

ACADEMIC REGULATIONS

COURSE STRUCTURE AND DETAILED SYLLABUS

MECHANICAL ENGINEERING



For

B. Tech. Four Year Degree Course

(Applicable for the batch admitted in 2013-14)

(MR-13 Regulations)

(I Year Syllabus)

MALLA REDDY ENGINEERING COLLEGE

(Autonomous)

(Approved by AICTE & Affiliated to JNTUH)

Maisammaguda, Dhulapally (Post & Via Kompally), Secunderabad-500 100

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MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

Maisammaguda, Dhulapally (Post via. Kompally), Secunderabad - 500100

Academic Regulations for B. Tech. (Regular)

(MR13 Regulations)

(Effective for the students admitted into I year from the Academic year 2013-2014 onwards)

1. Award of B. Tech. Degree

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

- 1.1 The candidate shall pursue a course of study for not less than four academic years and not more than eight academic years.
- 1.2 **After eight academic years of course of study, the candidate is permitted to write the Examinations for two more years.**
- 1.3 The candidate shall register for 224 credits and secure 216 credits with compulsory subjects as listed in Table-1.

Table 1: Compulsory Subjects

Serial Number	Subject Particulars
1	All practical subjects
2	Industry oriented mini project
3	Comprehensive Viva-Voce
4	Seminar
5	Project work

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

3 Courses of study

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

Branch Code	Branch
1	Civil Engineering(CE)
2	Electrical and Electronics Engineering (EEE)
3	Mechanical Engineering(ME)
4	Electronics and Communication Engineering(ECE)
5	Computer Science and Engineering (CSE)
6	Information Technology(IT)
7	Mining Engineering(MNE)

4 Credits

	I Year		Semester	
	Periods / Week	Credits	Periods / Week	Credits
Theory	03	06	04	04
	02	04	--	--
Practical	03	04	03	02
Drawing	03	06	03	02
			06	04
Mini Project	--	--	--	02
Comprehensive Viva Voce	--	--	--	02
Seminar	--	--	06	02
Project	--	--	15	10

5 Distribution and Weightage of Marks

- 5.1 The performance of a student in each semester or I year shall be evaluated subject-wise for a maximum of 100 marks for a theory and 75 marks for a practical subject. In addition, industry-oriented mini-project, seminar and project work shall be evaluated for 50, 50 and 200 marks, respectively.
- 5.2 For theory subjects the distribution shall be 25 marks for Internal Evaluation and 75 marks for the End- Examination.
- 5.3 For theory subjects, during a semester there shall be 2 mid-term examinations. Each mid-term examination consists of one objective paper, one essay paper and one assignment. The objective paper and the essay paper shall be for 10 marks each with a total duration of 1 hour 20 minutes (20 minutes for objective and 60 minutes for essay paper). The Objective paper is set with 20 bits of multiple choices, filling the blanks and matching type of questions for a total of 10 marks. The essay paper shall contain 4 full questions (one from each unit) out of which, the student has to answer 2 questions, each carrying 5 marks. While the first mid-term examination shall be conducted on 1 to 2 1/2 units of the syllabus, the second mid-term examination shall be conducted on 2 1/2 to 5 units. Five (5) marks are allocated for Assignments (as specified by the subject teacher concerned). Assignment should be submitted before the conduct of the first mid-examination, and the second Assignment should be submitted before the conduct of the second mid-examination. The total marks secured by the student in each mid-term examination are evaluated for 25 marks, and the average of the two mid-term examinations shall be taken as the final marks secured by each candidate. However, in the I year, there shall be 3 midterm examinations, each for 25 marks, along with 3 assignments in a similar pattern as above (1st mid shall be from Unit-I, 2nd mid shall be 2 & 3 Units and 3rd mid shall be 4 & 5 Units) and the average marks of the examinations secured (each evaluated for a total of 25 marks) in each subject shall be considered to be final marks for the internals/sessional. If any candidate is absent for any subject of a mid-term examination, a re-exam will be conducted in the deserving cases based on the recommendations of College Academic Committee. The end examination will be conducted for 75 marks, which contains PART A and PART B. Part A for 25 marks contains 5 to 8 questions each two marks and remaining are one mark questions covering the entire syllabus. Part B is for maximum of 50 marks with 5 questions

consisting of two parts each (a) and (b) ,out of which the student has to answer either (a) or (b), not both. Each question in Part B carries 10 marks.

- 5.4 For practical subjects there shall be a continuous evaluation during a semester for 25 sessional marks and 50 end semester examination marks. Out of the 25 marks for internal evaluation, day-to-day work in the laboratory shall be evaluated for 15 marks and internal practical examination shall be evaluated for 10 marks conducted by the laboratory teacher concerned. The end semester examination shall be conducted with an external examiner and internal examiner. The external examiner shall be appointed by the principal / Chief Controller of examinations
- 5.5 For the subject having design and/or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing) and Estimation, the distribution shall be 25 marks for internal evaluation (15 marks for day-to-day work and 10 marks for internal tests) and 75 marks for end semester examination. There shall be two internal tests in a Semester and the average of the two shall be considered for the award of marks for internal tests. However, in the I year class, there shall be three tests and the average will be taken into consideration.
- 5.6 There shall be an industry-oriented Mini-Project, in collaboration with an industry of their specialization, to be taken up during the vacation after III year II Semester examination. However, the mini-project and its report shall be evaluated along with the project work in IV year II Semester. The industry oriented mini-project shall be submitted in a report form and presented before the committee. It shall be evaluated for 50 marks. The committee consists of an external examiner, head of the department, and the supervisor of the mini-project and a senior faculty member of the department. There shall be no internal marks for industry-oriented mini-project.
- 5.7 There shall be a seminar presentation in IV year II Semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding of the topic, and submit it to the department. It shall be evaluated by the departmental committee consisting of head of the department, seminar supervisor and a senior faculty member. The seminar report shall be evaluated for 50 marks. There shall be no external examination for the seminar.
- 5.8 There shall be a Comprehensive Viva-Voce in IV year II semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of Head of the Department and two Senior Faculty members of the Department. The Comprehensive Viva-Voce is intended to

assess the students understanding of the subjects he studied during the B. Tech. course of study. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.

5.9 Out of a total of 200 marks for the project work, 50 marks shall be allotted for Internal Evaluation and 150 marks for the End Semester Examination (Viva Voce). The End Semester Examination of the project work shall be conducted by the same committee as appointed for the industry-oriented mini-project. In addition, the project supervisor shall also be included in the committee. The topics for industry oriented mini project, seminar and project work shall be different from one another. The evaluation of project work shall be made at the end of the IV year. The Internal Evaluation shall be on the basis of two seminars given by each student on the topic of his project.

5.10 Laboratory marks and the sessional marks awarded by the concerned teacher are subjected to scrutiny and scaling by the Principal / Controller of examinations wherever necessary. In such cases, the sessional and laboratory marks awarded by the concerned teacher will be referred to a Committee headed by principal consisting of HOD, senior professor in that particular department. The Committee will arrive at a scaling factor and the marks will be scaled as per the scaling factor. The recommendations of the Committee are final and binding. The laboratory records and internal test papers including Lab end exam test papers shall be preserved in the exam branch for a minimum period of 6 years from the commencement of the batch, as per the University norms and shall be produced to the Committees as and when the same are asked for.

6 Attendance Requirements

- 6.1 A student shall be eligible to appear for End examinations only if he acquires a minimum of 75% of attendance in aggregate of all the subjects.
- 6.2 **Shortage of Attendance below 65% in aggregate shall in NO case be condoned.**
- 6.3 Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or I year may be granted by the College Academic Committee
- 6.4 A student will not be promoted to next semester unless he satisfies the attendance requirement of the present semester / first year as applicable

- 6.4 A student who is short of attendance in semester / I year may seek re-admission into that semester/I year as and when offered within 4 weeks from the date of the commencement of class work.
- 6.5 Students whose shortage of attendance is not condoned in any semester/I year are not eligible to write their end semester examination of that class and their registration Stands cancelled.
- 6.6 A stipulated fee shall be payable towards condonation of shortage of attendance.
- 6.7 A student will be promoted to the next semester if he satisfies the attendance requirement of the present semester/I year, as applicable, including the days of attendance in sports, games, NCC and NSS activities.
- 6.8 If any candidate fulfills the attendance requirement in the present semester or I year, he shall not be eligible for readmission into the same class.

7. Minimum Academic Requirements

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

- 7.1 A student is deemed to have satisfied the minimum academic requirements if he has **earned the credits allotted to each theory/practical design/drawing subject/project and secures not less than 35% of marks in the end semester exam, and minimum 40% of marks in the sum total of the mid-term and end semester exams.**
- 7.2 A student shall be promoted from first year to second year if he fulfills the minimum attendance requirement.
- 7.3 A student shall be promoted from II to III year only if he fulfills the academic requirement of 34 credits from
- a. One regular and one supplementary examinations of I year
 - b. One regular examination of II year I semester
- (or)
- 44 credits from
- a. one regular and two supplementary examinations of I year,
 - b. one regular and one supplementary examination of II year I semester
 - c. one regular of II year II semester.
 - d. or as suggested by affiliating University from time to time.

7.4 A student shall be **promoted from III year to IV year** only if he fulfills the academic requirements of **56 credits** from the following examinations,, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II semester.

- a. Two regular and two supplementary examinations of I year.
- b. Two regular and one supplementary examinations of II year I semester.
- c. One regular and one supplementary examinations of II year II semester.
- d. One regular examination of III year I semester

7.5 A student shall register and put up minimum attendance in all 224 credits and earn 216 credits. **Marks obtained in the best 216 credits shall be considered for the calculation of percentage of marks.**

7.6 **Students who fail to earn 216 credits as indicated in the course structure within ten academic years (8 years of study + 2 years additionally for appearing for exams only) from the year of their admission, shall forfeit their seat in B.Tech. Course and their admission stands cancelled.**

8 Course pattern

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

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

8.3 **When a student is detained for lack of credits/shortage of attendance, he may be re-admitted into the next semester/year. However, the academic regulations under which he was first admitted shall continue to be applicable to him.**

9 Award of Class

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

Class Awarded	% of marks to be secured	
First Class with Distinction	70% and above	From the aggregate marks secured from 216 Credits.
First Class	Below 70 but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks obtained in internal evaluation and end semester / I year examination shall be shown separately in the memorandum of marks.)

10 Minimum Instruction Days

The minimum instruction days for each semester/I year shall be 90/180 days.

- 11 There shall be no branch transfers after the completion of the admission process
- 12 Transfer from other colleges will be permitted, as per the rules stipulated by the affiliating University and the State government.

13 WITHHOLDING OF RESULTS

If the student has not paid the dues, if any, to the college or if any case of indiscipline is pending against him, the result of the student will be withheld and he will not be allowed into the next semester. His degree will be withheld in such cases.

14. TRANSITORY REGULATIONS

- 14.1 Discontinued, detained, or failed candidates are eligible for readmission as and when next offered.
- 14.2 After the revision of the regulations, the students of the previous batches will be given two chances for passing in their failed subjects, one supplementary and the other regular. If the students cannot clear the subjects in the given two chances, they shall be given equivalent subjects as per the revised regulations which they have to pass in order to obtain the required number of credits.
- 14.3 In case of transferred students from other Universities, the credits shall be transferred to MREC (A) as per the academic regulations and course structure of the MREC (A).

15. General

- 15.1 Wherever the words he, him, his, occur in the regulations, they include she, her, hers.
- 15.2 The academic regulation should be read as a whole for the purpose of any interpretation.
- 15.3 In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the College Academic Committee is final.
- 15.4 College may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College Academic Committee.
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- 15.5. The students seeking transfer to MREC from various other Universities / Institutions have to pass the failed subjects which are equivalent to the subjects of MREC, and also pass the subjects of MREC which the candidates have not studied at the earlier Institution on their own without the right to sessional marks. Further, though the students have passed some of the subjects at the earlier institutions, if the same subjects are prescribed in different semesters of MREC, the candidates have to study those subjects in MREC in spite of the fact that those subjects are repeated.

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
Maisammaguda, Dhulapally (Post via. Kompally), Secunderabad - 500100

ACADEMIC REGULATIONS FOR B. TECH

(LATERAL ENTRY SCHEME)

(Effective for the students admitted into II year from the Academic year 2014-2015 onwards)

1 Eligibility for award of B. Tech. Degree (LES)

I. The LES candidates shall pursue a course of study for not less than three academic years and not more than six academic years.

II. They shall be permitted to write the examinations for two more years after six academic years of course work.

2. The candidate shall register for 168 credits and secure 160 credits from II to IV year B.Tech. Program (LES) for the award of B.Tech. Degree with compulsory subjects as listed in Table-1.

Serial Number	Subject Particulars
1	All practical subjects
2	Industry oriented mini project
3	Comprehensive Viva-Voce
4	Seminar
5	Project work

Table 1: Compulsory Subjects

3. The students, who fail to fulfill the requirement for the award of the degree in 8 consecutive academic years (6 years of study + 2 years additionally for appearing exams only) from the year of admission, shall forfeit their seats.
4. The attendance regulations of B. Tech. (Regular) shall be applicable to B.Tech. (LES).
5. **Promotion Rule**

A student shall be promoted from second year to third year if he fulfills the minimum attendance requirement.

A student shall be promoted from III year to IV year only if he fulfills the academic requirements of **34** credits from the following examinations, whether or not the candidate takes the examinations

- a. Two regular and one supplementary examinations of II year I semester.
- b. One regular and one supplementary examinations of II year II semester.
- c. One regular examination of III year I semester

6. Award of Class

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

Class Awarded	% of marks to be secured	
First Class with Distinction	70% and above	From the aggregate marks secured from 160 Credits from II Year to IV Year.
First Class	Below 70 but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks obtained in the internal evaluation and the end semester examination shall be shown separately in the marks memorandum.)

7. All the other regulations as applicable to **B. Tech. 4-year degree course (Regular)** will hold good for **B. Tech. (Lateral Entry Scheme)**.

MALPRACTICES RULES

DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper conduct	Punishment
	<i>If the candidate:</i>	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with correlated to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination).	Expulsion from the examination hall and cancellation of the performance in that subject only.
b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.

2	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.
3	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practical's and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidates also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.

<p>4</p>	<p>Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.</p>	<p>Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.</p>
<p>5</p>	<p>Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.</p>	<p>Cancellation of the performance in that subject.</p>

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

<p>9</p>	<p>If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.</p>	<p>Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.</p>
<p>10</p>	<p>Comes in a drunken condition to the examination hall.</p>	<p>Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.</p>
<p>11</p>	<p>Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.</p>	<p>Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations</p>
<p>12</p>	<p>If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action toward suitable punishment.</p>	

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

B. TECH. MECHANICAL ENGINEERING

I YEAR COURSE STRUCTURE

Code	Subject	L	T/P/D	C
MR13U0E1	English	3	-	4
MR13U0M1	Mathematics-I	3	-	6
MR13U301	Engineering Mechanics	3	-	6
MR13U0P1	Engineering Physics	3	--	6
MR13U0C1	Engineering Chemistry	3	--	6
MR13U501	Computer Programming & Data Structures	3	--	6
MR13U302	Engineering Drawing	3	3	6
MR13U502	Computer Programming Lab	--	3	4
MR13U0PC	Engineering Physics & Engineering Chemistry Lab	--	3	4
MR13U0E2	English Language Communication Skills Lab	--	3	4
MR13U303	Engineering Workshop/ IT Workshop	--	3	4
	Total	21	15	56

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

B. TECH. MECHANICAL ENGINEERING

II Year

COURSE STRUCTURE

I Semester

Code	Subject	L	T/P/D	C
MR13U304	Machine Drawing	-	6	4
MR13U0M5	Probability and Statistics	4	--	4
MR13U243	Basic Electrical and Electronics Engineering	4	--	4
MR13U305	Mechanics of Solids	4	1	4
MR13U306	Thermodynamics	4	1	4
MR13U307	Metallurgy and Materials Science	4	1	4
MR13U244	Electrical and Electronics Engineering Lab	-	3	2
MR13U308	Metallurgy and Mechanics of Solids Lab	-	3	2
	Total	20	15	28

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

B. TECH. MECHANICAL ENGINEERING

II Year

COURSE STRUCTURE

II Semester

Code	Subject	L	T/P/D	C
MR13U309	Production Technology	4	1	4
MR13U310	Kinematics of Machinery	4	1	4
MR13U311	Thermal Engineering	4	1	4
MR13U312	Mechanics of Fluids and Hydraulic Machines	4	1	4
MR13U154	Environmental Studies	4	--	4
MR13U0M6	Mathematics-II	4	1	4
MR13U313	Production Technology Lab	-	3	2
MR13U314	Mechanics of Fluids and Hydraulic Machines Lab	-	3	2
	Total	24	11	28

MALLA REDDY ENGINEERING COLLEGE

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B. TECH. MECHANICAL ENGINEERING

III Year

COURSE STRUCTURE

I Semester

Code	Subject	L	T/P/D	C
MR13UB01	Managerial Economics and Financial Analysis	4	-	4
MR13U315	Metrology & Surface Engineering	4	1	4
MR13U316	Engineering Metrology	4	1	4
MR13U317	Machine Tools	4	1	4
MR13U318	Design of Machine Members – I	4	1	4
MR13U319	Thermal Engineering-II	4	1	4
MR13U320	Machine Tools & Metrology Lab	-	3	2
MR13U321	Thermal Engineering Lab	-	3	2
	Total	24	11	28

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

B. TECH. MECHANICAL ENGINEERING

III Year

COURSE STRUCTURE

II Semester

Code	Subject	L	T/P/D	C
MR13U322	Automobile Engineering	4	-	4
MR13U323	Finite Element Methods	4	1	4
MR13U324	Refrigeration and Air Conditioning	4	1	4
MR13U325	Design of Machine Members – II	4	1	4
MR13U326	Heat Transfer	4	1	4
	Elective:			
MR13U155	1. Disaster Management	4	1	4
MR13UB04	2. Intellectual Property rights			
MR13UB05	3. Human Values and Professional Ethics			
MR13U327	Heat Transfer Lab	-	3	2
MR13U0E3	Advanced English Communication Skills Lab	-	3	2
	Total	24	11	28

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

B. TECH. MECHANICAL ENGINEERING

IV Year

COURSE STRUCTURE

I Semester

Code	Subject	L	T/P/ D	C
MR13U328	Operations Research	4	1	4
MR13U329	Power Plant Engineering	4	1	4
MR13U330	CAD/CAM	4	1	4
MR13U331	Instrumentation and Control Systems	4	-	4
	Elective-I:	4	1	4
MR13U332	Robotics			
MR13U333	Mechanical Vibrations			
MR13U334	Mechatronics			
MR13U335	Composite Materials			
MR13UB03	Industrial Management			
	Elective-II:	4	1	4
MR13U336	Unconventional Machining Process,			
MR13U337	CNC Technology,			
MR13U338	Automation in Manufacturing,			
MR13U339	Design for Manufacturing			
MR13U340	Nano Technology			
MR13U341	CAD/CAM Lab	--	3	2
MR13U342	Production Drawing Practice & Instrumentation Lab	--	3	2
	Total	24	11	28

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

B. TECH. MECHANICAL ENGINEERING

IV Year

COURSE STRUCTURE

II Semester

Code	Subject	L	T/P/D	C
MR13U343	Production Planning & Control	4	1	4
MR13U547	Elective-III: Artificial Neural Networks,			
MR13U344	Total Quality Management	4	1	4
MR13U345	Maintenance & Safety Engineering,			
MR13U346	Plant Layout & Material Handling			
MR13U347	Elective-IV: Renewable Energy sources,			
MR13U348	Jet Propulsion & Rocket Engineering ,	4	-	4
MR13U349	Computational Fluid Dynamics,			
MR13U350	Gas Dynamics			
MR13U351	Seminar	--	6	2
MR13U352	Industry Oriented Mini Project	--	--	2
MR13U353	Project Work	--	15	10
MR13U354	Comprehensive Viva	--	--	2
	Total	12	23	28

Note: All End Examinations (Theory and Practical) are of three hours duration.

T – Theory P – Practical C – Credits

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)

L T/P/D C

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ENGLISH
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

1. INTRODUCTION:

There is an increasing concern over the English language competency of Engineering students based on their academic and professional performance. The transformation and the mistreatment of language in the social networking over the last decade have greatly affected the language skills of the students. In keeping with the language skill deficiencies, the present syllabus is designed to hone not only the traditional LSRW skills but also their analytical skills that enable to think too in English. This effective approach to develop English Language competency among the Engineering students aims to kindle the thinking skills to communicate effectively. The classroom activities based on the textbook may be used to build confidence among the students as they become active participants and teachers taking the role of a facilitator.

In the English classes, the focus should be on the skills of reading, writing for this the teachers should use the text prescribed for detailed study. For example, the students should be encouraged to read the texts/selected paragraphs silently. The teachers can ask comprehension questions to stimulate discussion and based on the discussions students can be made to write short paragraphs/essays etc. the focus is on honing of reading skills, writing skills, imparting grammar and vocabulary development. The text for non-detailed study is for extensive reading/reading for pleasure. Hence, it is suggested that they read it on their own the topics selected for discussion in the class. The time should be utilized for working out the exercises given after each section, as also for supplementing the exercises with authentic materials of a similar kind for example, from newspaper articles, advertisements, promotional material etc.. However, the stress in this syllabus is on skill development, fostering ideas and practice of language skills.

2. OBJECTIVES:

- a. to facilitate for the improvement of the language proficiency of the students in English with emphasis on RW skills, grammar and vocabulary.
- b. To equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus.
- c. To develop the study skills and communication skills in formal and informal situations.

LEARNING OUTCOMES:

1. Usage of English Language, written and spoken.
2. Enrichment of comprehension and fluency
3. Gaining confidence in using language for writing in real life situations.

SYLLABUS:

Reading Skills:

Objectives

1. To develop an awareness in the students about the significance of silent reading and comprehension.
2. To develop the ability of students to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.

- Skimming the text
- Understanding the gist of an argument
- Identifying the topic sentence
- Inferring lexical and contextual meaning
- Understanding discourse features
- Scanning
- Recognizing coherence/sequencing of sentences

NOTE : The students will be trained in reading skills using the prescribed text for detailed study. They will be examined in reading and answering questions using 'unseen' passages which may be taken from authentic texts, such as magazines/newspaper articles.

Writing Skills :

Objectives

1. To develop an awareness in the students about writing as an exact and formal skill
2. To equip them with the components of different forms of writing, beginning with the lower order ones.

- Writing sentences
- Use of appropriate vocabulary
- Paragraph writing
- Coherence and cohesiveness
- Narration / description
- Note Making
- Formal and informal letter writing

TEXTBOOKS PRESCRIBED:

In order to improve the proficiency of the student in the acquisition of the four skills mentioned above, the following texts and course content, divided into Five Units, are prescribe.

For Detailed study: First Textbook: "Skills Annexe -Functional English for Success", Published by Orient Black Swan, Hyderabad

For Non-detailed study

Second text book "Epitome of Wisdom", Published by Maruthi Publications, Guntur

For Grammar practice

3. A Work Book on English Grammar and Composition published by Tata Mac Graw –Hill , New Delhi 2012.

The course content and study material is divided into Five Units.

Unit –I:

1. Chapter entitled 'Wit and Humour' from 'Skills Annexe' -Functional English for Success, Published by Orient Black Swan, Hyderabad

2. Chapter entitled 'Mokshagundam Visvesvaraya' from "Epitome of Wisdom", Published by Maruthi Publications, Hyderabad.

G- articles, prepositions, tense and aspect, concord, voice, degrees of comparison, question tags.

V- parts of speech, formation of words.

Unit –II

1. Chapter entitled "Cyber Age" from "Skills Annexe -Functional English for Success" Published by Orient Black Swan, Hyderabad.

2 Chapter entitled 'Three Days To See' from "Epitome of Wisdom", Published by Maruthi Publications, Hyderabad.

G- types of sentences, transformation of sentences, speech.

V- homonyms, homophones, synonyms and antonyms

Unit –III

1. Chapter entitled 'Risk Management' from "Skills Annexe -Functional English for Success" Published by Orient Black Swan, Hyderabad

2. Chapter entitled 'Leela's Friend' by R.K. Narayan from "Epitome of Wisdom", Published by Maruthi Publications, Hyderabad

G – conditionals, common errors.

V – one word substitutions, words often confused, idioms and phrases and phrasal verbs,

Unit –IV

1. Chapter entitled 'Human Values and Professional Ethics' from "Skills Annexe -Functional English for Success" Published by Orient Black Swan, Hyderabad

2. Chapter entitled 'The Last Leaf' from "Epitome of Wisdom", Published by Maruthi Publications, Hyderabad

R -Reading – introduction to reading skills, types of reading, reading for themes and gists.

W- characteristics of effective writing, writing paragraphs, Application writing with resume writing, and summarizing

Unit –V

1. Chapter entitled 'Sports and Health' from "Skills Annexe -Functional English for Success" Published by Orient Black Swan, Hyderabad

2. Chapter entitled 'The Convocation Speech' by N.R. Narayanmurthy' from "Epitome of Wisdom", Published by Maruthi Publications, Hyderabad

R- reading for details, note-making, reading for specific purposes, critical reading

W- report writing, types of reports, circular, notice and memo writing.

* Exercises from the texts not prescribed shall also be used for classroom tasks.

REFERENCES :

1. Contemporary English Grammar Structures and Composition by David Green, MacMillan Publishers, New Delhi. 2010.

2. Innovate with English: A Course in English for Engineering Students, edited by T Samson, Foundation Books.

3. English Grammar Practice, Raj N Bakshi, Orient Longman.

4. Technical Communication by Daniel Riordan. 2011. Cengage Publications. New Delhi.

5. Effective English, edited by E Suresh Kumar, A RamaKrishna Rao, P Sreehari, Published by Pearson

6. Handbook of English Grammar & Usage, Mark Lester and Larry Beason, Tata Mc Graw –Hill.

7. Spoken English, R.K. Bansal & JB Harrison, Orient Longman.

8. Technical Communication, Meenakshi Raman, Oxford University Press

9. Objective English Edgar Thorpe & Showick Thorpe, Pearson Education

10. Grammar Games, Renuvolcuri Mario, Cambridge University Press.

11. Murphy's English Grammar with CD, Murphy, Cambridge University Press.

12. Everyday Dialogues in English, Robert J. Dixon, Prentice Hall India Pvt Ltd.,

13. ABC of Common Errors Nigel D Turton, Mac Millan Publishers.

14. Basic Vocabulary Edgar Thorpe & Showick Thorpe, Pearson Education

15. Effective Technical Communication, M Ashraf Rizvi, Tata Mc Graw –Hill.

16. An Interactive Grammar of Modern English, Shivendra K. Verma and Hemlatha Nagarajan , Frank Bros & CO

17. A Communicative Grammar of English, Geoffrey Leech, Jan Svartvik, Pearson Education

18. Enrich your English, Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,
19. A Grammar Book for You And I, C. Edward Good, MacMillan Publishers

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**MALLA REDDY ENGINEERING COLLEGE
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MATHEMATICS – I

(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

UNIT-I

Theory of Matrices: Real matrices – Symmetric, skew – symmetric, orthogonal. Complex matrices: Hermitian, Skew- Hermitian and Unitary Matrices. Idempotent matrix, Elementary row and column transformations- Elementary matrix, Finding rank of a matrix by reducing to Echelon and normal forms. Finding the inverse of a non-singular square matrix using row/ column transformations (Gauss- Jordan method). Consistency of system of linear equations (homogeneous and non- homogeneous) using the rank of a matrix. Solving $m \times n$ and $n \times n$ linear system of equations by Gauss elimination.

Cayley-Hamilton Theorem (without proof) – Verification. Finding inverse of a matrix and powers of a matrix by Cayley-Hamilton theorem, Linear dependence and Independence of Vectors. Linear Transformation – Orthogonal Transformation. Eigen values and eigen vectors of a matrix. Properties of eigen values and eigen vectors of real and complex matrices. Finding linearly independent eigen vectors of a matrix when the eigen values of the matrix are repeated.

Diagonalization of matrix – Quadratic forms up to three variables. Rank – Positive definite, negative definite, semi definite, index, signature of quadratic forms. Reduction of a quadratic form to canonical form.

UNIT – II

Differential calculus methods. Rolle's Mean value Theorem – Lagrange's Mean Value Theorem – Cauchy's mean value Theorem – (all theorems without proof but with geometrical interpretations), verification of the Theorems and testing the applicability of these theorem to the given function.

Functions of several variables: Functional dependence- Jacobian- Maxima and Minima of functions of two variables without constraints and with constraints-Method of Lagrange multipliers.

UNIT – III

Improper integrals, Multiple integrals & applications: Gamma and Beta Functions –Relation between them, their properties – evaluation of improper integrals using Gamma / Beta functions

Multiple integrals – double and triple integrals – change of order of integration- change of variables (polar, cylindrical and spherical) Finding the area of a region using double integrals and volume of a region using triple integrals.

UNIT – IV

Differential equations and applications Overview of differential equations- exact, linear and Bernoulli (NOT TO BE EXAMINED). Applications of first order differential equations – Newton’s Law of cooling, Law of natural growth and decay, orthogonal trajectories. Linear differential equations of second and higher order with constant coefficients, Non-homogeneous term of the type $f(x) = e^{ax}$, $\sin ax$, $\cos ax$, and x^n , $e^{ax} V(x)$, $xV(x)$, method of variation of parameters. Applications to bending of beams, Electrical circuits and simple harmonic motion.

UNIT – V

Laplace transform and its applications to Ordinary differential equations Definition of Integral transform, Domain of the function and Kernel for the Laplace transforms. Existence of Laplace transform. Laplace transform of standard functions, first shifting Theorem, Laplace transform of functions when they are multiplied or divided by “t”. Laplace transforms of derivatives and integrals of functions. – Unit step function – second shifting theorem – Dirac’s delta function, Periodic function – Inverse Laplace transform by Partial fractions(Heaviside method) Inverse Laplace transforms of functions when they are multiplied or divided by “s”, Inverse Laplace Transforms of derivatives and integrals of functions, Convolution theorem – Solving ordinary differential equations by Laplace transforms.

TEXT BOOKS:

1. Advanced engineering Mathematics by Kreyszig, John Wiley & Sons Publishers.
2. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.

REFERENCES:

1. Advanced Engineering Mathematics by R.K. Jain & S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.
2. Engineering Mathematics – I by T.K. V. Iyengar, B. Krishna Gandhi & Others, S. Chand.
3. Engineering Mathematics – I by D. S. Chandrasekhar, Priso Books Pvt. Ltd.
4. Engineering Mathematics – I by G. Shanker Rao & Others I.K. International Publications.
5. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press Taylor & Francis Group.
6. Mathematics for Engineers and Scientists, Alan Jeffrey, 6th Edi, 2013, Chapman & Hall/ CRC
7. Advanced Engineering Mathematics, Michael Greenberg, Second Edition. Pearson Education.

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ENGINEERING MECHANICS
(Common for ME,CE AND MINING)

UNIT – I

Introduction to Engineering. Mechanics – Basic Concepts. Systems of Forces: Coplanar Concurrent Forces – Components in Space – Resultant – Moment of Force and its Application – Couples and Resultant of Force Systems.

Equilibrium of Systems of Forces: Free Body Diagrams, Equations of Equilibrium of Coplanar Systems and Spatial Systems for concurrent forces. Lamis Theorem, Graphical method for the equilibrium of coplanar forces, Converse of the law of Triangle of forces, converse of the law of polygon of forces condition of equilibrium.

UNIT – II

Centroid : Centroids of simple figures (from basic principles) – Centroids of Composite Figures
Centre of Gravity: Centre of gravity of simple body (from basic principles), centre of gravity of composite bodies, pappus theorem.

Area moment of Inertia : Definition – Polar Moment of Inertia, Transfer Theorem, Moments of Inertia of Composite Figures, Products of Inertia, Transfer Formula for Product of Inertia.

Mass Moment of Inertia: Moment of Inertia of Masses, Transfer Formula for Mass Moments of Inertia, mass moment of inertia of composite bodies.

UNIT – III

Friction: Introduction to friction and its Characteristics, Types of Friction, laws of solid friction, Applications of friction-Body on horizontal, Body on a rough inclined plane, Ladder, Wedge and Screw.

UNIT – IV

Kinematics: Rectilinear and Curvilinear motions – Velocity and Acceleration – Motion of Rigid Body – Projectile. Types and their Analysis in Planar Motion.

Kinetics: Analysis as a Particle and Analysis as a Rigid Body in Translation – Central Force Motion – Equations of Plane Motion – Fixed Axis Rotation – Rolling Bodies.

UNIT – V

Principle of virtual work: Equilibrium of ideal systems, efficiency of simple machines, stable and unstable Equilibriums

Mechanical Vibrations: Definitions, Concepts. SHM -free vibrations, simple and compound pendulums.

TEXT BOOKS :

1. Engineering. Mechanics / Timoshenko & Young.
2. Engineering Mechanics / Ferdinand . L. Singer / Harper – Collins

REFERENCES :

1. Engineering. Mechanics / S.S. Bhavikatti & J.G. Rajasekharappa
2. Engineering Mechanics / K. Vijaya Kumar Reddy / J. Suresh Kumar
3. Engineering. Mechanics / Irving. H. Shames Prentice – Hall.
4. Engineering. Mechanics Umesh Regl / Tayal.
5. Engineering. Mechanics / R.V. Kulkarni & R.D. Askhevkar
6. Engineering. Mechanics /R.S. Khurmi / S.Chand.
7. Engineering. Mechanics / K L Kumar / Tata McGraw Hill
8. Text Book of Engineering Mechanics/ Y.V.B. Rao, Academic Publishers.

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ENGINEERING PHYSICS
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

1. Crystallography and Crystal Structures:

Classification of materials – Crystalline, Amorphous, Poly crystalline; Lattice point, Space Lattice, Basis, Crystal structure, Unit Cell, Crystallographic axes, Lattice Parameters; Crystal Systems – Bravais Lattices; Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC and Diamond structures; Crystal Planes and Directions - Miller Indices; Inter Planar Spacing of Cubic System; Basic Principles of X – ray diffraction - Bragg's Law; Laue and Powder methods.

2. Defects in Crystals:

Defects and their classification; Point Defects - Vacancies, Substitutional, Interstitial defects; Qualitative discussion of Schottky and Frenkel defects; Qualitative treatment of line defects (Edge and Screw dislocations); Burger's Vector.

3. Oscillations and Acoustics:

Introduction; Differential equation for S.H.M. and its solution; velocity and acceleration; expression for period and frequency; graphs of displacement, velocity and acceleration; energy of the simple oscillator; Damped oscillations – under damping, critical damping and over damping; Qualitative treatment of Forced vibrations; sharpness of resonance, Qualitative treatment of electrical oscillator circuit containing inductor, capacitor and resistor.

Basic requirements of acoustically good Hall; Reverberation; Sabine's formula for Reverberation Time (Qualitative Treatment); Factors Affecting the Architectural Acoustics and their Remedies;

Unit – II

4. Principles of Quantum Mechanics:

Waves and Particles - de Broglie's concept of Matter Waves; Davisson and Germer's Experiment; Heisenberg's Uncertainty Principle; Schrödinger's Time Independent Wave

Equation - Physical Significance of the Wave Function; Energy of a particle in a one dimensional infinite potential well.

5. Band Theory of Solids:

Electron in a periodic Potential (Bloch Theorem), Kronig-Penny Model (Qualitative Treatment), Origin of energy Band formation in solids, Classification of materials into Conductors, Semi Conductors & Insulators, Concept of effective mass of an electron.

6. Semiconductor Physics:

Charge carrier concentration in Intrinsic semiconductors; Qualitative treatment of charge carrier concentration in Extrinsic semiconductors; Qualitative treatment of Fermi Level in Intrinsic and Extrinsic Semiconductors; Direct & Indirect Band Gap Semiconductors; Hall Effect.

UNIT-III

7. Dielectric Properties:

Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector; Electronic, Ionic and Orientation Polarizations; Calculation of electronic and ionic Polarizabilities; Qualitative treatment of Internal Field in dielectrics; Clausius - Mossotti Equation; Piezo-electricity and Ferro- electricity.

8. Nanotechnology:

Origin of Nanotechnology; Nano Scale; Surface to Volume Ratio, Quantum Confinement; Bottom-up Fabrication: Sol-gel; Top-down Fabrication: Chemical Vapour Deposition; Characterization of nano materials by TEM.

UNIT-IV

9. Magnetic Properties:

Permeability, Field Intensity, Magnetic Field Induction, Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment - Bohr Magneton; Classification of Dia, Para and Ferro magnetic materials on the basis of magnetic moment; Hysteresis Curve and its explanation based on Domain theory; Soft and Hard Ferro magnetic Materials; Properties of Anti-ferro and Ferri Magnetic Materials; Applications of Ferri magnetic materials;

Concept of Perfect Diamagnetism; Meissner effect - Magnetic levitation; Type I and II Superconductors; Applications of Superconductors.

10. LASER:

Characteristics of LASER; Absorption, Spontaneous and Stimulated transitions; Einstein's Coefficients and Relations between them; Population Inversion; Pumping – Optical and Electrical; Meta-stable State; Three and Four level pumping schemes; Ruby LASER; Helium-Neon LASER; Semiconductor Diode LASER; Applications of LASER – Data storage, Medical, Scientific and industrial.

UNIT-V

11. Fiber Optics:

Principle of Optical Fiber; Acceptance angle and Acceptance cone, Numerical Aperture; Step and Graded index Optical Fibers and their Refractive Index profiles; Attenuation in Optical Fibers, Application of Optical Fibers – Medical, Level sensor and Communication system.

12. Optics:

Interference: Introduction – Young’s double slit experiment – Optical path difference and Fringe width – Interference in thin films (Reflected light) Cosine law – Newton’s rings experiment (Condition for bright and dark rings – Determination of wavelength of light).

Diffraction: Fraunhofer diffraction due to single slit (Qualitative treatment) – Theory of plane transmission diffraction grating.

Theory of Double refraction

TEXT BOOKS:

1. Modern Engineering Physics by K. Vijaya Kumar, S. Chandralingam: S. Chand & Co.Ltd
2. Engineering Physics – P.K.Palanisamy - SciTech Publications Pvt. Ltd., 5th Print 2008.
3. Applied Physics – S.O. Pillai & Sivakami-New Age International (P) Ltd., 2nd Edition 2008.
4. A Text book of Optics by N Subrahmanyam, Brijlal and M N Avadhanulu, S Chand & Co,
5. Unified Physics Vol – I by S L Gupta and Sanjeev Gupta JNPN Publications.

REFERENCES:

1. Solid State Physics – M. Arumugam (Anuradha Publications).
2. A Text Book of Engg Physics – M. N. Avadhanulu & P. G. Khsirsagar– S. Chand & Co. (for acoustics).
3. Nanotechnology – M.Ratner & D. Ratner (Pearson Ed.).
4. Introduction to Solid State Physics – C. Kittel (Wiley Eastern).
5. Solid State Physics – A.J. Dekker (Macmillan).
6. Applied Physics – T. Bhima Shankaram & G. Prasad (B.S. Publications, Third Edition 2008).
7. A text book of Engineering Physics – S.P. Basvaraju – Subhas store
8. Electricity and magnetism by Edward Purcell – Berkeley series vol 2
9. Physics Vol 2 – Resnick, Halliday & Krane – Fifth edition, Wiley Student edition.
10. Physics – B.Sc. First Year by Dr B Sanjeeva Rao, et al, Telugu Akademi

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ENGINEERING CHEMISTRY
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

UNIT I:

Electro Chemical Cells: EMF: Galvanic Cells, types of Electrodes – (Calomel, Quinhydrone and glass electrodes); Nernst equation and its applications ; concept of concentration cells, electro chemical series, Potentiometric titrations, determination of p^H using glass electrode-Numerical problems.

Batteries: Primary cells (dry cells) and secondary cells (lead-Acid cell, Ni-Cd cell). Applications of batteries. Fuel cells – Hydrogen – Oxygen fuel cell; Advantages and Applications.

Corrosion and its control: Causes and effects of corrosion; Theories of corrosion – Chemical & Electrochemical corrosion; Types of corrosion (Galvanic, Water line, Pitting and Inter granular); Factors affecting rate of corrosion – Nature of metal and Nature of Environment – Corrosion control methods – Cathodic protection (sacrificial anodic and impressed current). Surface coatings: Metallic coatings & methods of application of metallic coatings - hot dipping (galvanization & tinning), Cementation, cladding, electroplating (copper plating) Electro less plating (Ni plating).

Organic coatings: Paints - constituents and their functions.

UNIT II: Water and its Treatment:

Hardness of Water: Causes of hardness, expression of hardness – units – types of hardness, estimation of temporary & permanent hardness of water by EDTA method - numerical problems. Boiler troubles – Scale & sludges, Priming and foaming, caustic embrittlement and boiler corrosion; Treatment of boiler feed water – Internal treatment (Phosphate, Colloidal and

calgon conditioning) – External treatment – Lime Soda process, Zeolite process and ion exchange process. Numerical Problems.

Potable Water- Its Specifications – Steps involved in treatment of potable water – Disinfection of water by chlorination and ozonisation. Reverse osmosis & its significance.

UNIT III: Engineering Materials:

Polymers: Types of Polymerization (Chain & Step growth).

Plastics: Thermoplastic & Thermo setting resins, Compounding & fabrication of plastics (Compression and injection moulding). Preparation, properties, engineering applications of PVC, Teflon and Bakelite.

Fibers- Characteristics of fibers – preparation, properties and uses of Nylon – 6,6 and Dacron – Fiber Reinforced Plastics (FRP) – applications.

Rubbers – Natural rubber and its vulcanization. Elastomers – Buna-s, Butyl rubber and Thiokol rubber.

Conducting polymers: Polyacetylene, Polyaniline, Mechanism of Conduction, doping; applications of Conducting polymers.

Bio-degradable Polymers- preparation and Applications of Poly vinyl acetate and Poly lactic acid
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Material Chemistry:

Lubricants: Classification with examples- Characteristics of a good lubricant & mechanism of lubrication (thick film, thin film and extreme pressure) properties of lubricants: viscosity, Cloud point, flash and fire points.

Refractories: Classification, characteristics of a good refractory and applications.

Nanomaterials: Introduction, preparation by sol-gel & chemical vapor deposition methods. Applications of nano materials.

Unit – IV : Fuels & Combustion

Fuels – Classification – solid fuels: coal – analysis of coal - proximate and ultimate analysis and their significance. Liquid fuels – petroleum and its refining – cracking – types – fixed bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol, Bergius and Fischer-Tropsch's process: Gaseous fuels - constituents, characteristics and applications of natural gas, LPG and CNG. Analysis of flue gas by Orsat's apparatus – Numerical Problems.

Combustion – Definition, Calorific value of fuel – HCV, LCV; Determination of calorific value by Junker's gas calorimeter – theoretical calculation of Calorific value by Dulong's formula – Numerical problems on combustion.

UNIT V: Phase Rule & Surface Chemistry:

Phase Rule: Definition of terms: Phase, component, degree of freedom, phase rule equation.
Phase diagrams –one component system- water system. Two component system Lead- Silver System.

Alloys: Introduction, Classification and Properties.

Surface Chemistry:

Adsorption – Types of Adsorption, Isotherms – Freundlich and Langmuir adsorption isotherm, applications of adsorption;

Colloids: Classification of Colloids; Electrical & optical properties, micelles, applications of colloids in industry.

TEXT BOOKS:

1. Engineering Chemistry by R.P. Mani, K.N. Mishra, B. Rama Devi /CENGAGE learning.
2. Engineering Chemistry by P.C Jain & Monica Jain, Dhanpatrai Publishing Company (2008).

REFERENCE BOOKS

1. Engineering Chemistry by B. Siva Shankar Mc.Graw Hill Publishing Company Limited, New Delhi (2006)
2. Engineering Chemistry J.C. Kuriacase & J. Rajaram, Tata McGraw Hills Publishing Company Limited, New Delhi (2004).
3. Text Book of Engineering Chemistry by S.S. Dara & Mukkati S. Chand & Co Publishers, New Delhi(2006)
4. Chemistry of Engineering Materials by CV Agarwal, C.P Murthy, A.Naidu, BS Publications.

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**MALLA REDDY ENGINEERING COLLEGE
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3-/-/ 6

**COMPUTER PROGRAMMING
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)**

Objectives:

- To understand the various steps in Program development.
- To understand the basic concepts in C Programming Language.
- To learn how to write modular and readable C Programs
- To learn to write programs (using structured programming approach) in C to solve problems.
- To introduce the students to basic data structures such as lists, stacks and queues.
- To make the student understand simple sorting and searching methods.

Outcomes:

UNIT - I

Introduction to Computers – Computer Systems, Computing Environments, Computer Languages, Creating and running programs, Program Development. Introduction to the C Language – Background, C Programs, Identifiers, Types, Variables, Constants, Input / Output, Operators(Arithmetic, relational, logical, bitwise etc.), Expressions, Precedence and Associativity, Expression Evaluation, Type conversions, Statements- Selection Statements(making decisions) – if and switch statements, Repetition statements (loops)-while, for, do-while statements, Loop examples, other statements related to looping –break, continue, goto, Simple C Program examples.

UNIT - II

Functions-Designing Structured Programs, Functions, user defined functions, inter function communication, standard functions, Scope, Storage classes-auto, register, static, extern, scope rules, type qualifiers, recursion- recursive functions, Limitations of recursion, example C programs, Preprocessor commands. Arrays – Concepts, using arrays in C, inter function communication, array applications, two – dimensional arrays, multidimensional arrays, C program examples.

UNIT - III

Pointers – Introduction (Basic Concepts), Pointers for inter function communication, pointers to pointers, compatibility, Pointer Applications-Arrays and Pointers, Pointer Arithmetic and arrays, Passing an array to a function, memory allocation functions, array of pointers, programming applications, pointers to void, pointers to functions. Strings – Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions, string /data conversion, C program examples.

UNIT – IV

Enumerated, Structure ,and Union Types– The Type Definition(typedef), Enumerated types, Structures – Declaration, initialization, accessing structures, operations on structures, Complex structures, structures and functions, Passing structures through pointers, self-referential structures, unions, bit fields, C programming examples, command –line arguments, Input and Output – Concept of a file, streams, text files and binary files, Differences between text and binary files, State of a file, Opening and Closing files, file input / output functions (standard library input / output functions for files), file status functions (error handling), Positioning functions, C program examples.

UNIT – V

Searching and Sorting – Sorting- selection sort, bubble sort, Searching-linear and binary search methods. Lists- Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks- Push and Pop Operations, Queues- Enqueue and Dequeue operations.

TEXT BOOKS:

1. Computer Science: A Structured Programming Approach Using C, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Programming in C. P. Dey and M Ghosh , Oxford University Press.

REFERENCE BOOKS:

1. C& Data structures – P. Padmanabham, Third Edition, B.S. Publications.
2. C for All, S. Thamarai Selvi, R.Murugesan, Anuradha Publications.
3. Problem Solving and Program Design in C, J.R. Hanly and E.B. Koffman, 7th Edition, Pearson education.
4. Programming in C, Ajay Mittal, Pearson.
5. Programming with C, B.Gottfried, 3rd edition, Schaum's outlines, TMH.
6. Problem solving with C, M.T.Somasekhara, PHI
7. Programming with C, R.S.Bickar, Universities Press.
8. Computer Programming & Data Structures, E.Balagurusamy, 4th edition, TMH.
9. Programming in C – Stephen G. Kochan, III Edition, Pearson Education.
10. The C Programming Language, B.W. Kernighan and Dennis M.Ritchie, PHI.

11. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press.

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Code: MR13U302

MALLA REDDY ENGINEERING COLLEGE
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ENGINEERING DRAWING
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

UNIT – I

INTRODUCTION TO ENGINEERING DRAWING: Principles of Engineering Drawing/Graphics – Various Drawing Instruments – Conventions in Drawing – Lettering practice – BIS Conventions.

Curves: Constructions of Curves used in Engineering Practice:

- Conic Sections including the Rectangular Hyperbola – General method only.
- Cycloid, Epicycloid and Hypocycloid
- Involute.

Scales: Construction of different types of Scales, Plain, Diagonal, Vernier scale.

UNIT – II

ORTHOGRAPHIC PROJECTIONS IN FIRST ANGLE

PROJECTION: Principles of Orthographic Projections – Conventions – First and Third Angle projections.

Projections of Points. including Points in all four quadrants.

Projections of Lines - Parallel, perpendicular, inclined to one plan and inclined to both planes. True length and true angle of a line. Traces of a line.

PROJECTIONS OF PLANES: Plane parallel, perpendicular and inclined to one reference plane.
Plane inclined to both the reference planes.

UNIT – III

PROJECTIONS OF SOLIDS: Projections of regular solids, cube, prisms, pyramids, tetrahedron, cylinder and cone, axis inclined to both planes.

SECTIONS AND SECTIONAL VIEWS: Right Regular Solids – Prism, Cylinder, Pyramid, Cone .

UNIT – IV

DEVELOPMENT OF SURFACES: Development of Surfaces of Right Regular Solids – Prisms, Cylinder, Pyramids, Cone and their parts. frustum of solids.

INTERSECTION OF SOLIDS:- Intersection of Cylinder Vs Cylinder, Cylinder Vs Prism, Cylinder Vs Cone.

PERSPECTIVE PROJECTIONS: Perspective View : Points, Lines, Plane and solids Figures.

UNIT – V

ISOMETRIC PROJECTIONS : Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions –Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of parts with Spherical surface.

TRANSFORMATION OF PROJECTIONS: Conversion of Isometric Views to Orthographic Views. Conversion of orthographic views to isometric views – simple objects.

TEXT BOOK:

Engineering Drawing, N.D. Bhat / Charotar
Engineering Drawing - Basant Agrawal, TMH

REFERENCES:

Engineering drawing - P.J. Shah.S.Chand.
Engineering Drawing, Narayana and Kannaiah / Scitech publishers.
Engineering Drawing- Johle/Tata Macgraw Hill.
Computer Aided Engineering Drawing- Trymbaka Murthy- I.K. international.
Engineering Drawing - Grower.
Engineering Graphics for Degree - K.C. John.
Engineering Drawing , Venugopal / New age.

2013-14

Code: MR13U502

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)

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COMPUTER PROGRAMMING LAB
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

Objectives:

To write programs in C to solve the problems.

To implement linear data structures such as lists, stacks, queues.

To implement simple searching and sorting methods.

Outcomes:

Recommended Systems/Software Requirements:

Intel based desktop PC

ANSI C Compiler with Supporting Editors

Week I

a) Write a C program to find the sum of individual digits of a positive integer.

b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.

Write a C program to generate the first n terms of the sequence.

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

Week 2

- a) Write a C program to calculate the following Sum:
 $Sum = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$
- b) Write a C program to find the roots of a quadratic equation.

Week 3

- a) The total distance travelled by vehicle in 't' seconds is given by distance = $ut + \frac{1}{2}at^2$ where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec²). Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.
- b) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)

Week 4

- a) Write C programs that use both recursive and non-recursive functions
- To find the factorial of a given integer.
 - To find the GCD (greatest common divisor) of two given integers.

Week 5

- a) Write a C program to find the largest integer in a list of integers.
- b) Write a C program that uses functions to perform the following:
- Addition of Two Matrices
 - Multiplication of Two Matrices

Week 6

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

Week 7

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

Week 8

- a) Write a C program to generate Pascal's triangle.
- b) Write a C program to construct a pyramid of numbers.

Week 9

Write a C program to read in two numbers, x and n , and then compute the sum of this geometric progression: $1+x+x^2+x^3+\dots$. For example: if n is 3 and x is 5, then the program computes $1+5+25+125$. Print x , n , the sum. Perform error checking. For example, the formula does not make sense for negative exponents – if n is less than 0. Have your program print an error message if $n < 0$, then go back and read in the next pair of numbers without computing the sum. Are any values of x also illegal? If so, test for them too.

Week 10

- a) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
- b) Write a C program to convert a Roman numeral to its decimal equivalent.

Week 11

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

- i) Reading a complex number
- ii) Writing a complex number
- iii) Addition of two complex numbers
- iv) Multiplication of two complex numbers

(Note: represent complex number using a structure.)

Week 12

- a) Write a C program which copies one file to another.
 - b) Write a C program to reverse the first n characters in a file.
- (Note: The file name and n are specified on the command line.)

Week 13

- a) Write a C program to display the contents of a file.
- b) Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file)

Week 14

- a) Write a C program that uses non recursive function to search for a Key value in a given list of integers using Linear search.
- b) Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using Binary search.

Week 15

- a) Write a C program that implements the Selection sort method to sort a given array of integers in ascending order.
- b) Write a C program that implements the Bubble sort method to sort a given list of names in ascending order.

Week 16

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

- i) Create a singly linked list of integer elements.
- ii) Traverse the above list and display the elements.

Week 17

Write a C program that implements stack (its operations) using a singly linked list to display given list of integers in reverse order. Ex. input: 10 23 4 6 output: 6 4 23 10

Week 18

Write a C program that implements Queue (its operations) using a singly linked list to display given list of integers in the same order. Ex. input: 10 23 4 6 output: 10 23 4 6

Week 19

Write a C program to implement the linear regression algorithm.

Week 20

Write a C program to implement the polynomial regression algorithm.

Week 21

Write a C program to implement the Lagrange interpolation.

Week 22

Write C program to implement the Newton- Gregory forward interpolation.

Week 23

Write a C program to implement Trapezoidal method.

Week 24

Write a C program to implement Simpson method.

TEXT BOOKS:

1. C programming and Data Structures, P. Padmanabham, Third Edition, BS Publications
2. Computer Programming in C, V. Rajaraman, PHI Publishers.
3. C Programming, E.Balagurusamy, 3rd edition, TMH Publishers.
4. C Programming, M.V.S.S.N.Prasad, ACME Learning Pvt. Ltd.
5. C and Data Structures, N.B.Venkateswarlu and E.V.Prasad,S.Chand Publishers
6. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publishers.

2013-14

Code: MR13U0PC

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)

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Engineering Physics / Engineering Chemistry Lab
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)

Engineering Physics Lab
(Any Ten experiments compulsory)

1. Dispersion of Light –Dispersive power of material of a given prism
2. Diffraction grating – Determination of the wavelength of a Sodium vapour lamp.
3. Newton’s Rings – Radius of curvature of plano convex lens
4. Meldes Experiment – Longitudinal and Transverse modes
5. Study of RC time constant and RL circuit.
6. The series RLC circuit – determination of resonant frequency, bandwidth and quality factor.
7. Magnetic field along the axis of current carrying circular coil- Stewart and Gee’s experiment.

8. LASER- Diffraction due to single slit.
9. Evaluation of Numerical aperture of the given fiber.
10. Energy band –gap of a material of a P-N junction diode.
11. Torsional Pendulum- Determination of Rigidity modulus of a given material of wire.
12. Sonometer- Frequency of A.C supply
13. LASER diode – I-V characteristics.

Laboratory manual:

Engineering Physics Practicals by Dr.B.Srinivasa Rao, KesavaVamsiKrishna.V, K.S.Rudramamba.

(University Science Press)

Engineering Chemistry Lab

(Any 12 of the following)

Titrimetry:

1. Estimation of Hardness of water by EDTA method.
2. Estimation of ferrous iron by dichrometry.

Mineral analysis:

3. Determination of Percentage of copper in brass.
4. Estimation of manganese dioxide in pyrolusite.

Instrumental Methods:

Colorimetry:

5. Determination of ferrous iron in cement by colorimetric method.
6. Estimation of Copper by Colorimetric Method.

Conductometry:

7. Conductometric titration of strong acid vs strong base
8. Conductometric titration of mixture of acids vs strong base .

Potentiometry:

9. Titration of Strong acid vs strong base by potentiometry.
10. Titration of Weak acid vs strong base by potentiometry.

Physical Properties:

11. Determination of free chlorides in water.
12. Determination of viscosity of sample oil by redwood/Oswald's viscometer.

Preparations:

13. Preparation of Aspirin.

Kinetics:

14. To determine the rate constant of hydrolysis of methyl acetate catalyzed by an acid.

REFERENCE BOOKS:

1. Practical Engineering Chemistry by K. Mulkanti, et al, B.S. Publications, Hyderabad.
2. Inorganic quantitative analysis, Vogel.
3. Text Book of engineering chemistry by R.N. Goyal and Harmandra Goel, Ane Books Private Ltd.,
4. A text book on experiments and calculation Engg. S.S. Dara.
5. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications.

2013-14

Code: MR13U0E2

**MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)**

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**ENGLISH LANGUAGE COMMUNICATION SKILLS LAB
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)**

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

Objectives

To sensitize the students to the intelligibility in their pronunciation of English, speech sounds, word accent, intonation and rhythm

To improve the fluency in spoken English and neutralize mother tongue influence

To facilitate honing of listening and speaking skills of students

To train students to understand nuances of both verbal and non verbal communication during all activities

To develop confidence to face the audience and participate in activities

To help the students shed inhibitions and communicate with clarity

Learning Outcomes:

1. Better Understanding of nuances of language through audio- visual experience and group activities
2. Neutralization of accent for intelligibility
3. Speaking with clarity and confidence thereby enhancing employability skills of the students
4. Good understanding of listening skills and speaking skills and their application in real life situations.
5. Good understanding of non-verbal communication and developing confidence to face audience, shed inhibitions.

Listening Skills:

Objectives

1. To enable students to develop their listening skill so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation

2. To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language to be able to recognise them, awareness regarding stress and recognise and use the right intonation in sentences.

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

Speaking Skills:

Objectives

1. To make students aware of the role of speaking in English and its contribution to their success.

2. To enable students to express themselves fluently and appropriately in social and professional contexts.

- Oral practice
- Describing objects/situations/people
- Just A Minute(JAM) Sessions.

Syllabus: English Language Communication Skills Lab shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

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

UNIT– I

CALL Lab: Introduction to Phonetics – Speech Sounds – Vowels and Consonants

ICS Lab: Ice-Breaking activity and JAM session

Listening: listening for sounds in context, for ideas.

Speaking: ideation and translation of ideas into sentences.

UNIT – II

CALL Lab: Structure of Syllables - Past Tense Marker and Plural Marker – Weak Forms and Strong Forms - Consonant Clusters.

ICS Lab: Situational Dialogues – Role-Play- Expressions in Various Situations – Self-introduction and Introducing

Others – Greetings – Apologies – Requests – Social and Professional Etiquette - Telephone Etiquette.

Listening: listening for specific purposes, for details.

Speaking: speaking in the above situations with clarity, connectivity, maintaining voice characters.

UNIT- III

CALL Lab: Word accent and Listening Comprehension.

ICS Lab: Descriptions- Narrations- Giving Directions and guidelines.

Listening: listening for intelligible English

Speaking: formal and informal conversations, register.

UNIT – IV

CALL Lab: Intonation and Common errors in Pronunciation.

ICS Lab: Extempore- Public Speaking , Oral Presentation Skills

Listening: note taking and listening for speaker's tone/attitude

Speaking: organizing , connecting ideas and sentences, short forms in spoken English, errors in spoken English

UNIT– V

CALL Lab: Neutralization of Mother Tongue Influence and Conversation Practice

ICS Lab: Information Transfer, Debate

Minimum Requirement of infra structural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab:

The Computer aided Language Lab for 40 students with 40 systems, one master console, LAN facility and English language software for self- study by learners.

System Requirement (Hardware component):

Computer network with Lan with minimum 60 multimedia systems with the following specifications:i) P – IV Processor

a) Speed – 2.8 GHZ

b) RAM – 512 MB Minimum

c) Hard Disk – 80 GB

ii) Headphones of High quality

2. Interactive Communication Skills (ICS) Lab :

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

Books Suggested for English Language Lab Library (to be located within the lab in addition to the

CDs of the text book which are loaded on the systems):

Prescribed Lab Manual: English Language Communication Skills laboratory Manual Published by Pearson, New Delhi 2012

1. Suresh Kumar, E. & Sreehari, P. 2009. A Handbook for English Language Laboratories. New Delhi: Foundation
2. Speaking English Effectively 2nd Edition by Krishna Mohan and N. P. Singh, 2011. Macmillan Publishers India Ltd. Delhi.
3. Sasi Kumar, V & Dhamija, P.V. How to Prepare for Group Discussion and Interviews. Tata McGraw Hill
4. Hancock, M. 2009. English Pronunciation in Use. Intermediate. Cambridge: CUP
5. Spoken English: A Manual of Speech and Phonetics by R. K. Bansal & J. B. Harrison. 2013. Orient Blackswan. Hyderabad.
6. Hewings, M. 2009. English Pronunciation in Use. Advanced. Cambridge: CUP
7. Marks, J. 2009. English Pronunciation in Use. Elementary. Cambridge: CUP
8. Nambiar, K.C. 2011. Speaking Accurately. A Course in International Communication. New Delhi : Foundation
9. Spoken English (CIEFL) in 3 volumes with 6 cassettes, OUP.
10. English Pronouncing Dictionary Daniel Jones Current Edition with CD.
11. A textbook of English Phonetics for Indian Students by T. Balasubramanian (Macmillan)

DISTRIBUTION AND WEIGHTAGE OF MARKS

English Language Laboratory Practical Examination:

1. The practical examinations for the English Language Laboratory shall be conducted as per the college norms prescribed for the core engineering practical sessions.
2. For the Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year- end Examination shall be conducted by the teacher concerned as an internal examiner and another member from examiners' list recommended by the BOS as an external examiner.

2013-14

Code: MR13U303

**MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)**

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**IT WORKSHOP / ENGINEERING WORKSHOP
(Common for ME, CE, Mining, EEE, ECE, CSE&IT)**

Objectives:

The IT Workshop for engineers is a training lab course spread over 54 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel and Power Point.

Outcomes:

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. **The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario where everpossible.**

Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from netting infected with the viruses, worms and other cyber-attacks would be introduced.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets and power point presentations using the Microsoft suite of office tools and Latex. **(Recommended to use Microsoft office 2007 in place of MS Office 2003)**

PC Hardware

Week 1 – Task 1 :Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Week 2 – Task 2 :Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Week 3 – Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Week 4 – Task 4 :Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva.

Week 5 – Task 5: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the

computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Week 6 – Task 6: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web

Week 7 - Task 1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Week 8 - Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets.

Week 9 - Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Week 10 - Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install antivirus software, configure their personal firewall and windows update on their computer. Then they need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

Week 11- Task 5: Develop your home page using HTML Consisting of your photo, name, address and education details as a table and your skill set as a list.

Productivity tools

Latex and Word

Week 12 – Word Orientation: The mentor needs to give an overview of Latex and Microsoft (MS) office 2007/equivalent (FOSS) tool word: Importance of Latex and MS office 2007/ equivalent (FOSS) tool Word as word Processors, Details of the three tasks and features that would be covered in each, using Latex and word –Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter.

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

Week 13 - Task 2: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Week 14 - Task 3 : Creating a Newsletter : Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge inward.

Excel

Week 15 - Excel Orientation: The mentor needs to tell the importance of MS office 2007/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the two tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler - Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text

Week 16 - Task 2 : Calculating GPA - .Features to be covered:- Cell Referencing, Formulae in excel – average, td. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP, Orting, Conditional formatting

Latex and MS/equivalent (FOSS) tool Power Point

Week 17 - Task1: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both Latex and Power point. Students will be given model power point presentation which needs to be replicated (exactly how it's asked).

Week 18- Task 2: Second week helps students in making their presentations interactive. Topic covered during this week includes: Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

Week 19 - Task 3: Concentrating on the in and out of Microsoft power point and presentations in Latex. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes: -Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting –Background, textures, Design Templates, Hidden slides.

REFERENCE BOOKS:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.

2. LaTeX Companion – Leslie Lamport, PHI/Pearson.
3. Introduction to Computers, Peter Norton, 6/e Mc Graw Hill Publishers.
4. Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education
5. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech.
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and KenQuamme. – CISCO Press, Pearson Education.
7. PC Hardware and A Handbook – Kate J. Chase PHI (Microsoft)

ENGINEERING WORKSHOP

1. TRADES FOR EXERCISES:

At least two exercises from each trade:

1. Carpentry
2. Fitting
3. Tin-Smithy and Development of jobs carried out and soldering.
4. House-wiring.
5. Foundry.
6. Black smithy
7. Plumbing

2. TRADES FOR DEMONSTRATION & EXPOSURE:

1. Power Tools in construction, wood working, electrical engineering and mechanical engineering.
2. Welding.
3. Machine shop

TEXT BOOK:

1. Work Shop Manual – P. Kanniah/ K. L. Narayana, Scitech Publishers.
2. Work Shop Manual by Venkat Reddy
3. Work Shop Practice Manual by K. Venkat Reddy, B.S. Publishers.