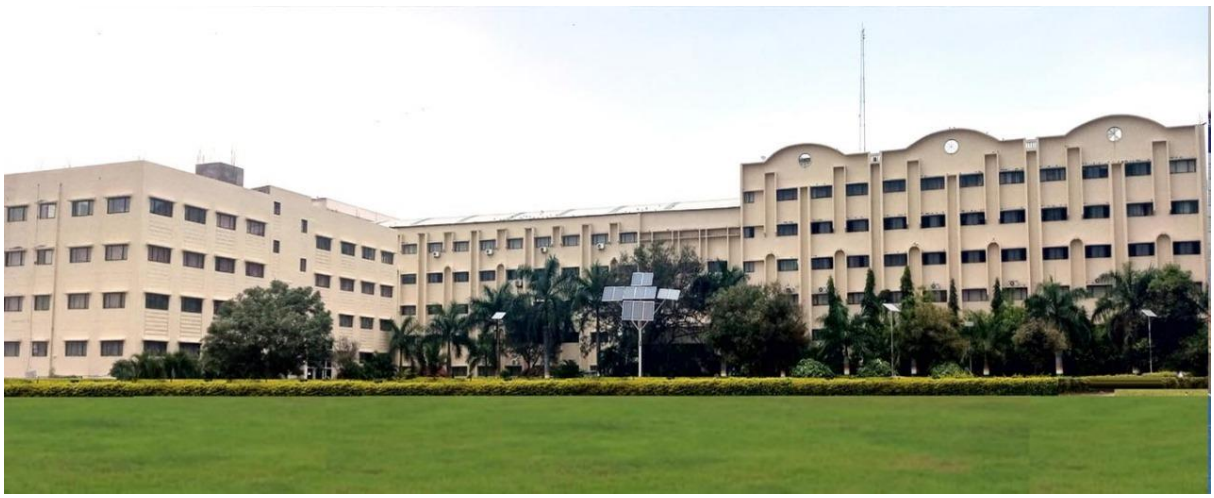
LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

(Autonomous)

Approved by AICTE | Recognized by Government of Telangana | Affiliated to Osmania University
Accredited by NBA | Accredited with 'A' grade by NAAC | Accredited by NABL

ACADEMIC REGULATIONS (LR-24)
for
4-Year B.E. Undergraduate Programme in Engineering

(With effect from the Academic Year 2024-25)



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VISION

Lords Institute of Engineering and Technology strives continuously for excellence in professional education through quality, innovation and team work and to emerge as a premier institute in the state and across the nation.

MISSION

- To impart quality professional education that meets the needs of present and emerging technological world.
- To strive for student achievement and success, preparing them for life, career and leadership.
- To provide scholarly & vibrant learning that enables faculty, staff and students to achieve personal and professional growth.
- To contribute to the advancement of knowledge in both fundamental and applied areas of Engineering & Technology.
- To forge mutually beneficial relationships with Government Organizations, Industries, Society and the Alumni.

QUALITY POLICY

Lords Institute of Engineering and Technology imparts quality education by practicing a system of quality assurance that enables continued improvement in the teaching-learning practices and enhances student skills and talents.

About the College:

Lords Institute of Engineering and Technology (Autonomous), Hyderabad was established in 2003 by Lords Educational Society (LES) and affiliated to Osmania University, Hyderabad. The institution is considered to be among the Top Muslim Minority Engineering Colleges in the Country with the below credentials:

- It is the only Muslim Minority Engineering Institution in the Telugu states (Telangana and Andhra Pradesh) which is conferred with autonomous status by the *University Grants Commission (UGC)*, New Delhi and granted autonomy by *Osmania University*, Hyderabad, for all the programs for a period of 10 years with effect from Academic Year 2021-22.
- It is the Leading Muslim Minority Institution in the state accredited by the *National Board of Accreditation* for all the eligible B.E. Programmes.
- It is also the only Muslim Minority Engineering Institution accredited by the *National Assessment and Accreditation Council (NAAC)* with a CGPA of 3.02 on a four scale at 'A' grade valid for five years till 2026.
- Civil Engineering Laboratories are accredited by *National Accreditation Board for Testing and Calibration Laboratories (NABL)* valid for three years till 2024 for offering Industrial Consultancy services.
- *GHMC* has extended its contract with the Institution for the fourth consecutive year as third party quality control agency as well as consultancy services.
- Recognized as 'Host Institution' for Technology Business Incubator (TBI) by *Ministry of Micro, Small and Medium Enterprises (MSME)*, Government of India.
- Recognized by the Ministry of Education Innovation Council in *ATAL Ranking of Institutions on Innovation Achievement* (ARIIA 2022) as band "PERFORMER"
- Selected by Ministry of Education, Government of India to adopt five villages under the scheme *Unnat Bharat Abhiyan (UBA)* in association with IIT Delhi.
- All India Council for Technical Education (AICTE) has granted the funds under the schemes for Promoting Interests, Creativity & Ethics among Students (SPICES) and AICTE Training and Learning (ATAL).
- Lords International Centre got recognized as Nodal Centre for International English Language Testing System (IELTS) by IDP Australia.
- Signed Memorandum of Understanding (MOU) with Lincoln University College, Malaysia for research collaboration, Ph. D and Post-Doc opportunities.
- Alumni got featured in Forbes 30 under 30 Asia and India categories.
- Student won Medals and Prizes in Sports at State and National level.
- Highest intake in B.E. courses among all the Muslim Minority Institutions.

From humble beginning in 2003 with an intake of 180 students in CSE, EEE and ECE, now the intake has increased to 1380 in 2025. In Under Graduate B.E. Programmes viz., Artificial Intelligence and Machine Learning (AIML), Civil Engineering (CE), Electronics and Communication Engineering (ECE), Mechanical Engineering (ME), Information Technology (IT), Computer Science and Engineering (CSE), CSE (Artificial Intelligence and Machine Learning) & CSE (Data Science); In Post Graduate Programmes we have total intake of 312 in Computer Science and Engineering, Structural Engineering, Construction Management and MBA. At present, about 3000+ students are pursuing various programs including B.E., M.E., M.Tech and MBA. The student body is having representation from different states of India and about 15+ Nationalities. In the past 20 years, over 9000+ students have graduated from the college and are well settled in their respective careers.

Our efforts have been acknowledged by the Industry and various Ranking Agencies. The Institution is ranked 109th across India, 66th in South India and 18th in Hyderabad among all the Private Engineering Colleges by 'The Week Magazine' in August 2022 edition. 'Times of India', has also awarded us 21st rank among top 25 Private Engineering Colleges in Telangana and 176th rank in all India in July 2021 edition. In addition to this media houses such as 'Outlook' ranked 8th in Hyderabad & 112th in India in 2019 edition, 'Dataquest', 'Lokmat', 'Competition Success Review', have also ranked us among Best Engineering Colleges of Hyderabad in past.

The institution hosts one of the biggest libraries in twin cities of Telangana with seating capacity of more than 400 students, Total volumes of 48305 and Total Titles 16745, E-Journals 25900 and Print Journals 135. Computer Centre is used by Government Agencies and Top Corporate Companies to conduct various competitive exams and entrance tests such as IIT-JEE, NEET, GATE, TS-EAMCET, TS-ECET, TS-ICET, TS-PGECET, APPSC, Bank POs, RRB, CAT, etc.

Multimedia Studio was established during the pandemic situation to help students with video lectures by faculty members for those facing problems in accessing the online live classes. Repository is maintained across all digital platforms including official YouTube channel and social media. Students have developed gadgets to tackle COVID-19 such as Drone Sanitizer, Mist sterilizer, Currency Disinfectant, Low-Cost Oxygen Concentrator which got national recognition and companies like Eureka Forbes signed Non-Disclosure Agreement for Technology Transfer. Faculty awarded with Patent Grant after successful hearing by the Patent Authority, Government of India.

GOVERNING BODY:

S. No.	Name with Designation	Role
1.	**Mr. C.A.BashaMohiuddin** Chairman, Lords Educational Society	Chairman
2.	**Mrs. Rizwana Begum** Secretary, Lords Educational Society	Member – Society Representative
3.	**Mr. Syed Touseef Ahmed** Vice Chairman, Lords Educational Society	Member – Society Representative
4.	**Mr. C.A.Syed Tanvir Ahmed** Treasurer, Lords Educational Society	Member – Society Representative
5.	**Mrs. Sana Sayeeda** Joint Secretary, Lords Educational Society	Member – Society Representative
6.	**Dr. Rega Rajendra** Dean CDC, O.U and Professor, Department of Mechanical Engineering Osmania University, Hyderabad	Member – University Nominee
7.	**Mr. G. GiriBabu** Deputy Director (Tech-1) Commissionerate of Technical Education, Govt. of Telangana	Member – State Government Nominee
8.	**Dr. Shakeel Ahmed** Joint Secretary, University Grants Commission (UGC), Govt. of India	Member – Academician
9.	**Dr. Syed Azam Pasha Quadri** Professor of Mechanical Engineering, LIET	Member – Academician
10.	**Dr. Anwarullah M** Professor of Mechanical Engineering, LIET	Member – Academician
11.	**Dr. T.K. Shaik Shavali** Professor of CSE, LIET	Member – Teachers Special Invitee
12.	**Dr. Ravi Kishore Singh** Professor of ECE & Principal, LIET	Member Secretary
13.	**Dr. J Sasi Kiran** Professor of CSE, LIET	Member – Teachers Special Invitee

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(UGC Autonomous Institution)

ACADEMIC REGULATIONS (LR-24)

For the Four-Year Degree Programme in Engineering

(With effect from the Academic Year 2024-25)

I. Preliminary Definitions and Nomenclature

S. No	Keywords	Definition
1.	Academic Year	Two consecutive (one odd & one even) semesters constitute one Academic year.
2.	Choice Based Credit System (CBCS)	The CBCS provides choice for students to select from the prescribed Courses (Core, Professional, Open Electives and Skill Development Courses).
3	Programme	An Educational Programme leading to the Award of a Degree**.**
4.	Semester	Each Semester consists of 16 weeks of Academic work equivalent to 90 actual teaching days. In general, the odd semester is scheduled from July to December and even semester from January to June.
5.	Discipline	It is the branch or specialization of B.E. Degree program, such as AI&ML, CE, CSE, CSE (AI&ML), CSE (DS), ECE, IT & ME
6	Admission Procedure	As Prescribed AICTE and Government of by Telangana, India.
7	Course	Usually referred to, as "papers/ subjects" is a component of program. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed comprising of Lectures/Tutorial/Practical/ Laboratory work/ Mini Project/ Project Work /Seminars /Exams/ Viva/ Assignments /Presentations/ Internship/ Skill Development Activity etc. or a combination of some of these. The medium of instruction, examinations and project report will be in English.
8.	Credit Based Semester System (CBSS)	Under the CBSS, the requirement for awarding a degree certificate is prescribed in terms of number of credits to be obtained by the student- A unit by which the course work is measured. It determines the number of hours of instructions required per week as per AICTE Model Curriculum i.e., one credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of Practical work/ Field work per week.
9.	Grading	To be normally done using Letter Grades as qualitative measure of achievement in each Course like: S (Outstanding), A (Excellent), B (Very Good), C (Good), D(Average), E (Pass) and F (Fail) based on the marks (%) scored in (CIE+SEE) of the course.

10.	Grade Point (GP)	It is a numerical weight allotted to each letter grade on a 10-point scale.
11.	Credit Point	It is the product of grade point and number of credits for a course.
12.	Semester Grade Point Average (SGPA)	It is a measure of performance of work done in a semester. It is the ratio of total credit points secured by a student in various theory and lab courses / field works / projects / skill development courses offered in that particular semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.
13.	Cumulative Grade Point Average (CGPA)	It is a measure of overall cumulative performance, of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses that are evaluated till that semester and the sum of the total credits of all courses in all the semesters that have been evaluated till that semester of the program. It is expressed up to two decimal places.
14.	Transcript or Grade Card or Certificate	Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, credits & grade secured) along with SGPA of that semester and CGPA earned till that semester.
15.	Course Load	Every student should register for a set of courses in each semester, with the total number of credits specified by considering the permissible weekly contact hours.
16.	Course Registration	Every student to formally register in each Semester for courses (credits) on the advice of the faculty.
17.	Course Evaluation	Continuous Internal Evaluation (CIE) & Semester End Examination (SEE) constitutes the main assessment prescribed for each course in the Semester.
18.	Continuous Internal Evaluation (CIE)	To be normally conducted by the course instructor which includes descriptive test, surprise test / quizzes / MCQ's / fill in the blanks / assignments / field work / exclusive talk /real time project / mini- projects & seminars, group discussions, any other activity specified by respective teacher either weekly or during mid-term and anytime throughout the semester, with weightage for the different components being fixed at the institutional level.
19.	Semester End Examination (SEE)	To be normally conducted at the institutional level, this will cover the entire course syllabi. The syllabi are to be modularized and SEE questions to be set from each unit/module, with choice if any, to be confined to unit/module concerned only. The questions are to be based on knowledge, comprehension, analysis, synthesis and evaluation as per Blooms taxonomy.

20.	Revision of Regulations, Curriculum and Syllabi	The institution from time to time may revise, amend or change the regulations, scheme of examinations, curriculum and syllabi with the approval of the Academic Council and Board of Studies.
21.	Student	Student is a candidate who has taken admission into undergraduate program of this college, as per the guidelines stipulated from time to time by AICTE, Government of Telangana and the Affiliating university, i.e. Osmania University, Hyderabad, India.

II. Admission Procedure:

A candidate is admitted into the four-year undergraduate degree programme of Bachelor of Engineering (B.E.) for all the branches of study as per the norms prescribed by AICTE, Telangana State Council of Higher Education (TSCHE), Government of Telangana, from time to time.

Each candidate will be allotted one programme at the time of admission, strictly depending on the merit secured at the Entrance Examination and subject to the prevalent rules regarding reservations of seats.

Eligibility: Candidate must have passed the Intermediate or equivalent examination with Physics, Mathematics, Chemistry, Computer Science, Electronics, Information Technology, Biology, Informatics Practices, Biotechnology, Technical Vocational subject, Agriculture, Engineering Graphics, Business Studies, Entrepreneurship (any of the three). Obtain at least 45% marks (40% marks in case of candidates belonging to reserved category) in the above subjects taken together as per guidelines of AICTE and relaxations given by Telangana Government from time to time if any.

i. 70% of seats under Category-A (based on the rank obtained at state level entrance examination i.e. TS-EAMCET) will be filled by the Convener, TS- EAMCET.
ii. 30% of seats under Category-B will be filled by the management as per the guidelines issued through government orders from time to time by the TSCHE, Government of Telangana. Out of 30%, 5% seats are allotted for NRI quota.
iii. In addition to i & ii, there is a supernumerary quota of maximum 10 seats under the Prime Minister's Special Scholarship Scheme (PMSSS) for students of Union Territories including Jammu & Kashmir and Ladakh as well as 15% for Overseas Citizen of India (OCI), Foreign Nationals (FN), Children of Indian Workers in Gulf

   Countries as approved by AICTE from time to time.
iv. All the leftover seats in convener quota are filled based on the guidelines given by the Convener, TS-EAMCET through spot admission procedure.

v. **Admission to the second year of B.E. (Lateral Entry) Program:**

Students seeking admission into this category shall qualify TS-ECET conducted by the TSCHE, Government of Telangana. Admissions are on the basis of merit ranks obtained by the students.

Eligibility: Candidate must have passed minimum 3 years Diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category) and relaxations given by Telangana Government from time to time if any.

vi. **Spot Admission Procedure for B.E. Lateral Entry:**

Any seats left vacant after counselling by TS-ECET convener will be filled based on the guidelines given by the Convener, TS-ECET. In addition to this the vacancies in the First Year shall also be filled through spot admission procedure as per guidelines of TSCHE, Government of Telangana.

III. Programme Structure, Programme of Study and Duration:

(i) Structure of Undergraduate Engineering program:

S.No	Classification		Course Work – Subject Area
	AICTE	UGC	
1.	HSMC	Foundation Courses	Humanities and Social Sciences including English, Communication Skills, Technical Report Writing, Economics & Finance, Accountancy and other Management Courses.
2.	BSC		Basic Sciences Courses (BSC) including Mathematics, Physics and Chemistry as well as Aptitude & Reasoning
3.	ESC		Engineering Science Courses (ESC) including Engineering Workshop, Engineering Graphics, Basics of Electrical / Electronics / Mechanical / Civil / Computer Engineering and Skill Development such as programming languages, simulation tools, etc.
4.	PCC	Core Courses	Professional Core Courses are relevant to the chosen specialization / branch.
5.	PEC	Professional Electives	Professional Elective Courses are relevant to the chosen specialization / branch.
6.	OEC	Open Electives	Open Electives Courses are from other technical or emerging subject areas.
7.	PROJ	Project	Mini Project, Project work, internship, comprehensive viva-Voce, and Technical Seminar.
8.	MC	Mandatory Courses	These courses are non-credit courses with Internal and External evaluation.
9.	BC	Bridge Course	These courses are non-credit courses with internal evaluation and for lateral entry students only.
10.	SDC	Skill Development Courses	Skill Development Courses are from emerging subject areas.

(ii) Programs Offered:

The following programs of study are offered by Lords Institute of Engineering and Technology (Autonomous) for academic year 2024-25:

S.No.	Branch Code	Bachelor of Engineering	Number of Seats
1.	732	Civil Engineering	30
2.	733	Computer Science and Engineering	600
3.	735	Electronics & Communication Engineering	60
4.	736	Mechanical Engineering	30
5.	737	Information Technology	180
6.	748	Computer Science and Engineering (Artificial Intelligence & Machine Learning)	180
7.	750	Computer Science and Engineering (Data Science)	120
8.	753	AIML	180
		Total Intake:	**1380**

(iii) Duration of study:

1. The duration of the programme is eight semesters in four years denoted as I, II,III, IV, V, VI, VII and VIII semesters, where each academic year comprises of two semesters:
   - Instruction per semester - 16 weeks.
   - Preparation holidays (includes practical exams) - 2 weeks
   - Each semester shall normally consist of 90 teaching days (including examination days). The BoS Chair / Head of the Department shall ensure that every faculty imparts instruction as per the number of hours specified in the syllabus covering the full content of the syllabus for the Course being taught
   - The number of weeks for each semester may be changed based on approval by Academic Council and Governing Body.
   - No admission / re-admission / promotion / transfer are entertained after four weeks of the commencement of instruction.
   - In case there are any court cases consequent to which the authorities are compelled to admit any candidate after the announced last date of admissions, the admission (seat) of such student would be reserved for the subsequent year on a supernumerary basis.
   - No refund of Tuition fee will be made after the commencement of instruction for students who wish to cancel their admission.
2. Candidate, who fails to fulfill all the requirements for the award of the degree as specified here in after within (N+4) academic years from the time of admission, will forfeit his / her seat in the programme and his / her admission will stand cancelled; where 'N' is normal or minimum duration prescribed for completion of the programme (4 years).

3. Diploma candidates admitted to the second year under lateral entry scheme shall fulfill all the requirements for the award of the degree as specified herein after within (N+3) academic years from the time of admission failing which they will forfeit their seat and their admission will stand cancelled, where 'N' is normal or minimum duration prescribed for completion of the programme (3years).
4. Lateral entry students shall also complete the bridge courses as required. The scheme and other guidelines will be intimated to the students from time to time.

IV. Registration of Courses

1. Every admitted student shall be assigned to a faculty advisor who shall guide and counsel the student about the details of the academic program, rules and regulations and the choice of courses wherever applicable considering student's academic background and career objectives.
2. Each student admitted should register for all courses prescribed in particular semester of study.
3. Every student shall confirm their enrollment for the courses of the succeeding semester at the end of the current semester. Those who fail to register can enroll at least one week before the commencement of concerned semester with valid reason. Registration of courses, such as professional and open electives by the students in each semester as prescribed by the department concerned shall be completed within the stipulated period on or before the due date. Change of professional electives and open electives will not be entertained after the due date.
4. No elective course shall be offered by department unless a minimum of **30%** students register for the course **in a division / class**. After registering for a course, student shall attend the classes, to satisfy the academic requirements for attending the semester end examinations.

V. Rules and Regulations of Attendance:

1. Candidates admitted to a particular programme of study are required to pursue a "Regular programme of study" by putting in attendance of not less than 75% in each semester before they are permitted to appear for the Semester End Examination.
   a) In special cases and for sufficient cause shown, the Principal / Academic Council on recommendation of concerned Head of the Department may condone deficiency in attendance to the extent of 10% on medical grounds subject to submission of medical certificate and payment of Rs. 2000/- as condonation fee. Such condonation shall be availed for a maximum of 4 (four) times in the entire period of B. E. programme.
   b) However, in respect of women candidates who seek condonation of attendance due to pregnancy, the Principal / Academic Council on recommendation of concerned Head of the Department may condone the deficiency in attendance to the extent of 15% (as against 10% condonation for others) on medical grounds subject to submission of medical certificate to this effect. Such condonation is permitted only once during the programme of study.
2. Attendance of N.C.C. / N.S.S. Camps or Inter-Collegiate or Inter-University or Inter-State or International matches or debates or Educational Excursions or such other Inter-University activities as approved by the authorities involving journeys outside the city in which the college is situated will not be counted as absence.
   (i) However, absence shall not exceed four (4) weeks per semester of the total period of instructions.
   (ii) Such leave should be availed with prior permission from the Principal and not be availed more than twice during the programme of study.
   (iii) Without any prior permission, such leave shall be treated as absent.
   (iv) While calculating the attendance, the number of classes not attended in each subject will be deleted in the denominator.
3. The attendance shall be calculated on aggregate of the courses from date of commencement of classes or date of re-admission in case of detained candidates as per the almanac.
4. In case of the candidates who fail to put in the required attendance in a programme of study, candidate shall be detained in the same class and will not be permitted to appear for the Semester End Examination. Such candidates shall have to seek re-admission into the same class during the subsequent year in order to appear for examination after fulfilling the attendance requirements and on payment of the requisite tuition fee.
   a) Candidates admitted to the first year through TS-EAMCET and who do not have the required attendance, but have more than 40% of attendance can seek re- admission without appearing for the entrance test again.
   b) In respect of candidates of such programs where the admissions are governed through TS-EAMCET, candidates of B.E. I semester, who got less than 40% attendance would lose their seat and they will have to seek admission afresh by appearing at the entrance test again.

VI. Scheme of Instructions and Examinations:

1. The Scheme of Instruction & Evaluation for various courses in each semester shall be provided by the College at the beginning of the Semester. Also, syllabi prescribed for the branch of study shall be as approved by the Board of Studies, Academic Council and ratified by the Governing Body.
2. The distribution of marks based on **Continuous Internal Evaluation (CIE)** and the **Semester End Examination (SEE)** for B.E. programme shall be as follows:

Subject	**Continuous Internal Evaluation (CIE) Marks**	**Semester End Examination (SEE) Marks**
Each Theory subject	40	60
Each Practical or Drawing Subject for which less than 5 hours a week is provided in the scheme of instruction.	25	50
Each Practical or Drawing Subject for which 5 or more hours a week is provided in the scheme of instruction.	50	50
Skill Development Course	25	50
Internship / Technical Report Writing / Technical Seminar	50	---
Comprehensive Viva-Voce	100	---
Mini Project	50	50
Major Project	50	150
Mandatory Course (Non-Credit)	40	60

3. THEORY COURSES

3.1 Continuous Internal Evaluation (CIE):

Out of 40 marks in total, 10 marks for Surprise Test / Quizzes / MCQ's / Fill in the Blanks/Any other activity specified by respective teacher and 10 marks for Real Time Project / Field Work / Exclusive Talk / Assignment / Any other activity specified by teacher. Descriptive test will be of 20 marks, out of which 6 marks are for short answer questions (a-c) each carrying 2 marks and 14 marks are for choice based long answer questions. Average of two descriptive tests and average of minimum two Surprise Test / Quizzes / MCQ's / Fill in the Blanks (10 marks) and average of minimum two Assignments / Real Time Project / Field Work / Exclusive Talk / (10 marks) will be calculated for the total CIE (40 marks). Bloom's Taxonomy will be followed in the question paper setting.

Distribution of Continuous Internal Examination Marks					
Type	Questions	Duration in minutes	No. of Questions	Marks per Question	Total (Marks)
Descriptive	Short Answer Questions (First Question is compulsory)	60	1	6	6
	Long Answer Questions (2 out of 3)		2	7	14
Surprise Test / Quizzes / MCQ's / Fill in the Blanks / Any other activity specified by Respective Teacher					10
Real Time Project / Field Work / Exclusive Talk / Assignment /Any other activity specified by Respective Teacher					10
Grand Total					**40**

Semester End Exam (SEE):

1. The Semester End Examination will be conducted for 60 marks, duration of three hours. The question paper for SEE will have seven (7) questions out of which the candidate has to answer five (5) questions where each question carries12 marks.
2. The first question is compulsory which consists of six (6) short questions covering the entire syllabus and each question (a-f) carries 2 marks.
3. The remaining six questions (2-7) cover the entire syllabus and the candidate can answer any four questions.

Distribution of Continuous Internal Examination Marks					
Type	Questions	Duration in minutes	No. of Questions	Marks per Question	Total (Marks)
Descriptive	Short Answer Questions (First Question is compulsory)	180	1	12	12
	Long Answer Questions (4 out of 6)		4	12	48
Grand Total					**60**

4. PRACTICAL COURSES:

4.1. Continuous Internal Evaluation (CIE):

CIE shall be conducted for 25/50 marks out of which 15/30 marks for day- to-day performance including attendance, timely submission of lab observations & records, viva-voce, 10/20 marks for internal lab exam and viva-voce.

4.2 Semester End Examination (SEE):

SEE shall be conducted for 50 marks out of which 10 marks are allocated for write up (design / procedure / schematic diagram) of the given experiment, 20 marks for conduction of experiment, 10 marks for results and 10 marks for viva-voce with a duration of 3 hours.

The external examiner will be appointed by the Principal / Chief Controller of Exams of the college, from any outside college among the autonomous / reputed institutions from a panel of three examiners submitted by the concerned Head of the Department / BOS Chairperson.

5. INTERNSHIP

The student shall undergo four weeks internship during summer vacation after IV semester to gain practical experience in industrial environment, exposure to current technological developments and improve his / her Interpersonal Skills. It also provides opportunities to learn understand and sharpen real time technical / managerial skills required at the job; where the evaluation will be done in the V Semester.

Internship has to be done at Industry / Corporate Sector / Government / Non- Government / Research Institutions / MSMEs / Startups / Entrepreneurship Incubator Units, etc.

Internship will be evaluated for 50 marks as CIE based on Punctuality in Attendance (10), Maintenance of Diary on daily work done (20), seminar presentation / viva voce followed by a report submission (20) to a committee consisting of Head of the Department, Senior Faculty and Faculty Advisor/ Supervisor for evaluation.

6. MINI-PROJECT

There shall be a Mini Project, which the student shall carryout after the V semester examinations the evaluation of which shall be done in sixth semester for a maximum of 100 marks out of which 50 marks each for CIE and SEE respectively. Evaluation will be done as per the below criteria:

CIE Evaluation:

50 marks are evaluated based on below criteria:

i. Literature Review (10)
ii. Innovation / Originality (10)
iii. Methodology / Relevance / Practical Application (10)
iv. Seminar Presentation followed by report (20)

A committee consisting of Supervisor, Senior Faculty and Head of the Department shall review and evaluate the CIE based on the above criteria.

6.2 SEE Evaluation:

50 Marks are evaluated based on the below criteria:

a. Overall Subject Knowledge (15)
b. Viva-voce Examination (15)
c. Demonstration and Verification of Results (20)

However, the criteria may change as per the "committee" whenever required.

Student should appear for SEE with Mini-Project Report.
A 'committee' consisting of External Examiner, Supervisor and Head of the Department shall review and evaluate the SEE based on the above criteria.

7. MAJOR PROJECT

7.1. CIE Evaluation:

The CIE evaluation of BE project (Project I) for consists of a maximum of 50 marks which will be distributed as per the guidelines given below:

(i) 30 Marks are allocated for quality of the project work covering (a) Literature review, (b) Innovation / Originality, (c) Methodology and (d) Relevance / Practical application which will be awarded by the supervisor.

(ii) 20 Marks are allocated to candidates performance in terms of viva-voce examination and overall subject knowledge. Under this category 20 marks will be awarded by the 2 members constituted by the HoD.

The evaluation of BE project (Project II / Full Time Internship) for Semester End Examination consists of a maximum of 100 marks which will be distributed as per the guidelines given below:

(i) 50 Marks are allocated for quality of the project work covering (a) Literature review, (b) Innovation / Originality, (c) Methodology and (d) Relevance / Practical application, which will be awarded jointly by the internal and external examiners.

(ii) 50 Marks are provided for candidates presentation an performance in terms of viva-voce examination and overall subject knowledge. Under the category 20 marks will be awarded by the internal examiner and 30 marks by the external examiner.

7.2. SEE Evaluation:

150 Marks are evaluated based on below criteria:

a. Overall Subject Knowledge (40)
b. Viva-voce Examination (40)
c. Demonstration and Verification of Results (70)

However, the criteria may change as per the 'committee' whenever required. Student should appear for SEE with Major-Project Report.

A "committee" consisting of External Examiner, Supervisor and Head of the Department shall review and evaluate the SEE based on the above criteria.

Note:

(i) A course that has CIE, but no SEE as per scheme will be treated as Pass if the candidate obtains at least 40% marks in CIE.
(ii) Candidates can choose an online course from MOOC's to improve their obtained score / credits / grade, provided the syllabus is at least 70% similar to the particular subject by

taking approval of respective BOS chairperson. If the MOOC's score / credits / grade is higher than the already obtained score, then it will be considered.

(iii) The candidates should preferably complete any online courses through SWAYAM / NPTEL before VII-Semester in view of backlog problem.

(iv) The details of instruction period, examination schedule, vacation etc., shall be notified by the College Academic Council.

(v) The medium of instruction and examination shall be English.

(vi) At the end of each semester, SEE shall be held as prescribed in the respective Schemes of Examination. Examinations pertaining to SEE are called main examinations and examinations pertaining to the other semesters will be called supplementary / backlogs examinations.

(vii) To enable the B.E. Final Year students to complete the programme requirements in time, there shall be a Backlog / Supplementary Exam for VIII and all the previous semesters, which will be scheduled within one month of publication of VIII semester results.

(viii) The examinations prescribed may be conducted by means of written papers, practical and oral tests, inspection of certified sessional work in Drawing, Laboratories and Workshop or by means of any combination of these methods as may be deemed necessary.

(ix) Candidates will be required to produce complete Lab Records of the Practical work done by them in each practical examination, along with other materials prepared or collected as part of Laboratory work/ Project.

(x) A candidate shall be deemed to have fully passed a Theory course, if the candidate secures a minimum of 40% in SEE and total of 40% in CIE & SEE together, and in Practical / Laboratory / Projects etc., candidate has to secure 50% in SEE and total of 50% in CIE & SEE together.

Minimum pass marks / grade in the Semester End Examinations and CIE shall be as below:

Each Theory Course	40%	E-Grade
Each Practical Course/Drawing Course/Project Work	50%	D-Grade

(xi) In case of hearing impaired, orthopedically handicapped and visually challenged candidates, 10% reduction in pass marks in each subject is admissible as per G.O. Ms. No.150, dated 31-08-2006.

(xii) If a candidate in any semester examination of the programme fails to secure the minimum marks / grade in any course, then the candidate should appear only in the failed subject of the semester.

(xiii) If a candidate desires to have recounting, revaluation and challenge evaluation, then candidate can apply for it as per the notification of the Examination Branch, LIET.

(xiv) WITH-HOLDING OF RESULTS:

a. If a candidate has found with any indiscipline / malpractice in examinations, the candidate results shall be withheld.

b. The issue of the award of the provisional certificate and the B.E. degree is liable to be withheld in such cases.

VII. Rules of Promotion:

The following rules are applicable to the students who are taking admission into first year of B.E. programme with effective from Academic Year 2022-23:

S. No.	Semester/ Class	Conditions to be fulfilled
1.	From I-Semester to II-Semester	• Regular course of study of I- Semester
2.	From II-Semester to III-Semester	• Regular course of study of II- Semester. • Must have secured at least 40% of total credits prescribed for I and II Semesters together
3.	From III-Semester to IV-Semester	• Regular course of study of III- Semester.
4.	From IV-Semester to V-Semester	• Regular course of study of IV- Semester. • Must have secured at least 40% of Total credits prescribed for I, II, III and IV Semesters put together.
5.	From V-Semester to VI-Semester	• Regular course of study V- Semester.
6.	From VI- Semester to VII-Semester	• Regular course of study of VI- Semester. • Must have secured at least 40% of • total credits prescribed for I, II, III, IV, V and VI Semesters put together
7.	From VII-Semester to VIII-Semester	• Regular course of study of VII Semester.
8.	Eligibility to appear VIII- Semester Examinations.	• Regular Semester

Note:

1. In case the candidate does not fulfill the requirement as per the above- mentioned table then the candidate will be detained.
2. The candidate who wishes to take re-admission into the year in which he/ she are detained have to pay the total tuition fee of that year and all the credits earned during that year shall become null and void.

VIII. Grading system:

1. Candidates who have passed all the examinations of the B.E. Degree Programme shall be awarded CGPA in accordance with the grade secured by them in all eight semesters taken together, including the CIE marks secured in those semesters.
2. The grade secured shall be shown in the memorandum of marks as per the cumulative performance in SEE and CIE as per the course structure.
   Grades are allotted based on the marks secured in SEE and CIE as per the following criteria:

Academic Performance	Letter Grade	Grade points
90% ≤ Marks ≤ 100%	S	10
80% ≤ Marks < 90%	A	9
70% ≤ Marks < 80%	B	8
60% ≤ Marks < 70%	C	7
50% ≤ Marks < 60%	D	6
40% ≤ Marks < 50%	E	5
Marks < 40% (Theory Courses)	F	0
Marks < 50% (Practical Courses)	F	0

3. SEMESTER GRADE POINT AVERAGE (SGPA) & CUMULATIVE GRADE POINT AVERAGE (CGPA) Calculation:

a) SGPA = Σ Letter Grade Point **x** Credits / Σ Credits

SGPA is calculated upto second decimal point and it is calculated only when all subjects in that semester are Cleared / Passed.

b) CGPA = $\Sigma (SGPA)_j$ **x** (Total Credits) / Σ Total Credits

Where "j" is the semester indicator index (all subjects from first to eight semester).
CGPA at a given point of Semester is calculated upto second decimal point. It is calculated only when total credits earned are equal to total credits prescribed as per scheme upto a semester in which the candidate has last appeared for SEE.

c) Courses in which the candidate has failed are not included in computing SGPA / CGPA.

IX. Award of Degree:

A student shall be declared to be eligible for the award of B.E., provided the student has successfully gained the required number of total credits and other requirements as specified in the curriculum corresponding to the student's programme within the stipulated time.

Award of Division:

CGPA	DIVISION
7.5 and above	First Class with distinction
6.5 and less than 7.5	First Class
5.5 and less than 6. 5	Second Class
4.0 and less than 5.5	Pass
Less than 4.0	Fail

X. Award of Gold & Silver Medal:

(i) Students securing highest CGPA at institution level in a **single attempt** are eligible for award of Gold Medal.

(ii) Students securing first highest and second highest CGPA at each program/ department/ branch level in a **single attempt** are eligible for award of Gold and Silver Medals respectively.

(iii) Students appearing in Supplementary Exams are not eligible.

(iv) A re-admitted student is not eligible for any Medal.

XI. Improvement of Overall Score:

a. A candidate who wishes to improve his/her overall score may do so within one academic year immediately after having passed all the examinations of the B.E. degree program, by reappearing in not more than two semesters (all subjects pertaining to the semester taken together) examinations.

b. For the award of the overall score, candidate will have the benefit of the higher of the two aggregates of marks/ grade secured in the corresponding semester(s).

XII. General Rules of Examinations:

1. Application for permission to appear in any examination shall be made available in the Examination Branch of LIET.
2. When a candidate's application is found in order and eligible to appear in SEE, the Controller of Examination shall furnish with a hall-ticket affixing the photograph, enabling the candidate to appear in the SEE. The hall-ticket should be produced by the candidate before admitted to the premises where the examination is likely to be held.
3. A candidate who does not present for examination for any reason whatsoever, except shortage of attendance, shall not be entitled to claim refund of the whole or part of the examination fee, for subsequent examination(s).
4. A candidate after being declared successful in all examinations, shall be given a provisional certificate stating the year of examination, the branch in which candidate was examined and the overall grade secured. However, the candidate has to obtain degree certificate (convocation) from Osmania University.
5. No candidate shall be allowed to write two exams simultaneously at any circumstance.
6. Candidates, who have appeared once in any examination of the programme, need not put in fresh attendance, if they wish to re-appear at the corresponding examination, not withstanding the fact that the college may have introduced new courses. They will, however, have to appear in the examination according to the scheme of instructions of any syllabi in force.
7. Procedures and the conduction of Exams will be as per Osmania University.

XIII. Transitory Regulations:

Whenever, course or scheme of instruction is revised or modified in a particular year, four examinations immediately following thereafter, shall be conducted according to the old syllabi / regulations. Candidates not appearing for examinations or failed shall take the examination subsequently according to the revised syllabus/ equivalent subjects/ regulations.

XIV. Range of Credits:

a. Candidate has to secure 160 credits for the award of B.E. Degree. Candidate will be eligible to get the Undergraduate Degree with 'Honors' or 'Additional Minor Engineering', if candidate secures 20 credits in addition to 160 credits (subject to approval of Osmania University). These could be acquired through MOOCs approved by BOS.

Honors: In addition to their primary Program B.E., an Engineering Student has the opportunity to award with 'Honors' Degree.

Award of an 'Honors' Degree is subject to the following conditions:

(i) The student must have earned at least eighteen (18) relevant and approved additional Credits.
(ii) Earning of these additional credits shall be through MOOCs/ NPTEL/ any other on-line Courses, which are approved by the respective BOS.
(iii) The list of courses is subject to the approval of respective BOS.
(iv) These additional eighteen (18) Credit Courses shall not be part of the regular Curriculum.
(v) A candidate must ensure to earn the required Credits for the award of respective 'Honors' Degree, before the completion of the regular Course.
(vi) It is the candidate's responsibility for registering the Courses through ONLINE and the required Registration Fee shall be borne by the respective student

Additional Minor Engineering: In addition to their primary program B.E., an engineering student has the opportunity to study one 'Additional Minor Engineering' in any areas listed as per AICTE handbook and Model Curriculum. 'Additional Minor Engineering' allows a candidate to gain inter-disciplinary experience and exposure to concepts and perspectives which may not be a part of their regular Degree Program, thus widening their understanding of the Engineering Profession. Upon completion of an 'Additional Minor Engineering', a candidate shall be better equipped to perform inter-disciplinary research.

Award of an 'Additional Minor Engineering' Degree is subject to the following conditions:

(i) The candidate must earn at least eighteen (18) additional Credits.
(ii) Earning of these additional credits shall be through MOOCs / NPTEL / any other on-line Courses, which are approved by the respective BOS.
(iii) The list of Courses is subject to the approval of respective BOS.

(iv) These additional eighteen (18) Credit Courses shall not be part of the regular Curriculum.

(v) A candidate must ensure that candidate shall earn the required Credits for the award of respective 'Additional Minor Engineering' Degree, before completion of regular course.

(vi) It is the candidate's responsibility for registering the courses through ONLINE and the required Registration fee shall be borne by the respective candidate.

b. MOOC is a free web-based distance learning programme that is designed for participation of large number of geographically dispersed candidates. MOOC may be patterned at department level of each college. The MOOC list will be provided by the Chairperson, Board of Studies of the concerned department for each semester, beyond semester-II.

Other Information:

i. Candidates shall obtain prior approval(s) from their BOS Chairperson/ Principal before opting for 'Additional Minor Engineering' or 'Honors'.

ii. A candidate is eligible to opt either for 'Honors' or 'Additional Minor Engineering'.

iii. A candidate is not eligible to opt for both the above-mentioned Degrees.

iv. The award of Honors or Additional Minor Engineering is subject to the rules and regulations of Osmania University that are updated from time to time.

Guidelines/Modalities for Evaluating the MOOC's courses to Award B.E (Honors Degree) / B.E Additional Minor Engineering Degree

As per the approved LR24 Regulations, vide item No. XIV a & b, the following guidelines are framed in order to award B.E (Honors/Additional Minor Engineering) degree.

- Only those students who have cleared I and II Semesters without any backlogs are eligible to register for MOOCs Online Courses.
- Students who can secure 20 additional credits through MOOCs during his course of study in addition to 160 credits are eligible for the award of B.E Honors Degree or Additional Minor Engineering Degree.
- The additional 20 credits should be attained by the students from the list of courses approved by Concered BOS.
- Student can choose any of the couses approved by the respective BoS. Student has to register the courses with the approval of concern BoS.
- Following are the details of the propsoed credits & grading pattern for awarding the MOOCs (NPTEL or equivalent recognized Online Courses).

S.No	Duration	Credits	Marks %	Grade	GPA
1.	12 Weeks or Above	4	90% ≤ Marks ≤ 100%	S	10
2.			80% ≤ Marks < 90%	A	09
3.			70% ≤ Marks < 80%	B	08
4.	8 Weeks or Above	3	90% ≤ Marks ≤ 100%	S	10
5.			80% ≤ Marks < 90%	A	09
6.			70% ≤ Marks < 80%	B	08
7.	6 Weeks or Above	2	90% ≤ Marks ≤ 100%	S	10
8.			80% ≤ Marks < 90%	A	09
9.			70% ≤ Marks < 80%	B	08
10.	4 Weeks or Above	1	90% ≤ Marks ≤ 100%	S	10
11.			80% ≤ Marks < 90%	A	09
12.			70% ≤ Marks < 80%	B	08

- If any student fails to clear MOOCs course then he/ she needs to clear during next time when it is offered. Otherwise the degree will not be awarded.
- If the particular course is not offered in MOOCS netx time, the equivalent course may be approved by the BoS Chairman with atleast 80% of the syllabus is matching with any other subject/ or any other equivalent subject as listed by the department.
- After completion of the course, student should give a presentation and submit the MOOCs certificate to the committee consisting of BoS Chairman and two Senior faculty members of the concern departments.
- Then the BoS Chairman should forwarded MOOCS Certificate along with recommendations in a prescribed format to the Controller of Examinations.
- It is the Student's responsibility for registering the Courses through ONLINE/ OFFLINE and the required Registration Fee shall be borne by the respective Student.
- Student shall be permitted to take **a maximum of 2 theory courses / courses equivalent to 6 credits during any semester for additional learning** towards Additional Minor Engineering curriculum.
- By the end of April of every academic year, respective departments will notify the list of equivalent courses in SWAYAM-NPTEL MOOCs / other standard MOOCs against the courses listed in the Curricula of Additional Minor Engineering programme(s) offered by their departments.
- Department can propose a new course(s) if any of the listed equivalent course(s) are not available in MOOCs.

XV. Malpractice and Award of Punishment:

S.No	Malpractice	Maximum Punishments
1.	Possession of the prohibited (written or printed) papers, books, notes, programmable calculators, cell phones, pager during the examination period, which were used.	Shall be debarred from appearing at the subsequent papers of the examination apart from cancelling the result of the examination in which He/she had indulged in malpractice.
2.	Matter relevant to the examination being written on any part of the body or on the clothes worn, or in the instruments, wrappings, etc.	-do-
3.	Attempting to take help from any prohibited papers, notes, written or printed matter, writings on the walls, furniture and attempting to take help from or giving help to other regarding answer to any question or questions of the examination paper.	-do-
4.	Taking help from or consulting of prohibited written or printed material; consulting and/or taking help from or helping other examinee during the examination period inside the examination hall or outside it; with or without his or her consent, or helping other candidate to receive help from anyone else.	-do-
5.	An examinee who attempts to disclose his/her identity to the paper valuer by writing his/her roll number at a place other than the place prescribed for it, or by writing his/her name or any coded message or an examiner, who makes an appeal to the paper valuer in the answer book.	Cancelling the result of that paper
6.	Writing such as invocation of God's name in any form.	To be ignored
7.	Writing on the question paper or other papers; the answer to questions, rough work, etc., without any intention of passing it on to another examinee.	To be warned not to do so
8.	Using abusive and obscene language in the answer book.	Cancellation of the result of that paper

9.	Examinee allowing or destroying prohibited material found in his possession or acting in any other manner with a view to destroy evidence.	Cancellation of the result of all examinations taken or proposed to be taken during that session and prohibiting his/her admission to or continuation in any course of the University for a period of one year.
10.	Refusing to obey instructions of the Chief Superintendent/ Invigilator	Cancelling the result of that paper
11.	Smuggling an answer book / additional answer book/matter into or out of the examination hall.	Cancellation of the result of all examinations taken or proposed to be taken during that session and prohibiting his/ her admission to or continuation in any course of the University for a period of the year.
12.	Inserting in or removing from the answer book/additional answer book of any sheet.	-do-
13.	Substituting wholly or partly an answer book/additional answer book.	-do-
14.	Impersonation even at a single examination.	To be dealt with as per law
15.	Cases of examinees when conspiring to interchange in Roll Nos.	Cancellation of the result of all examinations taken or proposed to be taken during that session and prohibiting their admission or constitution in any course of the University for a period of one year.
16.	Creation of disturbance or otherwise misbehaving in and around the examination hall during or before the examination.	Cancelling the results of all examinations taken or proposed to be taken during that session and prohibiting admission into or continuation in any course of study for a period of two years.
17.	Guilty of assaulting/abusing intimidating any person connected with the examination work any time before, during or after the examination	Cancelling the result of all examinations taken or proposed to be taken during that session and the next session and prohibiting admission into or continuation in any course for a period of two years.
18.	Punishments for malpractices not defined here would be recommended on the merits of the individual cases by the malpractices committee.	

XVI. Rules of Conduct for students:

- The college premises and buildings shall be kept clean; writing and sticking posters and notices on the building walls is strictly prohibited.
- Students are not permitted to resort to strikes and demonstrations within the college. Participation in any such activity shall automatically result in their dismissal from the college.
- No student unions, except professional associations, are permitted in the college.
- Any student responsible for bringing outsiders into the college campus for settling student disputes will be expelled from the college.
- The students may go on Industrial Tours on their own expense. The college will not defray any expenses of the tour.
- The students are expected to be regular in their class work and should conduct themselves in a disciplined manner. They should abide by such rules of discipline and conduct as stipulated by the college from time to time.
- Fees must be paid in full within two weeks of 1st semester in the college.
- The Principal of the college is the final authority regarding the discipline in the institution and has full power to suspend, fine, rusticate and take any other action, which is deemed necessary.
- The conduct of the students should be exemplary, not only within the premises of the college but also outside.
- The students are informed that they should furnish the latest addresses of their parents/ guardians in the Principal's Office. Any change of address of the parents/ guardian should also be informed immediately, in the college office.
- Ragging is prohibited. Any student participating in ragging is liable to be summarily expelled from the college, without any enquiry. Ragging on campus and off campus is strictly prohibited and it is a cognizable offence. The college has constituted Anti-Ragging Committee, vigilance teams, anti-ragging squads involving the police officers, senior faculty, etc., as per the Act.

XVII. Academic Regulations for B.E. (Lateral Entry Scheme) with effect from A. Y. 2024-25

Eligibility for award of B.E. Degree (LES)

1. The Lateral Entry 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 122 credits and secure 122 credits from II year to IV- year B.E. programme (LES) for the award of B.E. 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.E.
4. The attendance requirements of B.E. (Regular) shall be applicable to B.E. (LES).

Promotion Rules:

S. No.	Semester/ Class	Conditions to be fulfilled
1.	From III-Semester to IV-Semester	• Regular course of study of III- Semester.
2.	From IV-Semester to V-Semester	• Regular course of study of IV- Semester. • Must have secured at least 40% of Total credits prescribed for I, II, III and IV Semesters put together.
3.	From V-Semester to VI-Semester	• Regular course of study V- Semester.
4.	From VI- Semester to VII-Semester	• Regular course of study of VI- Semester. • Must have secured at least 40% of • total credits prescribed for I, II, III, IV, V and VI Semesters put together
5.	From VII-Semester to VIII-Semester	• Regular course of study of VII Semester.
6.	Eligibility to appear VIII- Semester Examinations.	• Regular Semester

Note:

- All the other regulations as applicable to B.E. 4-year degree course (Regular) will hold good for B.E. (Lateral Entry Scheme).
- These regulations can be modified from time to time retrospectively and prospectively based on approval of Academic Council or Governing Body.
- All the rules and regulations, specified herein after shall be read as whole for the purpose of interpretation.
- As per the requirements of the Statutory Bodies, Principal, Lords Institute of Engineering and Technology (Autonomous), shall be the Chairman of the College Academic Council.
- Whenever a doubt arises in the interpretation of these rules and regulations, the interpretation of the Chairman, Academic Council, Lords Institute of Engineering and Technology (Autonomous) is final.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(A UGC Autonomous Institution)
SCHEME OF INSTRUCTION & EXAMINATION
(With effect from the Academic Year 2024-25)
I-Semester (Group-A)
(Common to INF, CSE-AIML, AIML, ECE, CE & ME)

S. No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks		Duration in Hours	
								CIE	SEE		
MC: Three Week Induction Programme											
Theory Course											
1	U24MA101	BSC	Mathematics-I	3	-	-	3	40	60	3	3
2	U24CH101	BSC	Engineering Chemistry	3	-	-	3	40	60	3	3
3	U24CS102	ESC	Python Programming	2	-	-	2	40	60	3	2
4	U24EN101	HMSC	English for professional Communication	2	-	-	2	40	60	3	2
5	U24EN103	HSMC	Universal Human Values	2	-	-	2	40	60	3	2
6	U24EN102	MC	Indian Constitution	2	-	-	2	40	60	3	-
Practical/ Laboratory Course											
7	U24CH1L1	BSC	Engineering Chemistry Lab	-	-	3	3	25	50	3	1.5
8	U24CS1L2	ESC	Python Programming Lab	-	-	3	3	25	50	3	1.5
9	U24EN1L1	HSMC	Effective Communication Skills Lab	-	-	3	3	25	50	3	1.5
10	U24ME1L2	ESC	Workshop/Manufacturing Practice Lab	1	-	2	3	50	50	3	2
Total				**15**	**-**	**11**	**26**	**365**	**560**	**30**	**18.5**

L: Lecture *(Hrs/Wk/Sem)* **T**: Tutorial *(Hrs/Wk/Sem)* **P**: Practical **D**: Drawing *(Hrs/Wk/Sem)*

CIE: Continuous Internal Evaluation **SEE**: Semester End Examination

MC: Mandatory Course **BS**: Basic Science **ES**: Engineering Science
HS: Humanities and Social Sciences **MA**: Mathematics **CH**: Chemistry
EN: English
CE: Civil Engineering **ME**: Mechanical Engineering. **EE:** Electrical Engineering

Note:
1. Each contact hour is a Clock Hour.
2. The duration of the practical class is two hours, however it can be extended wherever necessary, to enable the student to complete the experiment.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(A UGC Autonomous Institution)
SCHEME OF INSTRUCTION & EXAMINATION
(With effect from the Academic Year 2024-25)
II-Semester (Group-A)
(Common to INF, CSE-AIML, AIML & ECE)

S. No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks		Duration in Hours	
								CIE	SEE		
Theory Course											
1	U24MA201	BSC	Mathematics-II	3	1	-	4	40	60	3	4
2	U24PH201	BSC	Engineering Physics	3	-	-	3	40	60	3	3
3	U24CS201	ESC	Programming for Problem Solving	3	-	-	3	40	60	3	3
4	U24EE201	ESC	Basic Electrical Engineering	3	-	-	3	40	60	3	3
5	U24CH202	MC	Environmental Science	2	-	-	2	40	60	3	-
Practical/ Laboratory Course											
6	U24PH2L1	BSC	Engineering Physics Lab	-	-	3	3	25	50	3	1.5
7	U24CS2L1	ESC	Programming for Problem Solving Lab.	-	-	3	3	25	50	3	1.5
8	U24EE2L1	ESC	Basic Electrical Engineering Lab	-	-	3	3	25	50	3	1.5
9	U24ME2L1	ESC	Engineering Graphics &Design Practice Lab	1	-	2	3	50	50	3	2
Total				**15**	**1**	**11**	**27**	**325**	**500**	**27**	**19.5**

L: Lecture *(Hrs/Wk/Sem)* **T**: Tutorial *(Hrs/Wk/Sem)* **P**: Practical **D**: Drawing *(Hrs/Wk/Sem)*

CIE: Continuous Internal Evaluation **SEE**: Semester End Examination
MC: Mandatory Course **BS**: Basic Science **ES**: Engineering Science
HS: Humanities and Social Sciences **MT**: Mathematics **CH**: Chemistry
EN: English
CE: Civil Engineering **ME**: Mechanical Engineering. **EE:** Electrical Engineering
CS: Computer Science and Engineering

Note:

1. Each contact hour is a Clock Hour.
2. The duration of the practical class is two hours, however it can be extended wherever necessary, to enable the student to complete the experiment.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution)
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]
(W.e.f Academic Year 2025-26)

B.E.III-Semester

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks CIE	Maximum Marks SEE	Duration in Hours	
Theory Course											
1	U24MA301	BSC	Mathematics–III (Probability and Statistics)	3	-	-	3	40	60	3	3
2	U24CS302	PCC	Data Structures #	3	-	-	3	40	60	3	3
3	U24EC304	ESC	Digital Electronics and Computer Organization	3	-	-	3	40	60	3	3
4	U24EN301	HSMC	English For Technical Communication	2	-	-	2	40	60	3	2
5	U24IT301	PCC	Database Management Systems	3	0	0	3	40	60	3	3
Practical/Laboratory Course											
6	U24IT3L1	PCC	Database Management Systems Lab	0	0	3	3	25	50	3	1.5
7	U24EN3L1	HSMC	Soft Skills and Employability Skills Lab	0	0	3	3	25	50	3	1.5
8	U24CS3L1	PCC	Data Structures Lab	0	0	3	3	25	50	3	1.5
10	U24CS3L2	ESC	C Programming Lab*	-	-	2	2	50	-	-	0
11	U24CD3L2	ESC	Python Programming	-	-	2	2	50	-	-	0
Total				**14**	**-**	**13**	**27**	**375**	**450**	**24**	**18.5**

***Bridge Course for Lateral Admitted Students Only** **# - Term Work**

L: Lecture*(Hrs/Wk/Sem)* **T**:Tutorial*(Hrs/Wk/Sem)* **P**:Practical **D**:Drawing*(Hrs/Wk/Sem)*
CIE: Continuous Internal Evaluation **SEE**: Semester End Examination
MC: Mandatory Courses **BSC**: Basic Science Courses **ESC**: Engineering Science Courses
HSMC: Humanities & Social Sciences including Management Course **MA**: Mathematics
CH: Chemistry **EN:** English **ME**: Mechanical Engineering. **EE:** Electrical Engineering

Note:

1. Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours , however it can be extended wherever necessary, to enable the student to complete the experiment.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution)
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]
(W.e.f Academic Year 2025-26)

B.E.IV-Semester

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks CIE	Maximum Marks SEE	Duration in Hours	
Theory Course											
1	U24CM401	PCC	Introduction to Data Science	3	-	-	3	40	60	3	3
2	U24CM402	PCC	Artificial Intelligence #	3	0	0	3	40	60	3	3
3	U24IT402	PCC	Java Programming	3	0	0	3	40	60	3	3
4	U24IT403	PCC	Automata Theory, Languages and Computation	3	1	0	3	40	60	3	4
5	U24CD401	PCC	Operating Systems	3	0	0	3	40	60	3	3
Practical/Laboratory Course											
6	U24CD4L1	PCC	Operating Systems Lab	0	0	3	3	25	50	3	1.5
7	U24IT4L2	PCC	JAVA Programming Lab	0	0	3	3	25	50	3	1.5
8	U24CM4L2	PCC	Artificial Intelligence Lab	0	0	3	3	25	50	3	1.5
9	U24EP4L1	HSMC	Design Thinking Lab	0	0	2	2	25	50	3	1
Total				**15**	**1**	**11**	**26**	**300**	**500**	-	**21.5**

 # - Term Work

L: Lecture*(Hrs/Wk/Sem)* **T**:Tutorial*(Hrs/Wk/Sem)* **P**:Practical **D**:Drawing*(Hrs/Wk/Sem)*
CIE: Continuous Internal Evaluation **SEE**: Semester End Examination
MC: Mandatory Courses **BSC**: Basic Science Courses **ESC**: Engineering Science Courses
HSMC: Humanities & Social Sciences including Management Course **MA**: Mathematics
CH: Chemistry **EN:** English **ME**: Mechanical Engineering. **EE:** Electrical Engineering

Note:
1.Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours , however it can be extended wherever necessary, to enable the student to complete the experiment.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution)
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]
(W.e.f. Academic Year 2026-27)
B.E.V-Semester(Tentative)

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximm Marks CIE	Maximm Marks SEE	Duration in Hours	
Theory Course											
1	U24CM501	PCC	Machine Learning #	3	0	0	3	40	60	3	3
2	U24MB501	HSMC	Business Economics and Financial Analysis	3	0	0	3	40	60	3	3
3	U24CS501	PCC	Design and Analysis of Algorithms	2	1	0	3	40	60	3	3
4	-	PEC	Professional Elective – I	3	0	0	3	40	60	3	3
5	-	OEC	Open Elective–I	3	0	0	3	40	60	3	3
Practical/Laboratory Course											
6	U24CM5L1	PCC	Machine Learning Lab	0	0	3	3	25	50	3	1.5
7	U24CS5L1	PCC	Design and Analysis of Algorithms Lab	0	0	3	3	25	50	3	1.5
Internship											
9	U24AM5P1	PROJ	Internship (During Vacation Period After IV Sem)	-	-	2	2	50	-	-	1
Skill Development Course											
10	U24MA5L1	BSC	Aptitude and Reasoning	-	-	2	2	25	50	3	1
Total				**14**	**1**	**10**	**25**	**325**	**450**	**-**	**20**

 # - Term Work

L: Lecture *(Hrs/Wk/Sem)* **T**:Tutorial*(Hrs/Wk/Sem)* **P**:Practical **D**:Drawing*(Hrs/Wk/Sem)*
CIE: Continuous Internal Evaluation **SEE**: Semester End Examination **CM:** CSE-AIML
PCC: Program core course P**EC:** Professional Elective Course **PROJ**: Project
MB: Master of Business Administration **BSC**: Basic Science Courses **AM:**AI&ML
HSMC: Humanities & Social Sciences including Management Course

Note:

1. Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours , however it can be extended wherever necessary, to enable the student to complete the experiment

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]
(W.e.f. Academic Year 2026-27)

B.E.VI-Semester (Tentative)

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks CIE	Maximum Marks SEE	Duration in Hours	
Theory Course											
1	U24AM601	PCC	Deep Learning Techniques #	3	0	0	3	40	60	3	3
2	U24CD602	PCC	Computer Networks	3	0	0	3	40	60	3	3
3	U24CD603	PCC	Software Engineering	3	-	0	3	40	60	3	3
4	-	PEC	Professional Elective – II	3	0	0	3	40	60	3	3
5	-	OEC	Open Elective-II	3	-	-	3	40	60	3	3
Practical/Laboratory Course											
6	U24AM6L1	PCC	Deep Learning Techniques Lab	-	-	3	3	25	50	3	1.5
7	U24CD6L2	PCC	Computer Networks Lab	-	-	3	3	25	50	3	1.5
8	U24CS6L2	HSMC	Scripting Languages Lab	-	-	2	2	50	-	-	1
Project											
9	U24CM6P1	PROJ	Mini Project	-	-	4	4	50	50	3	2
Total				**15**	**-**	**12**	**27**	**350**	**450**	**24**	**21**

 # - Term Work

L: Lecture*(Hrs/Wk/Sem)* **T**:Tutorial*(Hrs/Wk/Sem)* **P**:Practical **D**:Drawing*(Hrs/Wk/Sem)*
CIE: Continuous Internal Evaluation **AM:**AI&ML **SEE**: Semester End Examination
PCC: Program core course **PEC:** Professional Elective Course **CM:** CSE-AIML
OEC: Open Elective Course **PROJ**: Project **IT:** Information Technology
- Term Work

Note:

1. Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours , however it can be extended wherever necessary, to enable the student to complete the experiment

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]
(W.e.f Academic Year 2027-28)

B.E.VII – Semester (Tentative)

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours / Week	CIE	SEE	Duration in Hours	
Theory Course											
1	U24CM701	PCC	Information Security	3	0	0	3	40	60	3	3
2	U24CM702	PCC	Advanced Machine Learning #	3	1	0	3	40	60	3	4
3	U24AM702	PCC	Introduction to NLP	3	1	0	3	40	60	3	4
4	-	PEC	Professional Elective – III	3	0	0	3	40	60	3	3
5	-	OEC	Open Elective – III	3	0	0	3	40	60	3	3
Practical/Laboratory Course											
6	U24CM7L1	PCC	Information Security Lab	-	0	2	2	25	50	3	1.5
7	U24AM7L1	PCC	Advanced Machine Learning Lab	-	0	3	3	25	50	3	1.5
8	U24AM7P1	PCC	Project Work-I	-	0	3	3	50	-	3	2
Total				**15**	**1**	**8**	**23**	**300**	**400**	**24**	**22**

 # - Term Work

L: Lecture *(Hrs./Wk./Sem)* **T**: Tutorial *(Hrs./Wk./Sem)* **P**:Practical **D**:Drawing*(Hrs/Wk/Sem)*

CIE: Continuous Internal Evaluation **SEE**: Semester End Examination
CM: CSE-AIML **OEC**: Open Elective Course
PEC: Professional Elective Course **PROJ:** Project **AM:** AI&M
 # - Term Work

Note:

1. Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours , however it can be extended wherever necessary, to enable the student to complete the experiment

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]
(W.e.f Academic Year 2027-28)

B.E.VIII- Semester(Tentative)

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	CIE	SEE	Duration in Hours	
Theory Course											
1	-	PEC	Professional Elective – IV	3	0	0	3	40	60	3	3
2	-	PEC	Professional Elective – V	3	0	0	3	40	60	3	3
3	-	OEC	Open Elective – IV	3	0	0	3	40	60	3	3
Practical/Laboratory Course											
4	U24AM8P1	PROJ	Technical Seminar	0	0	4	4	100	-	-	2
5	U24AM8P2	PROJ	Project Work-II	0	0	16	16	50	150	-	8
Total				**9**	**0**	**20**	**29**	**270**	**330**	**-**	**19**

L: Lecture*(Hrs/Wk/Sem)* **T**:Tutorial*(Hrs/Wk/Sem)* **P**:Practical **D**:Drawing*(Hrs/Wk/Sem)*
CIE: Continuous Internal Evaluation **SEE**: Semester End Examination
CM: CSE-AIML **OEC**: Open Elective Course
PEC: Professional Elective Course **PROJ:** Project **AM:** AI&ML

Note:

1. Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours, however it can be extended wherever necessary, to enable the student to complete the experiment.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution)
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
SCHEME OF INSTRUCTIONS & EXAMINATIONS [LR-24]

PROFESSIONAL ELECTIVE COURSES

S.No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks		Duration in	
								CIE	SEE		
PROFESSIONAL ELECTIVE COURSE 1											
1	U24CM503	PEC1	Blockchain Technology	3	0	0	3	40	60	3	3
	U24CM504		Web Technologies	3	0	0	3	40	60	3	3
	U24CM505		Data Visualization	3	0	0	3	40	60	3	3
	U24CM506		Software Project Management	3	0	0	3	40	60	3	3
PROFESSIONAL ELECTIVE COURSE 2											
2	U24CM603	PEC2	Artificial Neural Networks	3	0	0	3	40	60	3	3
	U24CM604		Mobile Application Development	3	0	0	3	40	60	3	3
	U24CM605		R- For Data Science	3	0	0	3	40	60	3	3
	U24CM606		Compiler Design	3	0	0	3	40	60	3	3
PROFESSIONAL ELECTIVE COURSE 3											
3	U24CM703	PEC3	Generative AI	3	0	0	3	40	60	3	3
	U24CM704		Parallel and Distributed Systems	3	0	0	3	40	60	3	3
	U24CM705		Mobile Computing	3	0	0	3	40	60	3	3
	U24CM706		Modern Software Delivery with DevOps	3	0	0	3	40	60	3	3
PROFESSIONAL ELECTIVE COURSE 4											
4	U24CM801	PEC4	Computer Vision	3	0	0	3	40	60	3	3
	U24CM802		Cloud Computing	3	0	0	3	40	60	3	3
	U24CM803		Social Media And Data Analytics	3	0	0	3	40	60	3	3
	U24CM804		Human Computer Interactions	3	0	0	3	40	60	3	3
PROFESSIONAL ELECTIVE COURSE 5											
5	U24CM805	PEC5	Cognitive Computing	3	0	0	3	40	60	3	3
	U24CM806		Internet of Things	3	0	0	3	40	60	3	3
	U24CM807		Big Data Analytics	3	0	0	3	40	60	3	3
	U24CM808		Virtual and Augmented Reality	3	0	0	3	40	60	3	3

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(A UGC Autonomous Institution)
SCHEME OF INSTRUCTION & EXAMINATION
(With effect from the Academic Year 2025-26)
I-B.E. I-Semester (Group-A)
(Common to INF, CSE-AIML,AIML& ECE)

S. No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks		Duration in Hours	
								CIE	SEE		
MC: Three Week Induction Programme											
Theory Course											
1	U24MA101	BSC	Mathematics-I	3	–	-	3	40	60	3	3
2	U24CH101	BSC	Engineering Chemistry	3	–	-	3	40	60	3	3
3	U24CS102	ESC	Python Programming	2	-	-	2	40	60	3	2
4	U24EN101	HMSC	English for professional Communication	2	-	-	2	40	60	3	2
5	U24EN103	HSMC	Universal Human Values	2	-	-	2	40	60	3	2
6	U24EN102	MC	Indian Constitution	2	-	-	2	40	60	3	-
Practical/ Laboratory Course											
7	U24CH1L1	BSC	Engineering Chemistry Lab	-	-	3	3	25	50	3	1.5
8	U24CS1L2	ESC	Python Programming Lab	-	-	3	3	25	50	3	1.5
9	U24EN1L1	HSMC	Effective Communication Skills Lab	-	-	3	3	25	50	3	1.5
10	U24ME1L2	ESC	Workshop/Manufacturing Practice Lab	1	-	2	3	50	50	3	2
Total				**15**	**-**	**11**	**26**	**365**	**560**	**30**	**18.5**

L: Lecture *(Hrs/Wk/Sem)* **T**: Tutorial *(Hrs/Wk/Sem)* **P**: Practical **D**: Drawing *(Hrs/Wk/Sem)*

CIE: Continuous Internal Evaluation **SEE**: Semester End Examination

MC: Mandatory Course **BS**: Basic Science **ES**: Engineering Science
HS: Humanities and Social Sciences **MA**: Mathematics **CH**: Chemistry
EN: English
CE: Civil Engineering **ME**: Mechanical Engineering. **EE:** Electrical Engineering

Note:
1. Each contact hour is a Clock Hour.
2. The duration of the practical class is two hours, however it can be extended wherevernecessary, to enable the student to complete the experiment.

Course Code	Course Title						Core/Elective
U24MA101	MATHEMATICS-I						Core
Prerequisite	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
--	3	–	-	-	40	60	3

Course Objectives:

To enable the students to apply the knowledge of Mathematics in various engineering fields by making them to learn the following:

1. To introduce the concepts of sequences, series and their properties
2. To introduce the concepts of functions of several variables and multiple integrals
3. To study vector differential and integral calculus

Course Outcomes: On completion of this course, students will get the ability to

1. Test the nature of Sequence and Series
2. Calculate the problems on single variable, curvature, evolutes and envelopes and different series
3. Determine the limit, continuity, partial derivatives, Jacobi and maxima and minima of function of several variables
4. Evaluate double and triple integration and learn its applications
5. Utilize and apply the concepts of Vector differentiation, gradient, curl and divergence and its integration.
6. Solve Engineering problems with the help of Mathematics tool

Desirable /Advanced Course Outcomes

1. **Apply** convergence tests to analyze infinite series and determine their nature in scientific and engineering contexts.
2. **Differentiate and integrate** multivariable functions to solve real-world problems involving gradients, tangents, and optimization.
3. **Analyze and interpret** vector fields using line, surface, and volume integrals, applying Green's, Stokes', and Divergence theorems in physics and engineering application.

Unit-I

Sequence and Series: Sequence, Series, General properties of series of positive terms, Comparison tests,tests of Convergence D'Alembert's ratio test, Cauchy's nth root test, Raabe's test (All tests without proof),Alternating Series, Series of Positive and negative terms, Absolute convergence and Conditional convergence

Unit-II

Calculus of one Variable: Rolle's theorem, Lagrange's, Cauchy's mean value theorems (with proofs), Taylor's series (without proof), Curvature, Radius of curvature, Circle of curvature.

Unit-III

Multivariable Calculus (Differentiation) : Functions of two variables, Limits and continuity, Partial derivatives, Total differential and differentiability , Euler's theorem and problems, Jacobian, Taylor's series of functions of two variables, Maximum and minimum values of functions of two variables, Lagrange's method of undetermined multipliers.

Unit-IV

Multivariable Calculus (Integration): Double integrals, Change of order of integration, Change of Variables from Cartesian to plane polar coordinates, Triple integrals, change of coordinates in triple Integral-Spherical and cylindrical coordinate system.

Unit-V

Vector Calculus: Scalar and vector fields, Gradient of a scalar field, Directional derivative, Divergence and Curl of a vector field, Line, Surface and Volume integrals, Green's theorem in a plane, Gauss's divergence theorem, Stoke's theorem (without proofs) and their verification.

Textbooks:

1. B.S. Grewal,"Higher Engineering Mathematics",Khanna publishers,44th edition,2016.
2. Erwin Kreyszig,"Advanced Engineering Mathematics,Wiley,9th edition,2013.
3. R.K. Jain & S.R.K. lyengar, Advanced Engineering Mathematics, Narosa Publications,4thEdition,2014.

Reference Books:

1. B.V.Ramana,"Higher Engineering Mathematics",TataMcGraw-Hill,2018
2. N.P.Baliand Manish Goyal,"A textbook of Engineering Mathematics", Laxmi Publications, latest edition.
3. H.K.Dassand Er. Rajnish Verma, "Higher Engineering Mathematics", S.Chand Publishing, 1st edition, 2011

Course code	Course Title						Core/Elective
U24CH101	ENGINEERING CHEMISTRY						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
-	L	T	D	P			
	3	–	-	-	40	60	3

Course Objectives:

1. To understand and apply fundamentals of battery chemistry in Engineering applications.
2. To get acquainted with hard water and corrosion and apply the techniques for softening and corrosion control method.
3. Correlate the properties of materials with their internal structure and their use for Engineering application
4. Exposure to qualitative and quantitative parameters of chemical fuels.
5. To develop the concept of green chemistry in modern trends in engineering.

Course Outcomes:

1. Identify and analyze the fundamental principles of electrochemical cells and describe their role in the designing of batteries.
2. Illustrate various methods used in treatment of water and corrosion. Estimate total hardness of water in domestic and industrial use.
3. Describe the various synthesis of engineering materials and explain conducting and biodegradable polymers to get innovative and sustainable solutions.
4. Categorize and analyze the characteristics and uses of fuels. Calculate Calorific value and amount of air required for combustion of fuel.
5. Apply the principles of green chemistry to synthesize biodiesel and composite materials for sustainable environment.

Desirable / Advanced Course Outcomes

1. Develop electroplating and corrosion prevention methods and critically evaluate the electrochemical performance of batteries.
2. Formulate strategies to optimize fuel usage

UNIT-I ELECTROCHEMISTRY AND BATTERIES:

Electrochemistry: Types of cells, cell notation, cell reaction and cell potential. Nernst equation and its derivation. Applications of Nernst equation to electrode potential and EMF of a cell. Numerical problems. Types of electrodes: Calomel, Quinhydrone and Glass electrode. Determination of pH by using Quinhydrone electrode.

Batteries: Introduction to Batteries**, Secondary battery:** Lead acid battery and Li-Ion battery.

Flow batteries: Methanol-Oxygen fuel cells.

UNIT- II WATER CHEMISTRY AND CORROSION:

Water Chemistry: Hardness of water, its types and units of hardness, Estimation of hardness by EDTA method. Softening of water by Ion exchange process, reverse osmosis method. Potable water and its specifications, disinfection of water by chlorination and break point Chlorination. **Corrosion:** Introduction, causes and its effects. Theories of corrosions- Wet corrosion and its mechanism. Factors affecting rate of corrosion. **Corrosion Control Methods:** Cathodic Protection,Sacrificial anodic method, impressed current method and Surface coating method- Electroplating, Electroless Ni plating.

UNIT- III POLYMERS

Polymers: Basics terms in polymers: Monomer and its functionality, Polymers and Degree of polymerization. Types of polymerizations, Classification of Polymers – Thermoplastics and Thermosetting resins. **Preparation, Properties and engineering applications of: Plastics-** PVC and Bakelite. **Fibres:** Nylon 6:6, Kevlar. **Elastomers:** Buna-S.

Conducting polymers: Classification Mechanism of conduction in Poly-acetylene, Applications of conducting polymers.

Biodegradable polymers: Introduction, preparation, properties and applications of Polylactic acid.

UNIT- IV CHEMICAL FUELS: Definition and classification of fuels- Primary and secondary fuels. Solid, liquid and gaseous fuels. Requirements of a good fuel. Calorific Value – HCV and LCV. Theoretical calculations of calorific value by Dulong 's formula – Numerical problems.

Solid Fuels: Analysis of coal - Proximate and Ultimate analysis.

Liquid Fuels: Refining of Petroleum. Composition and uses of Gasoline, Diesel and Kerosene. **Gaseous Fuels:** LPG, CNG -Composition and Uses. **Combustion:** calculation of air quantities byweight required for combustion of a fuel- Numerical problems.

UNIT –V GREEN CHEMISTRY & COMPOSITES

Green Chemistry: Concept, Principles of Green Chemistry – Atom Economy, Catalysis and examples of clean technology. **Biodiesel:** Sources, Concept of Trans esterification and carbon neutrality. Properties and significance. **Composites:** Introduction to composites, composition and characteristic properties of composites. Classification of composites and its applications.

Text Books:

1.P.C. Jain & M. Jain, Engineering Chemistry, Dhan Patrai and sons Publishing Company,17th Edn, New Delhi (2019)

2.Rama Devi, Venkata Ramana Reddy and P. Rath, Engineering Chemistry, CengageLearning, New Delhi (2016)

3.S.S. Dara, S. Chand, A Text Book of Engineering Chemistry, S. Chand Publications,Reprint edition, 2017

4.Puri and Sharma, Principles of Physical Chemistry, Vishal Publications Co.2019

5.Agarwal Shikha, Engineering Chemistry, Cambridge University Publications.

Reference Books:

1.C. V. Agarwal, C. P. Murthy, A. Naidu, "Chemistry of Engineering Materials", WileyIndia, 5thEdition, 2013.

2.R. P. Mani, K. N. Mishra, "Chemistry of Engineering Materials", Cengage Learning, 3rdEdition, 2015.

Course Code	Course Title						Core /Elective
U24CS102	PYTHON PROGRAMMING						Core
Prerequisite	Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
-	2	-	-	-	40	60	2

Course Objectives:

Develop ability to

1. Learn about Python programming language syntax, semantics, and concepts like data types, conditionalexecution, and loops.
2. Acquire concepts like functions to solve real problems.
3. Familiarized with computer programming concepts of data structure.
4. Develop the coding techniques for object-oriented programming.
5. Analyze about basic library modules in Python.

Course Outcomes:

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

1. Develop essential programming skills using basic concepts like data types, and control statements.
2. Understand modular programming for problem solving and implement using functions and recursion.
3. Apply core data structures like lists, tuples, dictionaries, sets for storing and manipulating data.
4. Implement object-oriented programming principles and file operations in Python.
5. Use Python libraries such as NumPy and Pandas for basic data analysis.

Desirable / Advanced Course Outcomes:

1. Evaluate and optimize Python programs using algorithmic efficiency and vectorization (NumPy).
2. Design and build a real-world data-driven Python application using OOP, files, and libraries.

UNIT- I

Introduction to Python: Features of Python, Identifiers, variables and constants, Data Types, Operators, Built-in functions, input and output functions, and type conversion.

Control Structure: Conditional blocks use if, else, and elif, and Control blocks use for loop, and while loop. Loop manipulation using pass, continue, break, and else.

UNIT- II

Functions: Defining function, function call, return results from function, return multiple values, Arguments, using variable length arguments. Using local and Global variables, recursive functions, and lambda functions. **Modules**: Introduction to modules, packages, and libraries.

UNIT-III

Python Data Structures: Lists- basic list operators, replacing, inserting, removing an element; searching and sorting lists; tuples

Dictionaries- literals, adding and removing keys, accessing and replacing values; traversing dictionaries and Sets

UNIT-IV

File Handling: Introduction, file types, file paths, file operations: creating, reading, writing, closing, renaming, and deleting files.

Introduction to Object Oriented Programming: Class, object, attributes, and methods; defining classes, inheritance, polymorphism, abstract classes, Exception handling.

UNIT- V

Python for Data Analysis:

Numpy: Introduction to Numpy, creating arrays, using arrays and Scalars, Indexing Arrays, Array Transposition, Universal Array Function, Array Processing, Array Input and Output.

Pandas: What is pandas? Where it is used? Series in pandas, Index objects, Reindex, Drop Entry, SelectingEntries. Data Alignment, Rank and Sort Summary.

Suggested Readings:

1. Reema Thareja, "Python Programming using Problem Solving Approach", ISBN-13:978-0-19-948017-3 Oxford University Press, 2017
2. R Nageswara Rao, "Core Python Programming", Dreamtech press, 2017 Edition.
3. Vamsi Kurama, "Python Programming: A modern approach", ISBN-978-93-325-8752- 6, Pearson,2018.
4. Mark Lutz, "Learning Python", ISBN: 1-56592-464-9, Orielly, 4th edition, 1999.
5. Chun, "Core python programming", ISBN-13: 978-0132269933, Pearson, 2nd edition, 2016.
6. Kenneth Lambert," Fundamentals of Python: First Programs", ISBN-13: 978- 1337560092, Cengage Learning Publishers, First Edition,2012.
7. Allen B. Downey, "Think Python: How To Think Like A Computer Scientist", ISBN-13: 978-1491939369, O'Reilly, 2nd Edition, 2016.
8. Mike Mc Grath "Python in easy steps: Makes Programming Fun", Kindle Edition, 2017.

Course Code	Course Title						Core/Elective
U24EN101	ENGLISH FOR PROFESSIONAL COMMUNICATION						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
--	L	T	D	P			
	2	-	-	-	40	60	2

Course Objectives:

Students are able

1. To understand the total content and underlying meaning in the context.
2. To comprehend the text to develop language competency
3. To develop vocabulary among the students
4. To practice the grammar skills involved in writing sentences and short paragraphs.
5. To write paragraphs, letters, narrative pieces, reports, etc.

Course Outcomes:

On completion of this course, the student will be able to:

1. Study and write the content meaningfully.
2. Comprehend the given texts and respond appropriately.
3. Demonstrate proficiency in vocabulary relatively.
4. Build grammar structure precisely in writing sentences and paragraphs.
5. Apply the knowledge of various types of writing confidently.

Desirable/Advanced Course Outcomes:

1. Analyze the language connectors and transitional Signals for different types of writing thoroughly.
2. Synthesize complex texts into clear, relevant written responses effectively.

UNIT-I

Reading: Ruskin Bond, 'The Thief's Story'

Vocabulary: Word Building – Prefixes, Suffixes, Root words

Grammar: Articles, Prepositions, Concord

Writing: Paragraph Writing

UNIT-II

Reading: Padma Sachdeva, "Sunrise"

Vocabulary: Word Formation –Blending, Synonyms, Antonyms,

Grammar: Punctuation

Writing: Formal/Official Letter Writing

UNIT-III

Reading: Robots that look like Humans-Article

Vocabulary: One Word Substitutes

Grammar: Common Errors in English

Writing: Basics of Report Writing

UNIT-IV

Reading: William Wordsworth, 'Daffodils'

Vocabulary: Idioms, Phrases

Grammar: Narration (Direct – Indirect Speech)

Writing: Statement of Purpose (SOP)

UNIT-V

Reading: Francis Bacon, 'Of Studies'(Essay)
Vocabulary: Standard Abbreviations
Grammar: Tense
Writing: Blog Writing

Suggested Readings:

1. Kumar, S and Lata, P, (2018), *Communication Skills*, Oxford University Press.
2. Yule, George, (2019), *Oxford Grammar Practice*, Oxford University Press, Oxford.
3. Swan, Michael, (2016), *Practical English Usage*. Oxford University Press.
4. Rizvi, Ashraf, M, (2017) *Effective Technical Communication*, Tata McGraw Hill, 2nd Edition.
5. Raman, Meenakshi & Sharma, Sangeeta, (2017) *Technical Communication*: *Principles andPractice.* OUP, 3rd Edition.
6. McCarthy, M & Felicity, O'Dell, (2010) *English Vocabulary in Use*, 2nd edition, Pubs.

Course Code	Course Title						Core/Elective
U24EN103	UNIVERSAL HUMAN VALUES						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
--	2	-	-	-	40	60	2

Course Objectives:

Students are able

1. To appreciate the essence of human values and value education.
2. To ensure sustained happiness and prosperity.
3. To develop harmony in family, society and nature.
4. To promote social conduct, ethics, trust and mutual human behavior.
5. To create an awareness on professional ethics and holistic technologies.

Course Outcomes:

On completion of this course, the student will be able to:

1. Understand the significance of human values and value education completely.
2. Evaluate happiness and prosperity of ' I' with the body utterly.
3. Identify the role of harmony in family, society and nature thoroughly.
4. Compare and contrast between social conduct, ethics, trust and mutual human behavior elaborately.
5. Adapt professional ethics in their streams of technology effectively.

Desirable / Advanced Course Outcomes:

1. Apply consciously value -based reasoning in real world scenario to promote peace, equity and holistic well-being.
2. Develop strategic thinking automatically to influence human- centered decision - making in diverse socio - professional contexts..

UNIT I: Introduction to Value Education

1. Value Education, Definition, Concept and Need for Value Education.
2. The Content and Process of Value Education.
3. Basic Guidelines for Value Education.
4. Self-exploration as a means of Value Education.
5. Happiness and Prosperity as parts of Value Education.

UNIT II: Harmony in the Human Being

1. Human Being is more than just the Body.
2. Harmony of the Self ('I') with the Body.
3. Understanding Myself as Co-existence of the Self and the Body.
4. Understanding Needs of the Self and the needs of the Body.
5. Understanding the activities in the Self and the activities in the Body.

UNIT III: Harmony in the Family and Society and Harmony in the Nature

1. Family as a basic unit of Human Interaction and Values in Relationships.
2. The Basics for Respect and today's Crisis: Affection, Guidance, Reverence, Glory, Gratitude andLove.
3. Comprehensive Human Goal: The Five Dimensions of Human Endeavour.
4. Harmony in Nature: The Four Orders in Nature.
5. The Holistic Perception of Harmony in Existence

UNIT IV: Social Ethics

1. The Basics for Ethical Human Conduct.
2. Defects in Ethical Human Conduct.
3. Holistic Alternative and Universal Order.
4. Universal Human Order and Ethical Conduct.
5. Human Rights violation and Social Disparities.

UNIT V: Professional Ethics

1. Value based Life and Profession.
2. Professional Ethics and Right Understanding.
3. Competence in Professional Ethics.
4. Issues in Professional Ethics – The Current Scenario.
5. Vision for Holistic Technologies, Production System and Management Models.

Suggested Readings:

1. Gaur. R.R., Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
2. Gaur. R.R., Sangal. R, Bagaria. G.P, Teachers Manual Excel Books,
   2009.3.Bajpai. B. L, New Royal Book Co, Lucknow, Reprinted, 2004
3. Bertrand Russell, Human Society in Ethics & Politics
4. I.C. Sharma. Ethical Philosophy of India Nagin & co Julundhar
5. Mortimer. J. Adler, – What man has made of man
6. William Lilly, Introduction to Ethic, Allied Publisher

Course Code	Course Title						Core/Elective
U24EN102	INDIAN CONSTITUTION						Mandatory Course
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	2	-	-	-	40	60	-

Course Objectives:

1. To create awareness among students about the Indian Constitution
2. To acquaint the working conditions of union, state, local levels, the powers and functions
3. To create consciousness among the students on fundamental rights and duties of the citizen
4. To expose the students on relations between federal and provincial units
5. To divulge the students about the statutory institutions

Course Outcomes:

After completing this course, the student will be able to

1. Recall the background of the present constitution of India thoroughly.
2. Recognize efficiently the working of the Union, State and Local government.
3. Identify the fundamental rights and duties completely.
4. Examine the relation between union and state policies carefully.
5. Discuss the role of the Election Commission of India elaborately.

Desirable / Advanced Course Outcomes:

1. Interpret the ideological and structural transformation from colonial acts to the Indian Constitution accurately.
2. Correlate the interconnected nature of rights, duties, and state directives in constitutional governance significantly.

UNIT-I

Evolution of the Indian Constitution: 1909Act, 1919Act and 1935Act. Constituent Assembly: Composition and Functions; Fundamental features of the Indian Constitution.

UNIT-II

Union Government: Executive-President, Prime Minister, Council of MinisterState Government: Executive: Governor, Chief Minister, Council of Minister Local Government: Panchayat Raj Institutions, Urban Government

UNIT-III

Rights and Duties: Fundamental Rights, Fundamental Duties, Directive principle of State Policy.

UNIT-IV

Relation between Federal and Provincial units: Union-State relations, Administrative, legislative and Financial, Inter-State council, NITI Aayog, Finance Commission of India

UNIT-V

Statutory Institutions:

Elections-Election Commission of India, National Human Rights Commission, National Commission for Women

Suggested Readings:

1. Basu, D.D., (2016), *Introduction to the constitution of India*, Lexis Nexis, New Delhi,9th Edition.
2. Kashyap, Subhash, (2015), *Our Parliament*, National Book Trust, New Delhi.
3. Ghosh, Peu, (2012), *Indian Government & Politics*, Prentice Hall of India, New Delhi.
4. Fadia, B.Z. & Fadia, Kuldeep, (2020) *Indian Government & Politics*, Lexis Nexis, NewDelhi,16th Edition.

Course code	Course Title						Core/Elective
U24CH1L1	ENGINEERING CHEMISTRY LAB						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
-	L	T	D	P			
	-	-	-	3	25	50	1.5

Course Objectives:

1. Conduct experiments, take measurements and analyze the data through hands-onexperience in order to demonstrate understanding of the theoretical concepts of quantitative analysis while working in small group.
2. Interpret the electro analytical principles with experimental results graphically.
3. Demonstrate writing skills through clear laboratory reports.

Course Outcomes:

1. Estimate the amount of Ferrous ions by volumetric analysis.
2. Calculate the total hardness and alkalinity of water.
3. Identify the mobility of ions in strong acids and weak acids using conductivity meter.
4. Estimate the amount of Fe^{+2} and HCl by using potentiometer.
5. Verify Beer- Lambert's law by using Colorimetry.

Desirable / Advanced Course Outcomes

1. Analyze data critically and draw meaningful conclusions from experimental results.
2. Relate laboratory findings to industrial, environmental, and medical fields.

LIST OF EXPERIMENTS

Introduction to Chemical Analysis.

Techniques of Weighing.

VOLUMETRIC ANALYSIS:

1. Determination of strength of Ferrous solution by Dichrometry.
2. Determination of strength of Ferrous solution by Permanganometry.
3. Determination of hardness of water by Complexometric method using EDTA.
4. Determination of strength of Carbonates and bicarbonates in a given mixture.

INSTRUMENTAL ANALYSIS:

Conductometer:

5. Determination of strength of given HCl solution
6. Determination of strength of CH_3COOH solution
7. Determination of strength of HCl & CH_3COOH in given mixture

Potentiometer:

8. Determination of strength of HCl solution
9. Determination of strength of Ferrous solution.

pH Meter:

10. Determination of strength of HCl solution

Colorimeter:

11. Verification of Beer-Lambert 's law and determination of Permanganate.

CHEMICAL KINETICS:

12. Determination of rate constant of acid catalyzed hydrolysis of methyl acetate.

DRUG SYNTHESIS:

13. Synthesis of Drug (Aspirin / Paracetamol).

(Note: Minimum ten experiments should be conducted in the semester)

Textbooks:

1.B.D. Khosla, A. Gulati and V.Garg, _Senior Practical Physical Chemistry", (R. Chand& Co., Delhi)
2.K. K. Sharma and D.S. Sharma, _An Introduction to Practical Chemistry", (Vikaspublishing, N. Delhi

Course Code	Course Title						Core/Elective
U24CS1L2	PYTHON PROGRAMMING LAB						Core
Prerequisite	Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
-	-	-	-	3	25	50	1.5

Course Objectives:

Develop ability to

1. Elucidate problem solving through python programming.
2. Learn the use of functions in python programming.
3. Design programs using File Handling Functions
4. Analyze and implement different kinds of OOP concept in real world problems.
5. Develop Mini-projects using various libraries.

Essential Course Outcomes:

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

1. Summarize the fundamental concepts of python programming.
2. Build user defined functions and modules to improve code reusability.
3. Implement fundamental data structures for manipulating data.
4. Interpret file handling and object oriented programming in Python.
5. Apply suitable libraries to solve simple problems.

Desirable / Advanced Course Outcomes:

1. Build real-world applications by using Python OOP concepts and libraries.
2. Apply advanced Python features like recursion, lambda functions, and data structures to build efficient programs.

List of Programming Exercises:

1. Introduction to Python Lab: Installation and Simple Output Display.

a) Write a python program to read a string "Python Programming" and display it on the screen.

b) Write a python program to read integer, float & string values and display them on the screen.

2. Programs using Input Output Statements, Variables and Expressions.

a) Write a python program to read a float value and convert Fahrenheit to Centigrade.

b) Write a python program to find the area of triangle.

c) Write a python program to read the marks in four subjects and display the average.

3. Programs using various operators in Python.

a) Write a python program for demonstrating the usage of comparison operators.

b) Write a python program for demonstrating identity and membership operators.

c) Write a python program for demonstrating the usage of bitwise operators.

4. Programs using conditional statements

a) Write a python program to print a number is positive/negative using if-else.

b) Write a python program to find the largest number among three numbers.

c) Write a python program to swap two variables.

d) Write a python to calculate the electricity bill consumed by the user.

5. Programs using iterative statements

a) Write a python program to reverse the digits of a given number.

b) Write a python program to find the factorial of a given number.

c) Write python Program to print all Prime numbers in an Interval.

d) Write a python program to print the Fibonacci series up to n numbers.

6. Programs using strings

a) Write a python program that asks the user to enter a string and perform the following:

i) The total number of characters in the string.
ii) Repeat the string 10 times.
iii) The first character of the string.
iv) The first three characters of the string.
b) Write a python program to check whether the given string is palindrome or not.
c). Write a program to create, concatenate, and print a string and access a substring from a given string.
7. Program on user-defined functions:
a) Write a python program to demonstrate how to pass parameters to a function.
b) Write a python program to demonstrate arguments in a function
c) Write a program to illustrate the scope of a variable inside a function.
d) Write a python program to find the factorial of a given number using a function.
e) Write a python program to find the factorial of a given number using the Recursive function.
8. Program on lambda functions
a) Write a program to double a given number and add two numbers using lambda().
b) Write a program for filter () to filter only even numbers from a given list.
c) Write a Python Program to Make a Simple Calculator.
d) Write a program to perform basic operations on the random module.
9. Program on data structure
a) Create a list and perform the following methods
1) Insert() 2) remove() 3) append() 4) len() 5) pop() 6)clear()
b) Create a dictionary and apply the following methods
1) Print the dictionary items 2) access items 3) useget () 4) change values 5) use len()
c) Create a tuple and perform the following methods
1) Add items 2) len() 3) check for item in tuple 4)Access items
10. Program on OOPs concepts
a) Write a Python program to call data members and function using classes and objects
b) Write a python program to create a class representing a shopping cart. Include methods for adding and removing items and calculate the total price.
c) Write a Python program to demonstrate inheritance
d) Write a Python program to demonstrate polymorphism
e) Write a Demonstrate a python code to print try, except and finally block statements.
11. Programs on files
a) Write a python program to open and write “hello world” into a file and check the access permissions to that file?
b) Write a Python code to merge two given file contents into a third file.
c) Write a function that reads a file ”file1” and displays the number of words, number of vowels, blank spaces,lower case letters and uppercase letters.
12. Python program to practice some basic library modules
a) Numpy
b) Pandas

Suggested Readings:

1. Mark Summerfield,” Programming in Python A Complete Introduction to the Python Language”, Addison-Wesley Professional,2009.
2. Martin C. Brown,” PYTHON: The Complete Reference”, McGraw-Hill,2001.
3. Wesley J Chun,” Core Python Applications Programming”, Prentice Hall,2012.
4. Supercharged Python: Take your code to the next level, Overland.
5. Learning Python, Mark Lutz, O'reilly.

Course Code	Course Title						Core/Elective
U24EN1L1	EFFECTIVE COMMUNICATION SKILLS LAB (Common to all Branches)						Core
Perquisites	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
--	-	-	-	3	25	50	1.5

Course Objectives:

Students are able

1. To enhance listening skill of the students.
2. To train the students to use correct pronunciation, stress and intonation.
3. To promote critical thinking and build team work among students.
4. To foster creativity and boost self confidence among students.
5. To prepare students for formal presentations.

Course Outcomes:

On completion of this course, the student will be able to:

1. Interpret spoken language productively.
2. Understand the neutralized pronunciation, stress and intonation.
3. Develop critical thinking and acknowledge team work effectively.
4. Speak confidently in individual and group activity.
5. Perform formal presentations dynamically.

Desirable/Advanced Course Outcomes:

1. Interpret confidently spoken content in real-time and present it with clarity and cultural sensitivity.
2. Communicates effectively with clarity and confidence during presentations, interviews, and workplace discussions.

LIST OF ACTIVITIES

1. Listening for comprehension
2. Pronunciation, Intonation, Stress and Rhythm
3. Conversation Skills
4. Introducing Oneself and Others
5. Asking for and Giving information
6. Making Request and Responding to them Appropriately
7. Giving Instructions and Responding to them Appropriately
8. Making Formal Announcement and Emceeing
9. Group Discussion
10. Just A Minute (JAM)
11. Role Play
12. Debate
13. Public Speaking
14. Formal Presentations

Suggested Readings:

1. Board of Editors, (2018), *Language and Life Skills Approach*, Orient Black Swan.
2. Bala Subramaniam, T.A., (2017), *Text book of English Phonetics for Indian Students*, Macmillan
3. CIEFL, (2018), *Exercises in Spoken English. PART-III*, Oxford University Press.
4. Rizvi, Ashraf, M, (2017) *Effective Technical Communication*, Tata McGraw Hill, 2nd Edition.
5. Robert. M. Sher field & et al, (2009) *Developing Soft Skills*, Pearson Education,4th Edition.
6. Ludlow R & Panton F., (1993) *The Essence of Effective Communication*, Prentice Hall

Course Code	Course Title						Core/Elective
U24ME1L2	WORKSHOP/ MANUFACTURING PRACTICES						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
-	1	-	-	2	50	50	2

Course Objectives:

The Objective of this course is to impart knowledge of

1. Engineering Practices & develop holistic understanding of various Engineering materialsand Manufacturing processes.
2. Steel, Plastic, Composite and other materials for suitable applications.
3. Hands on practice on techniques of fabrication, welding, casting, manufacturing,metrology, and allied skills.
4. Productivity, create skilled manpower which is cognizant of industrial workshop components and processes and can communicate their work in a technical, clear andeffective way.
5. Engineering Skill development with regard to making components, system integrationand assembly to form a useful device.

Course Outcomes:

After completing this course, the student will be able to

1. Differentiate the tools and Fabricate components with their own hands.
2. Examine the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.
3. Perform the Assembling of different components and will be able to produce small mechanisms/devices of their interest.
4. Demonstrate experiments of black smithy, plumbing, carpentry, tinsmithy, fitting, house wiring.
5. Select different Engineering Materials and Manufacturing Methods.
6. Develop different techniques used in Workshop and chooses the best material/ manufacturing process for the application.

Desirable/Advanced Outcomes:

1. Understand and explain the use of mechanical tools and machines (like measuring, marking and lathe machine) in real-life and industrial applications.
2. Design and build basic mechanical models by small hand tools and also with 3D printing technology for practical use or technical competitions.

A. TRADES FOR EXERCISES

1. FITTING SHOP

1. Square fitting
2. Dovetail fitting
3. V- Template fitting

2. CARPENTRY

1. End lap joint
2. T- Bridle joint
3. Dovetail lap joint

3. ELECTRICAL & ELECTRONICS /HOUSE WIRING

1. Two lamps in parallel with 5 Pin 6amp socket and switches.
2. Two lamps in series connection with switches.
3. Staircase wiring.

4. TIN SMITHY

1. Square Tin
2. Rectangular Scoop
3. Conical funnel

5. WELDING PRACTICE

1. Lap Joint
2. V- Butt Joint
3. T-joint

B. TRADES FOR DEMONSTRATION AND EXPOSURE

1. Machining (Lathe & Drilling)
2. Plumbing (Introduction of tools, joints, couplings, and valves etc)
3. Blacksmithy (Introduction, Round to Square, Square to Octogon)
4. 3D Printing

C. PRESENTATIONS AND VIDEO LECTURES

1. Manufacturing Methods
2. Brazing
3. Glass Cutting
4. CNC LATHE
5. Plastic Moulding
6. Casting
7. Gas Welding

Note: At least two exercises from each trade.

Suggested Readings :

1. H S Bawa, "Workshop Practice", Tata Mc Graw Hill Education Private Limited ,New Delhi, Second Edition, 2009.
2. V Ramesh Babu, “Engieering Workshop Practice”, VRB Publishers Pvt Ltd, New Edition, 2009.
3. P. Kannaiah & K. L. Narayana “Workshop manual” 2nd Ed., Scitech publications (I) Pvt. Ltd., Hyderabad.
4. Hajra Choudhury S.K., HajraChoudhury A.K., Nirjar Roy S.K. “Elements of Workshop Technology” Vol-I2008 &Vol-II 2010 Media Promoters & Publishers Pvt. Limited, Mumbai.
5. B S Raghuwanshi, “A Course In Workshop Technology”, Dhanpat Rai & Co. (P) Ltd, Educational & TechnicalPublishers, Vol-II, 2011.
6. K Venkata Reddy,”Workshop Practice Manual” Sixth Edition, B S Publications Books Pvt.Ltd, Hyderabad.

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(A UGC Autonomous Institution)
SCHEME OF INSTRUCTION & EXAMINATION
(With effect from the Academic Year 2025-26)

I-B.E. II-Semester (Group-A)
(Common to INF, CSE-AIML, AIML, ECE)

S. No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	Maximum Marks		Duration in Hours	
								CIE	SEE		
Theory Course											
1	U24MA201	BSC	Mathematics-II	3	1	-	4	40	60	3	4
2	U24PH201	BSC	Engineering Physics	3	-	-	3	40	60	3	3
3	U24CS201	ESC	Programming for Problem Solving	3	-	-	3	40	60	3	3
4	U24EE201	ESC	Basic Electrical Engineering	3	-	-	3	40	60	3	3
5	U24CH202	MC	Environmental Science	2	-	-	2	40	60	3	-
Practical/ Laboratory Course											
6	U24PH2L1	BSC	Engineering Physics Lab	-	-	3	3	25	50	3	1.5
7	U24CS2L1	ESC	Programming for Problem Solving Lab.	-	-	3	3	25	50	3	1.5
8	U24EE2L1	ESC	Basic Electrical Engineering Lab	-	-	3	3	25	50	3	1.5
9	U24ME2L1	ESC	Engineering Graphics & Design Practice Lab	1	-	2	3	50	50	3	2
Total				**15**	**1**	**11**	**27**	**325**	**500**	**27**	**19.5**

L: Lecture *(Hrs/Wk/Sem)* **T**: Tutorial *(Hrs/Wk/Sem)* **P**: Practical **D**: Drawing *(Hrs/Wk/Sem)*

CIE: Continuous Internal Evaluation **SEE**: Semester End Examination
MC: Mandatory Course **BS**: Basic Science **ES**: Engineering Science
HS: Humanities and Social Sciences **MT**: Mathematics **CH**: Chemistry
EN: English
CE: Civil Engineering **ME**: Mechanical Engineering. **EE:** Electrical Engineering
CS: Computer Science and Engineering

Note:
1. Each contact hour is a Clock Hour.
2. The duration of the practical class is two hours, however it can be extended wherevernecessary, to enable the student to complete the experiment.

Course Code	Course Title						Core/Elective
U24MA201	MATHEMATICS-II						Core
Prerequisite	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
--	3	1	-	-	40	60	4

Course Objectives

1. To study matrix algebra and its use in solving system of linear equations and in Solving eigen value problems
2. To provide an overview of ordinary differential equations
3. To study special functions like Legendre and Beta Gamma functions
4. To learn Laplace Transforms and its properties

Course Outcomes

The students will able to

1. Engineering problems through Mathematics knowledge
2. Solve system of linear equations with the help of Matrices and solving eigen value problems.
3. Discuss the methods for solving certain first order differential equations and insight into its applications.
4. Determine solution of certain higher order differential equations and exposure into its applications.
5. Explain Analyze the basic problems of Gamma, Beta and Legendre's functions.
6. Apply the concept of Laplace Transforms in improper integrals and to the ordinary differential equations.

Desirable /Advanced Course Outcomes

1. **Solve** linear systems and Eigen value problems using matrix decomposition techniques and interpret their role in dynamic systems and stability analysis.
2. **Construct and solve** first and higher-order differential equations arising in engineering applications using integrating factors, variation of parameters, and reduction methods.
3. **Apply** Laplace and inverse Laplace transforms to solve linear differential equations with initial conditions, particularly in control systems and circuit analysis.

Unit-I

Matrices: Rank of a matrix, Echelon form, System of linear equations, Linearly dependence and independence of vectors, Linear transformation, Orthogonal transformation, Eigen values, Eigenvectors, Properties of eigen values, Diagnolization, Cayley - Hamilton theorem, Quadratic forms, Reduction of quadratic form to canonical form by orthogonal transformation, Nature of quadratic forms.

Unit-II

Differential Equations of First Order: Exact differential equations, Integrating factors, Linear differential equations, Bernoulli's differential equation, Orthogonal trajectories of a given family of curves (Cartesian and polar), Newton's Law of Cooling.

Unit-III

Differential Equations of Higher Orders: Solutions of second and higher order linear homogeneous equations with constants coefficients, Method of reduction of order for the linear homogeneous second order differential equations with variable coefficients, Solutions of non-homogeneous linear differential equations, Method of variation of parameters.

Unit-IV

Special Function: Beta Functions and Gamma Functions, , Relation Between Beta and Gamma Function. Power Series Method- Bessel's function, problems on basic properties , Generating function (without proof) , Legendre's Differential Equation and Legender's Polynomial Pn(x), Rodrigue's Formula(without proof).

Unit-V

Laplace Transforms: Laplace Transforms, Inverse Laplace Transforms, Properties of Laplace Transforms and inverse Laplace Transforms, ConvolutionTheorem (without proof). Solution of ordinary Differential Equations using Laplace Transforms.

Text books:

1. B.S. Grewal, "Higher Engineering Mathematics", Khanna publishers, 44th edition,2016.
2. Erwin Kreyszig, "Advanced Engineering Mathematics, Wiley, 9th edition, 2013.
3. R.K. Jain & S.R.K. lyengar, Advanced Engineering Mathematics, Narosa Publications, 4th Edition, 2014.

Reference Books:

1. B.V. Ramana, "Higher Engineering Mathematics", Tata McGraw-Hill,2018
2. N.P.Bali and Manish Goyal, "A text book of Engineering Mathematics", LaxmiPublications, latest edition.
3. H.K. Dass and Er. RajnishVerma, "Higher Engineering Mathematics", S.Chand Publishing, 1st edition,2011

Course Code	Course Title						Core/Elective
U24PH201	ENGINEERING PHYSICS						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
--	3	0	-	-	40	60	3

Course Objectives:

1. Demonstrate the use of crystal structures in device applications and find the solutionsof Quantum mechanical problems.
2. Awareness on fundamentals of optical properties, fibers in communication, lasers in Engineering.
3. Illustrate the knowledge on various properties of semiconductors and nanomaterials.
4. Understand fundamental laws related to magnetic as well as dielectric properties of materials.
5. Acquire the knowledge of low temperature physics.

Course Outcomes:

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

1. Classify crystals based on their structures and their appropriate uses.
2. Illustrates working of lasers and optical fibers in high-speed communication.
3. Analyze the wave nature of matter and to develop the skills in designing the various electronics devices.
4. Distinguish the materials and can justify their application in divergent fields.
5. Apply the principles of nanoscience in new technological devices.

Advanced Course Outcomes:

1. Illustrates the basic concepts of quantum superposition and entanglement, and describe their importance in emerging technologies like quantum computing and quantum communication.
2. Analyze the properties of modern semiconductor materials and propose their use in designing next-generation electronic and optoelectronic devices.

UNIT-I

Crystallography: Types of crystal systems, Bravais lattices, Lattice planes and Miller indices, Inter planar spacing (Cubic system), Bragg's law, Powder diffraction method.

Crystal defects: Classification of point defects, Concentration of Schottky defects in ionic crystals, Concentration of Frenkel defects.

UNIT-II

Lasers: Characteristics of Lasers, Absorption, Spontaneous and stimulated emissions, Pumping process, Population inversion, Einstein's A and B Coefficients, Ruby Laser, Helium Neon Laser, Semiconductor Laser, Applications of Lasers.

Fiber Optics: Propagation of light through an optical fiber, Acceptance angle, Numerical aperture (NA), Types of Optical fibers and Refractive index profiles, Attenuation Losses in optical fibers, Applications of optical fibers.

UNIT-III

Wave Mechanics: Matter waves –de-Broglie wavelength, Davisson Germer Experiment, Properties and Physical significance of wave function, Schrodinger time dependent and time in-dependent wave equation, Particle in a 1-D box.

Semiconductors and Devices: Bloch's theorem statement, Kronig-Penney model (qualitative treatment), Classification of solids, Intrinsic and Extrinsic semiconductors, Carrier concentration in intrinsic semiconductors, Formation of P-N junction diode and its I–V characteristics, Thermistor and

its characteristics, Hall effect and its applications, Solar cell, LED.

UNIT-IV

Magnetic Materials: Classification of magnetic materials, Domain theory (qualitative), Hysteresis on the basis of domain theory, soft and hard magnetic materials, Applications of ferrites.

Superconductivity: General properties of superconductors, Meissner effect, Type I and Type II superconductors, BCS theory (qualitative), Introduction to High Tc superconductors, Applications of superconductors.

UNIT-V

Dielectric Materials: Introduction to Dielectrics, Types of polarizations, Electronic, Ionic, Orientational and Space charge polarizations, Expression for Electronic and Ionic polarizability, Ferroelectricity, Barium titanate, Applications of Ferroelectrics.

Nanomaterials: Nano scale, Classification of Nanomaterials, Properties of Nanomaterial: Surface to volume ratio at Nano scale, Quantum Confinement, Nanomaterial Preparation: Bottom-up methods (Sol-gel and CVD) and Top-down method (ball milling), Applications of Nanomaterials.

Text Books:

1. M. N. Avadhanulu and PG Kshirsagar, "Engineering Physics", S. Chand India Private Limited, 11thEdition, 2019.
2. P. K. Palaniswamy, "Engineering Physics", Scitech India Private Limited, 4th Edition, 2014.
3. S. O. Pillai, "Solid State Physics", S. Chand India Private Limited, 10th Edition 2022.

Reference Books:

1. S. Mani Naidu, "Applied Physics", Pearson India Private Limited, 1st Edition, 2010.
2. R. K. Gaur and SL Gupta, "Engineering Physics", Dhanpat Rai India Private Limited, Revised Edition, 2018.
3. J. Decker, "Solid State Physics", Laxmi Publisher, 2008 Edition.
4. Dr. G. Senthil Kumar, Engineering Physics, Arvind Publisher, 2018 Edition.

Course Code	Course Title						Core / Elective
U24CS201	PROGRAMMING FOR PROBLEM SOLVING						Core
Pre-requisite	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	-	-	-	40	60	3

Course Objectives:

The Objectives of this Course are:

1. To introduce the basic concepts of Computing environment, Algorithm and Flowchart
2. To familiarize the basic concepts of C language such as data types, operators and expressions.
3. To understand modular and structured programming concepts in C
4. To learn the usage of structured data types and memory management using pointers
5. To learn the concepts of data handling using pointers

Course outcomes:

Student will be able to:

1. Formulate simple algorithms and translate the algorithms to programs using c language.
2. Implement conditional branching & iteration and arrays
3. Apply the function concepts to implement searching and sorting algorithms.
4. Analyze the usage of structures and pointer variable.
5. Apply the concept of pointers for implementing programs on dynamic memory managementand string handling.
6. Design and implement programs to store data in structures and files.

Desirable/Advance Course Outcome:

1. Apply pointer arithmetic and memory management for optimize program development
2. Integrate C programming with external systems for real-world problem-solving and device control**.**

Unit-I

Introduction to Programming: Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.).

Idea of Algorithm: steps to solve logical and numerical problems.

Representation of Algorithm: Flowchart / Pseudo code with examples. From algorithms to programs; source code, variables (with data types) and memory locations, Syntax and Logical Errors in compilation, object and executable code.

Unit-II

Control Structures: Arithmetic expressions and precedence, Conditional Branching and Loops, Writing and evaluation of conditionals and consequent branching.

Arrays: Arrays (1-D, 2-D), Character arrays and Strings.

Unit-III

Basic Algorithms: Searching algorithms, Basic Sorting Algorithms (Bubble, Insertion and Selection), Findingroots of equations.

Functions: Functions (including using built in libraries), Parameter passing in functions, call by value. Passing arrays to functions: idea of call by reference

Unit-IV

Recursion: Recursion, Example programs, such as Finding Factorial, Fibonacci series

Structure: Structures, Defining structures and Array of Structures

Unit-V

Pointers: Idea of pointers, defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation), Introduction to File Handling.

Suggested Readings:

1. "Theory and practice of Programming with C", Byron Gottfried, Schaum's Outline McGraw-Hill,1996
2. "Computer Fundamentals and Programming in C, A.K. Sharma Universities Press, 2nd Edition, 2018.
3. "Programming in ANSI C‖", E. Balaguruswamy, Tata McGraw-Hill Education, 2008
4. "The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall of India,1988.

Course Code	Course Title						Core/Elective
U24EE201	BASIC ELECTRICAL ENGINEERING						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
....	L	T	D	P			
	3	-	-	-	40	60	3

Course Objectives

1. To analyze the behavior of different circuit elements R, L and C and the basic concepts of circuit analysis.
2. To understand the concepts of electromagnetism.
3. To analyze the concepts of AC circuits, RMS value, average value phasor analysis etc.
4. To understand the basic principle of operation and construction of DC machines and Transformers.
5. To understand the basic principle of operation and construction of AC machines.

Course Outcomes

On the completion of this course students will be able to

1. To Analyze the DC electrical circuits and measures the parameters of electrical energy.
2. To Apply fundamental principles of electromagnetism to analyze and solve problems involving electromagnetic induction and inductance.
3. To Analyse the AC electrical circuits and measures the parameters of electrical energy.
4. To comprehend the working principle and construction of DC machines and transformers and compute the efficiency of transformers using standard methods.
5. To comprehend the working principle and construction of AC machines namely Induction motor & Synchronous generator.

Desirable/Advanced Outcomes

1. Understand how motors, transformers, and other electrical machines are used in everyday life and industry.
2. Design and build simple electrical circuits or small working models for real-life use or competitions.

UNIT-I

DC Circuits

Ohm's Law and Kirchhoff's Laws; Analysis of series, parallel and series-parallel circuits excited by independent voltage sources; Power and energy, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems.

UNIT-II

Electromagnetism

Faradays Laws, Lenz's Law, Fleming's Rules, Statically and dynamically induced EMF, Concepts of self-inductance, Mutual inductance and coefficient of coupling; Energy stored in magnetic fields.

UNIT-III

AC Circuits

Representation of sinusoidal waveforms, peak and rms values, phasor representation, Real Power, Reactive Power, Apparent Power, Power Factor. Analysis of single-phase ac circuits consisting of R, L, C, and RL, RC, RLC combinations (series only), Three phase balanced circuits, Voltage and current relations in star and delta connections.

UNIT IV

DC Machines

Construction and Principle of operation of DC generator, EMF equation, Types of DC generator and its applications, Principle of operation of DC motor, Back EMF, DC motor types and its applications.

Transformers

Principle of operation and construction of single-phase transformers (core and shell types), EMF equation, Ideal andpractical transformers, OC and SC test losses and efficiency.

UNIT V

AC machines Induction Motors

Asynchronous machines, Principle of operation of 3-Φ induction motor, Concepts of slip, Construction, Types and its applications, 1-Φ Induction motor, Principle of operation, Construction, Types and its applications. Synchronous generators - Construction, Principle of operation, Types and applications, OC and SC characteristics.

Text books:

1. U.A Bakshi & V.U Bakshi. "Basic Electrical Engineering", 2014.
2. J.B Gupta "Fundamentals of Electrical Engineering And Electronics" S.K Kataria & sons. 2012.
3. B L Theraja, A K Theraja "A Textbook of Electrical Technology Volume II AC And DC Machines", 2007.
4. D.P Kothari and I.J Nagarath "Electrical Machines 3rd Edition, Tata McGraw hill Publications**,** 2017.

Course Code	Course Title						Core / Elective
U24CH202	ENVIRONMENTAL SCIENCES						Core
Prerequisite	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
-	2	-	-	-	40	60	-

Course Objectives:

1. To create awareness and impart basic knowledge about the various types of natural resources.
2. To know the functions of ecosystems.
3. To understand importance of biological diversity.
4. To study different pollutions and the impact on environment.
5. To know social and environment related issues and their preventive measures.

Course Outcomes:

After completing this course, the student will be able to:

1. Describe various natural resources.
2. To understand various biotic and abiotic components of ecosystem.
3. Learn the different conservation techniques of biological diversity.
4. Illustrate the causes, effects and control measures of various types of environmental pollutions.
5. Explain the methods of water conservation, understand the current global environmental issues.

Desirable / Advanced Course Outcomes

1. Explore the use of renewable resource for producing different types of materials.
2. Design innovative solution for pollution prevention and their remedies.

UNIT-I

The Multidisciplinary Nature of Environmental Studies: Definition, scope andimportance, need for public awareness.

Natural Resources: Water Resources – Use and over utilization of surface and ground water, flood, drought **Dams:** Benefits and Problems. Food Resources –effects of modern agriculture, fertilizer-pesticides. Forest Resources –Use and overexploitation Land Resources–Land Degradation, environmental effect of mining, soil erosion and desertification**.** Energy Resources– Renewable and Non-renewable energy resources.

UNIT-II

Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in ecosystem, food chains, ecological pyramids, ecological succession, types of ecosystems (marine, river, forest, grassland).

UNIT-III

Biodiversity: Levels of Biodiversity, Bio-geographical classification of India, Value of biodiversity, Threats to biodiversity, endangered and endemic species of India, Conservation of biodiversity.

UNIT-IV

Environmental Pollution: Definition, Causes, effects and control measures of air pollution, water pollution, soil pollution, solid waste management.

Environment Protection Act: Air, water, forest and wildlife Acts, issues in the enforcement of environmental legislation.

UNIT-V

Social Issues and the Environment: Watershed management and environmental ethics. Climate change, global warming, acid rain, ozone layer depletion.

Environmental Disaster Management: Types of disasters, impact of disasters on environment, infrastructure, and development. Basic principles of disaster mitigation, disaster management, and methodology. Disaster management cycle and disaster management in India.

Field Work:

- Visit to a local area to document environmental issues – agricultural area/ lake /terrestrial ecosystem.
- Visit to a local polluted area-market/slum area/Industrial area/traffic area.

Text Books

1. Erach Bharucha, Environmental Studies for undergraduate courses, third edition,Universities Press.
2. R. Rajagopalan, Environmental Studies from crisis to cure, oxford Publication.

Reference Books:

1. A.K. De, Environmental Chemistry, Wiley Eastern Ltd.
2. E. P. Odum, Fundamentals of Ecology, W. B. Sunders Co., USA.
3. M.N. Rao and A.K. Datta, Waste Water Treatment, Oxford and IBK Publications.
4. Benny Joseph, Environmental Studies, Tata McGraw Hill, 2018.
5. V.K. Sharma, Disaster Management, National Centre for Disaster Management, IIPE,2013.

Course Code	Course Title						Core/Elective
U24PH2L1	ENGINEERING PHYSICS LAB						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
--	L	T	D	P			
	-	-	-	3	25	50	1.5

Course Objectives:

1. Enhance the experience of fundamental functioning, analyzing and characterization of different experiments.
2. Develop skills in the design and development of various electronic devices.
3. Create interest in working with lasers and semiconductor devices.
4. To gain the knowledge on mechanical properties.
5. Acquire the knowledge of communication through optical fiber.

Course Outcomes:

1. Apply the basic principles of lasers and optical fibers to determine wavelength and numerical aperture.
2. Apply the electrical properties to evaluate the energy band gap of the semiconductors.
3. Estimate the carrier concentration of semiconductor materials by applying Hall effect principle.
4. Illustrate the basic knowledge of semiconductors and understand the I-V characteristics of p-junction diode, solar cell and LED devices.
5. Analyze the temperature dependence on resistance by Thermistor Experiment.
6. Demonstrate the concept of rigidity modulus through Torsional pendulum.

Advance Course Outcomes:

1. Investigate complex optical and semiconductor properties by designing and modifying experimental setups (e.g., laser diffraction, Hall effect, I-V analysis) to enhance measurement accuracy and experimental insight.
2. Correlate experimental data with theoretical models to critically evaluate material properties and device performance, enabling learners to bridge the gap between fundamental physics and practical engineering applications.

List of Experiments:

1. Determination of wavelength of a Laser by using diffraction Grating.
2. Determination of Numerical aperture of an optical fiber.
3. To draw the I-V Characteristics of a p-n junction diode.
4. Determination of carrier concentration and Hall Effect of Ge crystal using Hall Effect experiment.
5. To determine the constants of A and B using Thermistor Characteristics.
6. Determine the Energy gap of semiconductor diode.
7. To draw the I-V Solar Cell and to calculate the:
   i) Fill factor Efficiency ii) Series resistance
8. Determination of rigidity of modulus of a given wire using Torsional pendulum.
9. Photoelectric Effect: To determine the work function of a given material.
10. Plot the I-V characteristics of LED.
11. To determine the Quality factor of series/parallel LCR circuit.
12. To determine the time constant of RC circuit.

Note: Minimum 8 experiments should be conducted in the semester**.**

Text books:

1. N.K. De, “Basic Electrical Engineering” Universities press, 2015.
2. J.B. Guptha, “Fundamentals of Electrical Engineering and Electronics” S.K. Kataria & Sons Publications 2002.
3. Er. R. K. Rajput, “Utilization of Electric Power and Electric Traction” S.K. Kataria & Sons Publications, 2010.

Course Code	Course Title						Core/Elective
U24CS2L1	PROGRAMMING FOR PROBLEM SOLVING LAB						Core
Prerequisite	Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	-	-	-	3	25	50	1.5

Course Objectives:

The objectives of this course are:

1. To understand the fundamentals of programming in C language.
2. To write, compile and debug programs in C.
3. To formulate solution to problems and implement in C.
4. To effectively choose programming components to solve computing problems.

Course Outcomes:

On completion of this Course, Students are able to:

1. Choose appropriate data type for implementing programs in C language.
2. Design and implement modular programs involving input/output operations, decision making looping constructs and string handling.
3. Implement search and sort operations on arrays and decompose the problem into functions to develop modular, reusable code.
4. Design and implement programs using recursion and to store data in structures.
5. Apply the concept of pointers for implementing programs on dynamic memory management and files.

Desirable/Advances Course Outcomes:

1. By applying control statements, structures, and dynamic memory allocation, students are able to develop practical real-world software solutions.
2. Design and implement modular programs using Searching, Sorting and matrix computation for data processing task.

List of Experiments

1. Finding roots of quadratic equation.
2. Finding maximum and minimum of given set of numbers.
3. Conversion of Binary to Decimal, Octal, Hexadecimal and vice versa.
4. Generating Pattern & Pyramid of Numbers
5. Recursion: factorial, Fibonacci, GCD.
6. Matrix addition and multiplication using arrays.
7. linear search and binary search using non-recursive procedures
8. Bubble Sort and Selection Sort
9. Programs on Pointers: Pointers to Arrays, Pointer and Function
10. Functions for string manipulations.
11. Programs on Structures and Unions
12. Finding the number of characters, words and lines of given text file using file handling functions.

Suggested Readings:

1. "Theory and practice of Programming with C", Byron Gottfried, Schaum's Outline,McGraw-Hill 1996.
2. "Computer Fundamentals and Programming in C", A.K. Sharma, Universities Press, 2nd Edition, 2018.
3. "Programming in ANSI C", E. Balaguruswamy, Tata McGraw-Hill Education,2008.
4. "The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall of Indian 1988.

Course Code	Course Title						Core/Elective
U24EE2L1	BASIC ELECTRICAL ENGINEERING LAB						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
....	-	-	-	3	25	50	1.5

Course objectives:

1. Understand the basic concepts of ohms law and theorems with DC excitation.
2. Understand the concepts of self and mutual inductance, coefficient of coupling.
3. Identify Sinusoidal steady state response of R-L, and R-C circuits.
4. Understand the different phenomenon for balanced three phase circuit connected in Star and Delta.
5. Understand the characteristics of DC and AC Machine and performance of Single-phase transformer.

Course outcomes:

1. Verify the ohm's law and theorems by practical and theoretical calculations.
2. Evaluate of self and mutual inductance, coefficient of coupling.
3. Explain the Sinusoidal steady state response of R-L, and R-C circuits.
4. Analyse the different phenomenon for balanced three phase circuit connected in Star and Delta.
5. Analyze the characteristics of DC and AC machines based on experimental data, and evaluate the performance of a single-phase transformer by conducting standard tests to determine its efficiency

Desirable/Advanced Outcomes:

1. Understand and explain the use of electrical machines (like motors and transformers) in real-life and industrial applications.
2. Design and build basic electrical circuits or small machine models for practical use or technical competitions.

Demonstration - 1: Basic safety precautions, Introduction and use of measuring instruments, Voltmeter, Ammeter,Multi- meter, Oscilloscope, Real-life resistors, Capacitors and Inductors.

1. Verification of Ohm's Law, KVL and KCL.
2. Verification of Super position theorem (with DC excitation).
3. Verification of Thevenin's and Norton's theorems (with DC Excitation).
4. Determination of self and mutual inductance, co-efficient of coupling.
5. Sinusoidal steady state response of R-L, and R-C circuits.

Demonstration – 2: Demonstration of cut-out sections of Machines: DC Machine (Commutator- brush arrangement), Transformers, Induction Machine (Squirrel cage rotor), Synchronous Machine (Field winging- slip ring arrangement) and Single-Phase Induction Machine.

1. Measurement of phase voltage/current, line voltage/current and power in a balanced three-phase circuit connected in star and delta.
2. OCC characteristics of DC Generator.
3. Transformers: Observation of the no-load current wave form on an oscilloscope.
4. (Non-sinusoidal wave-shape due to B-H curve non-linearity should be shown along with a discussion about harmonics).
5. O.C test and S.C test on single phase Transformer.
6. Measurement of primary and secondary voltages, currents and power of a single-phase Transformer.
7. Open circuit and short circuit characteristics of an Alternator.
8. Power factor improvement of Induction Motor using static capacitor.

Note: It is mandatory to conduct any 8 experiments from the above list of experiments.

Suggested Readings:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition, 2019.
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2nd Edition, 2008.
3. P. S. Bimbhra, "Electrical Machinery", Khanna Publishers, 2021.
4. I.J. Nagrath and D. P. Kothari, "Electric Machines", McGraw Hill Education, 2017.

Course Code	Course Title						Core/Elective
U24ME2L1	ENGINEERING GRAPHICS & DESIGN PRACTICE						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	1	-	2	-	50	50	2

Course Objectives:

On completion of this Course, Students are able to:

1. Understand the conventions and standards of technical drawing, including dimensioning, line types, and lettering.
2. Draw basic geometrical constructions such as lines, angles, polygons, and curves (ellipse, parabola, hyperbola, etc.).
3. Represent three-dimensional objects in two dimensions using orthographic projections from different views (front, top, side).
4. Create 3D pictorial views from orthographic projections using isometric drawing techniques.
5. Use basic computer-aided design (CAD) software to create and edit 2D and 3D engineering drawings.

Course Outcomes:

1. Identify basics of Dimensioning, lettering and use of different drawing instruments.
2. Demonstrate different geometric methods to construct conics & engineering curves.
3. Apply the concept of Orthographic projection and projection of lines and planes to develop physical objects
4. Analyze the need of projection of solids and section of solids in real world using CAD tools.
5. Evaluate the development of surfaces of right regular solids (Prisms, Pyramids, cylinder and Cone) and Isometric and Orthographic projections, using CAD tools

Desirable/Advanced Course Outcomes:

1. Construct advanced curves (cycloids, involutes, spirals) and solve tangency problems and to apply geometrical reasoning to solve engineering drawing tasks involving accuracy and precision.
2. To convert 2D projections into 3D models mentally and represent 3D objects using multi-view projections and to Visualize and interpret complex spatial relationships between components.

List of Experiments

S No	Topic / Exercises
1.	**Introduction to Engineering Graphics** Engineering Graphics, Significance, Drawing instrument used in engineering drawing and types of sheet layout and theirfolding. Types of lines used in engineering drawing, various lettering and dimensioning formats.
2.	**Scales :** Scales, Representation, Units, Representative fraction [RF]Types: a) Reducing, Enlarging & True. b) Plain, Diagonal and Vernier Scale
3.	**Conic Sections-I :** Conic section, Types, Construction of Ellipse, Parabola & Hyperbola given focus and eccentricity
4.	**Conic Sections-II :** Construction of ellipse [given major and minor axis], parabola [given base and height] &rectangular hyperbola
5.	**Engineering Curves** Introduction and Construction of Cycloid, Epicycloid along with tangent and normal, Involutes (involute of triangle,square & circle)
6.	**Introduction to AutoCAD :** Basic commands and simple drawings. Demonstrating knowledge of the theory of CADsoftware [such as : The Menu System, Toolbars (standard, object properties, Draw, Modify and Dimension), DrawingArea (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Short menus (Button Bars), The Command Line (Where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and eraseobjects]

S No	Topic / Exercises
7.	**Various methods of drawing lines and circles :** Setup of drawing page and the printer, including scale settings, setting setup of modules and drawing limits, ISO and ANSI standards for coordinate dimensioning and tolerances,producing drawing by using various coordinates methods for lines and circles, such as absolute coordinate method, relative coordinate method, polar coordinate method, direct distance method, 2-points method, 3-points & tangentmethod.
8.	**Orthographic Projection :** Principles of Orthogonal Projections-Conventions – Projections of points situated indifferent quadrants.
9.	**Projections of straight lines – I :** Line parallel to both the reference planes, line perpendicular or inclined to onereference plane.
10.	**Projections of straight lines – II :** Line inclined to both the reference planes.
11.	**Projection of Planes – I :** Perpendicular Planes.
12.	**Projection of Planes – II :** Oblique Planes.
13.	**Projection of Solid – I :** Axis parallel to HP or VP, Projection of regular solids in simple position.
14.	**Projection of Solid – II :** Projections of solids axis Inclined to one or both the reference planes.
15.	**Section of Solids-I :** When the sectional plane is parallel or perpendicular to one Reference Plane.
16.	**Section of Solids – II :** Sectional plane is inclined to one reference plane.
17.	**Development of surfaces :** Development of surfaces of Right Regular Solids - Prism, Pyramid, Cylinder and Cone.
18.	**Isometric projection-I :** Planes and Principle of isometric projection, Isometric scale, Isometric Views – Conventions lines & Planes.
19.	**Isometric projection-II :** Compound solids, isometric Projections of simple solids & compound solids
20.	**Conversion of Isometric to Orthographic views.**
21.	**Conversion of Orthographic to Isometric views.**
22.	Optional [Any one must be done] Floor plan windows, doors, and fixtures such as WC, bath, sink, shower, etc.Simple Machine Element Basic Electrical Drawing Basic Networking Drawing

NOTE:

1. At least 15 sheets must be covered.
2. Sheet number 1 to 5 (Graph sheets / drawing sheets)
3. Sheet number 6 to 22 (AutoCAD drawings)

Suggested Readings :

1. Bhatt N.D., Panchal V.M. & Ingle P.R, Engineering Drawing, Charotar Publishing House,53rd Edition, (2018).
2. Shah, M.B. &Rana B.C. Engineering Drawing and Computer Graphics, Pearson Education, 2nd Edition, (2018).
3. Agrawal B. &Agrawal C. M., Engineering Graphics, TMH Publication, 2nd Edition, (2016).
4. Narayana, K.L. & P Kannaiah, Text book on Engineering Drawing, Scitech Publishers, (2009).
5. S.N Lal, Engineering Drawing with Introduction to Auto CAD, Cengage Learning India Pvt Lid, New Delhi, (2018).
6. DhananjayAJolhe, Engineering Drawing, Tata Mcgraw Hill Education private Limited, Third print, (2009).
7. K Venkata Reddy, Text Book of Engineering drawing with AUTO CAD, BS Publications, 4th Edition, (2003).
8. (Corresponding set of) CAD Software Theory and User Manuals

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[Conferred UGC Autonomous Status for 10 Years w.e.f 2021-22 A.Y]

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ALMANAC for the Academic Year 2025-2026 [Tentative]

B.E. I & II Semesters - FIRST YEAR [LR-24]

SEMESTER-I

S.No	Description	Period	Duration
1	Orientation and briefing session for Registration of Courses	28-08-2025 to 30-08-2025	3 Days
2	Induction Programme	01-09-2025 to 06-09-2025	1 Week
3	Commencement of Class work and I-Spell of Instructions	08-09-2025 to 01-11-2025	8 Weeks
4	CIE-1 (Internal Mid Term Test)	03-11-2025 to 06-11-2025	3 Days
5	Display of CIE-1 Marks on or before	13-11-2025	--
6	Parents Teachers Meeting-1	15-11-2025	--
7	II-Spell of Instructions	07-11-2025 to 03-01-2026	8 Weeks
8	CIE-2 (Internal Mid Term Test)	05-01-2026 to 07-01-2026	3 Days
9	Display of CIE-2 Marks on or before	15-01-2026	--
10	Submission of CIE 1& 2 Average Marks to Examination Branch	17-01-2026	--
11	Preparation Holidays & Practical Semester End Examinations	08-01-2026 to 21-01-2026	2 Weeks
12	Theory Semester End Examinations	22-01-2026 to 07-02-2026	2.5 Weeks
13	Tentative period for publication of Results	16-03-2026 to 21-03-2026	--

SEMESTER-II

S.No	Description	Period	Duration
1	Orientation and briefing session for Registration of Courses	05-02-2026 to 07-02-2026	3 Days
2	Commencement of Class work and I-Spell of Instructions	09-02-2026 to 04-04-2026	8 Weeks
3	CIE-1 (Internal Mid Term Test)	06-04-2026 to 08-04-2026	3 Days
4	Display of CIE-1 Marks on or before	15-04-2026	--
5	Parents Teachers Meeting-2	18-04-2026	--
6	II-Spell of Instructions	09-04-2026 to 16-05-2026	5.5 Weeks
7	Summer Vacation	17-05-2026 to 30-05-2026	2 Weeks
8	II-Spell of Instructions contd..	01-06-2026 to 17-06-2026	2.5 Weeks
9	CIE-2 (Internal Mid Term Test)	18-06-2026 to 20-06-2026	3 Days
10	Display of CIE-2 Marks on or before	27-06-2026	--
11	Submission of CIE 1& 2 Average Marks to Examination Branch	30-06-2026	--
12	Preparation Holidays & Practical Semester End Examinations	22-06-2026 to 04-07-2026	2 Weeks
13	Theory Semester End Examinations	06-07-2026 to 18-07-2026	2 Weeks
14	Tentative period for publication of Results	24-08-2026 to 29-08-2026	--
15	***III – Semester: Commencement of Class work***	**20-07-2026**	--

Note:

1) The Academic Calendar may change subject to conditions and guidelines issued by the Ministry of Education of Govt. of Telangana / College Academic Council and Governing Body from time to time.
2) In case of any Public Holiday / unscheduled holiday on the day of Internal Mid Term Test, the Chief Controller of Examinations may reschedule the same immediately on the next working day.
3) The Classes may conduct in Offline (Class Room) / Online or Blended Mode (Offline as well as Online) following the prescribed protocols / guidelines related to special vacation if any.
4) The Heads of the Departments may review the syllabus covered on semimonthly basis and take remedial measures if required for completion of syllabus on time.

Dean-Planning & Coordination

Principal, LIET (A)

PRINCIPAL
Lords Institiute of Engineering & Tech.
(An Autonomous Institution)
Sy. No. 32,Himayath Sagar, Hyderabad-500091.T.S.

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2. Director of Evaluation
3. Controller of Examinations
4. Dean-Academics
5. PA to Principal
6. Website Coordinator, Request to Upload in the College website

DEAN PLANNING & EVALUATION
Lords Institute of Engineering & Tech. (A)
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