Multi level inheritance d) Hierarchical inheritance
WEEK 10	Write a C++ program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class. a) Write a Programto Invoking Derived Class Member Through Base Class Pointer.
WEEK 11	a) Write a Template Based Program to Sort the Given List of Elements. b) Write a C++ program that uses function templates to find the large stand smallest number in a list of integers and to sort a list of numbers in ascending order.
WEEK 12	a) Write a Program Containing a Possible Exception. Use a Try Block to Throw it and a Catch Block to Handle it Properly. b) Write a Program to Demonstrate the Catching of All Exceptions.

Course Outcomes:

1. Ability to write, compile, and debug C++ programs.
2. Apply object-oriented programming (OOP) concepts like classes, objects, inheritance, and polymorphism.
3. Abilityto manage memory manually using pointers and dynamic memory allocation.
4. Able to handle exceptions and error handling in C++.
5. Execute templates and generic programming frameworks.

MALLAREDDYCOLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- II Sem **L/T/P/C**
2/0/0/0

(R24A0005) FOREIGN LANGUAGE-FRENCH

INTRODUCTION

In view of the growing importance of foreign languages as a communication tool in some countries of the world, French has been identified as one of the most popular languages after English. As a result, French program is introduced to develop the linguistic and communicative skills of engineering students and to familiarize them to the French communication skills. This course focuses on basic oral skills.

COURSEOBJECTIVES

1. To inculcate the basic knowledge of the French language
2. To hone the basic sentence constructions inday today expressions for communication in their vocation
3. To form simple sentences that aids in day-to-day communication
4. To prepare the students towards DELF A1
5. To develop in the student an interest towards learning languages.

UNIT - I:

Speaking: Introduction to the French language and culture –Salutations - French alphabet - Introducing people Writing: Understand and fill out a form

Grammar: The verbs “to be ' and “to have '' in the present tense of the indicative

Vocabulary: The numbers from 1 to 20 - Professions- Nationalities

UNIT - II:

Speaking: Talk about one’s family – description of a person - express his tastes and preferences - express possession - express negation

Writing: Write and understand a short message

Grammar: Nouns (gender and number) - Articles - The–erverbs in the present-Possessive adjectives - Qualifying adjectives

Vocabulary: The family – Clothes-Colors- The numbers from 1 to 100-The classroom

UNIT - III

Speaking: Talk about your daily activities - be in time - ask and indicate the date and time - talk about sports and recreation - express the frequency

Writing: A letterto a friend

Grammar: The expression of time– The –ire verbs in the present- The verbs do, go, take, come,- Adverbs-Reflexive verbs Vocabulary: The days and months of the year-The sports-Hobbies

UNIT - IV

Speaking: Express the quantity - ask and give the price - express the need, the will and the capacity - compare (adjective) - speak at the restaurant / in the shops

Writing: A dialogue between a vendor and a customer at the market Grammar: Verbs “to want”, “to can”- Express capacity / possibility- Express will / desire – the future tense

Vocabulary: The food – Meals-Fruits and vegetables– The parts of the body

UNIT - V

Speaking: Express the prohibition and the obligation - describe an apartment - talk about the weather / ask the weather - ask the opinion - give your opinion - express your agreement or disagreement

Writing: Descriptions

Grammar: Demonstrative adjectives- Prepositions- The verb 'must' to indicate obligation and necessity in the present Seasons – Holidays-The city– Furniture

NOTE: The students are exposed to simple listening and reading activities.

REFERENCE BOOKS

1. Apprenons le Français 1& 2, New Saraswati House, 2015
2. A propos, A1, Langers International, 2010
3. Easy French Step-by-step by Myrna Bell Rochester
4. Ultimate French Beginner-Intermediate (Coursebook) By Livid Language
5. Ã L'Aventure: An Introduction to French Language and Francophone Culturesby EvelyneCharvier-Berman, Anne

C. Cummings.

COURSE OUTCOMES

1. The students will be able to communicate in French at A1 level.
2. The student will have an advantage in the competitive job market.
3. This course benefits the graduates when pursuing study opportunities in the countries where French is the official language.
4. The students are able to simple listening and reading activities.
5. The students will learning Speaking: Express the prohibition and the obligation