

ACADEMIC REGULATIONS

COURSE STRUCTURE

CHOICE BASED CREDIT SYSTEM

MLR15

Master of Technology (M.Tech)

M. Tech. - Regular Two Year Degree Program
(For batches admitted from the academic year 2015 - 2016)



MLR Institute of Technology

(Autonomous)

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FOREWORD

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

MLR Institute of Technology is proud to win the credence of all the above bodies monitoring the quality in education and has gladly accepted the responsibility of sustaining, if not improving upon the standards and ethics for which it has been striving for more than a decade in reaching its present standing in the arena of contemporary technical education. As a follow up, statutory bodies like Academic Council and Boards of Studies are constituted with the guidance of the Governing Body of the College and recommendations of the JNTU Hyderabad to frame the regulations, course structure and syllabi under autonomous status.

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

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

PRINCIPAL

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**M. Tech. - Regular Two Year Degree Program
(For batches admitted from the academic year 2015 - 16)**

For pursuing two year post graduate Masters Degree Programme of study in Engineering (M.Tech) offered by M L R Institute of Technology under Autonomous status and herein referred to as MLRIT (Autonomous):

All the rules specified herein approved by the Academic Council will be in force and applicable to students admitted from the Academic Year 2015-16 onwards. Any reference to "Institute" or "College" in these rules and regulations shall stand for M L R Institute of Technology (Autonomous).

All the rules and regulations, specified hereafter shall be read as a whole for the purpose of interpretation as and when a doubt arises, the interpretation of the Chairman, Academic Council is final. As per the requirements of statutory bodies, the Principal, M L R Institute of Technology shall be the Chairman, Academic Council.

1. ADMISSION

Admission into first year of two year M. Tech. degree Program of study in Engineering:

Eligibility:

Admission to the above programme shall be made subject to eligibility, qualification and specialization as prescribed by the University from time to time.

Admissions shall be made on the basis of merit/rank obtained by the candidates at the qualifying Entrance Test conducted by the University or on the basis of any other order of merit as approved by the University, subject to reservations as laid down by the Govt. From time to time.

2.0 AWARD OF M. Tech. DEGREE

A student shall be declared eligible for the award of the M. Tech. Degree, if he pursues a course of study in not less than two and not more than four academic years. However, he is permitted to write the examinations for two more years after two academic years of course work, failing which he shall forfeit his seat in M. Tech. programme.

The student shall register for all 88 credits and secure all the 88 credits.

The minimum instruction days in each semester are 90.

3.0 COURSES OF STUDY

The following specializations are offered at present for the M. Tech. programme of study.

1. Aerospace Engineering
2. CAD/CAM
3. Computer Science and Engineering
4. Digital Systems & Computer Electronics
5. Embedded Systems
6. Thermal Engineering
7. Software Engineering

4.0 Course Registration

4.1 A 'Faculty Advisor or Counselor' shall be assigned to each student, who will advise him on the Post Graduate Programme (PGP), its Course Structure and Curriculum, Choice/Option for Subjects/ Courses, based on his competence, progress, pre-requisites and interest.

4.2 Academic Section of the College invites 'Registration Forms' from students with in 15 days from the commencement of class work through 'ON-LINE SUBMISSIONS', ensuring 'DATE and TIME Stamping'. The ON-LINE Registration Requests for any

'CURRENT SEMESTER' shall be completed BEFORE the commencement of SEEs (Semester End Examinations) of the 'PRECEDING SEMESTER'.

- 4.3** A Student can apply for ON-LINE Registration, ONLY AFTER obtaining the 'WRITTEN APPROVAL' from his Faculty Advisor, which should be submitted to the College Academic Section through the Head of Department (a copy of it being retained with Head of Department, Faculty Advisor and the Student).
- 4.4** If the Student submits ambiguous choices or multiple options or erroneous entries - during ON-LINE Registration for the Subject(s) / Course(s) under a given/ specified Course Group/ Category as listed in the Course Structure, only the first mentioned Subject/ Course in that Category will be taken into consideration.
- 4.5** Subject/ Course Options exercised through ON-LINE Registration are final and CANNOT be changed, nor can they be inter-changed; further, alternate choices will also not be considered. However, if the Subject/ Course that has already been listed for Registration (by the Head of Department) in a Semester could not be offered due to any unforeseen or unexpected reasons, then the Student shall be allowed to have alternate choice - either for a new Subject (subject to offering of such a Subject), or for another existing Subject (subject to availability of seats), which may be considered. Such alternate arrangements will be made by the Head of Department, with due notification and time-framed schedule, within the FIRST WEEK from the commencement of Class-work for that Semester.

5 ATTENDANCE

The programmes are offered on a unit basis with each subject being considered a unit.

- 5.1** Attendance in all classes (Lectures/Laboratories etc.) is compulsory. The minimum required attendance in each theory / Laboratory etc. is 75% including the days of attendance in sports, games, NCC and NSS activities for appearing for the End Semester examination. A student shall not be permitted to appear for the Semester End Examinations (SEE) if his attendance is less than 75%.
- 5.2** Condonation of shortage of attendance in each subject up to 10% (65% and above and below 75%) in each semester shall be granted by the College Academic Committee.
- 5.3** Shortage of Attendance below 65% in each subject shall not be condoned.
- 5.4** Students whose shortage of attendance is not condoned in any subject are not eligible to write their end semester examination of that subject and their registration shall stand cancelled.
- 5.5** A prescribed fee shall be payable towards condonation of shortage of attendance
- 5.6** A Candidate shall put in a minimum required attendance at least three (3) theory subjects in I Year I semester for promoting to I Year II Semester. In order to qualify for the award of the M.Tech. Degree, the candidate shall complete all the academic requirements of the subjects, as per the course structure.
- 5.7** A student shall not be promoted to the next semester unless he satisfies the attendance requirement of the present Semester, as applicable. They may seek readmission into that semester when offered next. If any candidate fulfills the attendance requirement in the present semester, he shall not be eligible for readmission in to the same class.

6 EVALUATION

The performance of the candidate in each semester shall be evaluated subject-wise, with a maximum of 100 marks for theory and 100 marks for practicals, on the basis of Internal Evaluation and End Semester Examination.

- For the theory subjects 70 marks shall be awarded for the performance in the Semester End Examination and 30 marks shall be awarded for Continuous Internal Evaluation (CIE). The Continuous Internal Evaluation shall be made based on the average of the marks secured in the two Mid Term-Examinations conducted, one in the middle of the Semester and the other, immediately after the

completion of Semester instructions. Each mid-term examination shall be conducted for a total duration of 120 minutes.

Sessional Examinations

- Subjective Paper shall contain three questions. Question 1 & 2 with internal choice from unit-I, question 3 & 4 with internal choice from unit-II and question 5 having a, b questions with internal choice from first half part of unit-III for I-MID examinations. For II-MID 1 & 2 questions from unit-4, questions 3 & 4 from unit-5 and question no 5 from remaining half part of unit-3.

The first mid-term examination shall be conducted for the first 50% of the syllabus, and the second mid-term examination shall be conducted for the remaining 50% of the syllabus.

- The Semester End Examination will be conducted for 70 marks examination shall be conducted for a total duration of 180 minutes. Question paper Consists of Part –A and Part-B with the following.
- Part-A is a compulsory question consisting of 5 questions, one from each unit and carries 4 marks each.
- Part-B to be answered 5 questions carrying 10 marks each. There will be two questions from each unit and only one should be answered.

6.1 For practical subjects, 70 marks shall be awarded for performance in the Semester End Examinations and 30 marks shall be awarded for day-to-day performance as Internal Marks.

6.2 For conducting laboratory end examinations of all PG Programmes, one internal examiner and one external examiner are to be appointed by the Principal of the College and the same to be informed to the Chief Controller of Examination in two weeks before for commencement of the lab end examinations.

6.3 There shall be two seminar presentations during I year I semester and II semester. For seminar, a student under the supervision of a faculty member, shall collect the literature on a topic and critically review the literature and submit it to the department in a report form and shall make an oral presentation before the Departmental Academic Committee consisting of Head of the Department, Supervisor and two other senior faculty members of the department. For each Seminar there will be only internal evaluation of 50 marks. A candidate has to secure a minimum of 50% of marks to be declared successful. If he fails to fulfill minimum marks, he has to reappear during the supplementary examinations.

6.4 There shall be a Comprehensive Viva-Voce in II year I Semester. The Comprehensive Viva-Voce is intended to assess the students' understanding of various subjects he has studied during the M. Tech. course of study. The Head of the Department shall be associated with the conduct of the Comprehensive Viva-Voce through a Committee. The Committee consisting of Head of the Department, one senior faculty member and an external examiner. The external examiner shall be appointed by the Director of Evaluation. For this, the Principal of the College shall submit a panel of 3 examiners. There are no internal marks for the Comprehensive Viva-Voce and evaluates for maximum of 100 marks. A candidate has to secure a minimum of 50% of marks to be declared successful. If he fails to fulfill minimum marks, he has to reappear during the supplementary examinations.

6.5 A candidate shall be deemed to have secured the minimum academic requirement in a subject if he secures a minimum of 40% of marks in the Semester End Examination and a minimum aggregate of 50% of the total marks in the Semester End Examination and Continuous Internal Evaluation taken together.

6.6 In case the candidate does not secure the minimum academic requirement in any subject (as specified in 6.6) he has to re appear for the Semester End Examination in that subject.

- 6.7 A candidate shall be given one chance to re-register for the subjects if the internal marks secured by a candidate is less than 50% and failed in that subject for maximum of two subjects and should register within four weeks of commencement of the class work. In such a case, the candidate must re-register for the subjects and secure the required minimum attendance. The candidate's attendance in the re-registered subject(s) shall be calculated separately to decide upon his eligibility for writing the Semester End Examination in those subjects. In the event of the student taking another chance, his Continuous Internal Evaluation (internal) marks and Semester End Examination marks obtained in the previous attempt stands cancelled.
- 6.9 In case the candidate secures less than the required attendance in any subject, he shall not be permitted to write the Semester End Examination in that subject. He shall re-register for the subject when next offered.

7 Examinations and Assessment - The Grading System

- 7.1 Marks will be awarded to indicate the performance of each student in each Theory Subject, or Lab/Practicals, or Seminar, or Project, etc., based on the % marks obtained in CIE + SEE (Continuous Internal Evaluation + Semester End Examination, both taken together) as specified in Item 6 above, and a corresponding Letter Grade shall be given.
- 7.2 As a measure of the student's performance, a 10-point Absolute Grading System using the following Letter Grades (UGC Guidelines) and corresponding percentage of marks shall be followed:

% of Marks Secured (Class Intervals)	Letter Grade (UGC Guidelines)	Grade Points
80% and above ($\geq 80\%$, $\leq 100\%$)	O (Outstanding)	10
Below 80% but not less than 70% ($\geq 70\%$, $< 80\%$)	A+ (Excellent)	9
Below 70% but not less than 60% ($\geq 60\%$, $< 70\%$)	A (Very Good)	8
Below 60% but not less than 55% ($\geq 55\%$, $< 60\%$)	B+ (Good)	7
Below 55% but not less than 50% ($\geq 50\%$, $< 55\%$)	B (above Average)	6
Below 50% ($< 50\%$)	F (FAIL)	0
ABSENT	AB	0

- 7.3 A student obtaining F Grade in any Subject shall be considered 'failed' and is be required to reappear as 'Supplementary Candidate' in the Semester End Examination (SEE), as and when offered. In such cases, his Internal Marks (CIE Marks) in those Subjects will remain the same as those he obtained earlier.
- 7.4 A student not appeared for examination then 'Ab' Grade will be allocated in any Subject shall be considered 'failed' and will be required to reappear as 'Supplementary Candidate' in the Semester End Examination (SEE), as and when offered.
- 7.5 A Letter Grade does not imply any specific Marks percentage and it will be the range of marks percentage.
- 7.6 In general, a student shall not be permitted to repeat any Subject/ Course (s) only for the sake of 'Grade Improvement' or 'SGPA/ CGPA Improvement'.
- 7.7 A student earns Grade Point (GP) in each Subject/ Course, on the basis of the Letter Grade obtained by him in that Subject/ Course. The corresponding 'Credit Points' (CP) are computed by multiplying the Grade Point with Credits for that particular Subject/

Course.

Credit Points (CP) = Grade Point (GP) x Credits For a Course

- 7.8 The Student passes the Subject/ Course only when he **gets GP ≥ 6 (B Grade or above)**.
- 7.9 A student earns Grade Point (GP) in each Subject/ Course, on the basis of the Letter Grade obtained by him in that Subject/Course (excluding Mandatory non-credit Courses). Then the corresponding 'Credit Points' (CP) are computed by multiplying the Grade Point with Credits for that particular Subject/Course.
Credit Points (CP) = Grade Point (GP) x Credits For a Course

- 7.10 The Semester Grade Point Average (SGPA) is calculated by dividing the Sum of Credit Points ($\sum CP$) secured from ALL Subjects/ Courses registered in a Semester, by the Total Number of Credits registered during that Semester. SGPA is rounded off to TWO Decimal Places. SGPA is thus computed as
SGPA = $\frac{\sum_{i=1}^N C_i G_i}{\sum_{i=1}^N C_i}$ For each Semester,

where 'i' is the Subject indicator index (takes into account all Subjects in a Semester), 'N' is the no. Of Subjects 'REGISTERED' for the Semester (as specifically required and listed under the Course Structure of the parent Department), C_i is the no. of Credits allotted to that ix Subject, and G_i represents the Grade Points (GP) corresponding to the Letter Grade awarded for that ith Subject.

- 7.11 The Cumulative Grade Point Average (CGPA) is a measure of the overall cumulative performance of a student over all Semesters considered for registration. The CGPA is the ratio of the Total Credit Points secured by a student in ALL registered Courses in ALL Semesters, and the Total Number of Credits registered in ALL the Semesters. CGPA is rounded off to TWO Decimal Places. CGPA is thus computed from the I Year Second Semester onwards, at the end of each Semester, as per the formula

$$\text{CGPA} = \frac{\sum_{j=1}^M C_j G_j}{\sum_{j=1}^M C_j} \dots \text{for all S Semesters registered}$$

(ie., upto and inclusive of S Semesters, $S \geq 2$),

where 'M' is the TOTAL no. of Subjects (as specifically required and listed under the Course Structure of the parent Department) the Student has 'REGISTERED' from the 1st Semester onwards upto and inclusive of the Semester S (obviously $M > N$), 'j' is the Subject indicator index (takes into account all Subjects from 1 to S Semesters), C_j is the no. of Credits allotted to the jth Subject, and G_j represents the Grade Points (GP) corresponding to the Letter Grade awarded for that jth Subject. After registration and completion of I Year I Semester however, the SGPA of that Semester itself may be taken as the CGPA, as there are no cumulative effects.

- 7.12 For Calculations listed in Item 7.6 – 7.10, performance in failed Subjects/ Courses (securing F Grade) will also be taken into account, and the Credits of such Subjects/ Courses will also be included in the multiplications and summations.

8. EVALUATION OF PROJECT/DISSERTATION WORK

Every candidate shall be required to submit a thesis or dissertation on a topic approved by the Project Review Committee.

- 8.1 A Project Review Committee (PRC) shall be constituted with Head of the Department as Chairperson, Project Supervisor and one senior faculty member of the Departments

- offering the M. Tech. programme.
- 8.2 Registration of Project Work: A candidate is permitted to register for the project work after satisfying the attendance requirement of all the subjects, both theory and practical.
 - 8.3 After satisfying 8.2, a candidate has to submit, in consultation with his Project Supervisor, the title, objective and plan of action of his project work to the PRC for approval. Only after obtaining the approval of the PRC the student can initiate the Project work.
 - 8.4 If a candidate wishes to change his supervisor or topic of the project, he can do so with the approval of the PRC. However, the PRC shall examine whether or not the change of topic/supervisor leads to a major change of his initial plans of project proposal. If yes, his date of registration for the project work starts from the date of change of Supervisor or topic as the case may be.
 - 8.5 A candidate shall submit his project status report in two stages at least with a gap of 3 months between them.
 - 8.6 The work on the project shall be initiated at the beginning of the II year and the duration of the project is two semesters. A candidate is permitted to submit Project Thesis only after successful completion of all theory and practical courses with the approval of PRC not earlier than 40 weeks from the date of registration of the project work. For the approval of PRC the candidate shall submit the draft copy of thesis to the Head of the Department and make an oral presentation before the PRC.
 - 8.7 After approval from the PRC, the soft copy of the thesis should be submitted to the University for ANTI-PLAGIARISM for the quality check and the plagiarism report should be included in the final thesis. If the copied information is less than 24%, then only thesis will be accepted for submission.
 - 8.8 Three copies of the Project Thesis certified by the supervisor shall be submitted to the College
 - 8.9 For Project work Review I in II Year I Sem. there is an internal marks of 50, the evaluation should be done by the PRC for 25 marks and Supervisor will evaluate for 25 marks. The Supervisor and PRC will examine the Problem Definition, Objectives, Scope of Work, Literature Survey in the same domain. A candidate has to secure a minimum of 50% of marks to be declared successful for Project Work Review I. If he fails to fulfill minimum marks, he has to reappear during the supplementary examination.
 - 8.10 For Project work Review II in II Year II Sem. there is an internal marks of 50, the evaluation should be done by the PRC for 25 marks and Supervisor will evaluate for 25 marks. The PRC will examine the overall progress of the Project Work and decide the Project is eligible for final submission or not. A candidate has to secure a minimum of 50% of marks to be declared successful for Project Work Review II. If he fails to fulfill minimum marks, he has to reappear during the supplementary examination.
 - 8.11 For Project Evaluation (Viva Voce) in II Year II Sem. there is an external marks of 150 and the same evaluated by the External examiner appointed by the University. The candidate has to secure minimum of 50% marks in Project Evaluation (Viva-Voce) examination.
 - 8.12 If he fails to fulfill as specified in 8.11, he will reappear for the Viva-Voce examination only after three months. In the reappeared examination also, fails to fulfill, he will not be eligible for the award of the degree.
 - 8.13 The thesis shall be adjudicated by one examiner selected by the University. For this, the Principal of the College shall submit a panel of 3 examiners, eminent in that field, with the help of the guide concerned and Head of the Department.
 - 8.14 If the report of the examiner is not favourable, the candidate shall revise and resubmit the Thesis. If the report of the examiner is unfavourable again, the thesis shall be summarily rejected.
 - 8.15 If the report of the examiner is favourable, Project Viva-Voce examination shall be conducted by a board consisting of the Supervisor, Head of the Department and the external examiner who adjudicated the Thesis.
 - 8.16 The Head of the Department shall coordinate and make arrangements for the conduct of Project Viva- Voce examination.

9. AWARD OF DEGREE AND CLASS

9.1 A Student who registers for all the specified Subjects/ Courses as listed in the Course Structure, satisfies all the Course Requirements, and passes the examinations prescribed in the entire PG Programme (PGP), and secures the required number of **88** Credits (with CGPA ≥ 6.0), shall be declared to have 'QUALIFIED' for the award of the M.Tech. Degree in the chosen Branch of Engineering and Technology with specialization as he admitted.

9.2 Award of Class

After a student has satisfied the requirements prescribed for the completion of the programme and is eligible for the award of M. Tech. Degree, he shall be placed in one of the following three classes based on the CGPA:

Class Awarded	CGPA
First Class with Distinction	≥ 7.75
First Class	$6.75 \leq \text{CGPA} < 7.75$
Second Class	$6.00 \leq \text{CGPA} < 6.75$

9.3 A student with final CGPA (at the end of the PGP) < 6.00 will not be eligible for the Award of Degree.

10. 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 with held in such cases.

11. TRANSITORY REGULATIONS

11.1 If any candidate is detained due to shortage of attendance in one or more subjects, they are eligible for re-registration to maximum of two earlier or equivalent subjects at a time as and when offered.

11.2 The candidate who fails in any subject will be given two chances to pass the same subject; otherwise, he has to identify an equivalent subject as per MLR15 Academic Regulations.

13. GENERAL

12.1 **Credit:** A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.

12.2 **Credit Point:** It is the product of grade point and number of credits for a course.

12.3 Wherever the words "he", "him", "his", occur in the regulations, they include "she", "her".

12.4 The academic regulation should be read as a whole for the purpose of any interpretation.

12.5 In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Principal is final.

12.6 The University 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 University.

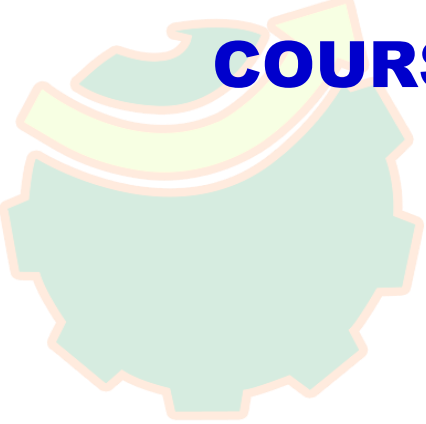
MALPRACTICES RULES
DISCIPLINARY ACTION FOR /IMPROPER CONDUCT IN EXAMINATIONS

S. No	Nature of Malpractices/Improper conduct	Punishment
1 (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the Principal.
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 candidate is also debarred for two consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for

		two consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5	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.	Cancellation of the performance in that subject.
6	Refuses to obey the orders of the Addl. Controller of examinations / 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 addl. Controller of examinations or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the addl. Controller of examinations, 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.	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 case is registered against them.
7	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9	If student of the college, who is not a candidate for the particular examination or any person not	Student of the colleges expulsion from the examination hall and cancellation of the

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

GROUP OF INSTITUTIONS



COURSE STRUCTURE
MARRI
LAXMAN
REDDY

GROUP OF INSTITUTIONS

AEROSPACE ENGINEERING

I M.Tech. I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B17601	Mathematical Modeling	3	-	-	3	30	70	100
B17602	Aerodynamics of Flight Vehicles	3	-	-	3	30	70	100
B17603	Flight Vehicle Structures	3	-	-	3	30	70	100
	Core Elective - I	3	-	-	3	30	70	100
	Core Elective – II	3	-	-	3	30	70	100
	Open Elective-I	3	-	-	3	30	70	100
B17604	Application of MATLAB in Aerospace Engineering	-	-	4	2	30	70	100
B17605	Seminar-I	-	-	4	2	50	-	50
TOTAL		18		8	22	260	490	750

I M.Tech. II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B17616	Space Transportation Systems	3	-	-	3	30	70	100
B17617	Aerospace Sensors and Measurement Systems	3	-	-	3	30	70	100
B17618	Avionics	3	-	-	3	30	70	100
	Core Elective – III	3	-	-	3	30	70	100
	Core Elective – IV	3	-	-	3	30	70	100
	Open Elective-II	3	-	-	3	30	70	100
B17619	CFD/CSA Solutions using ANSYS	-	-	4	2	30	70	100
B17620	Seminar-II	-	-	4	2	50	-	50
TOTAL		18		8	22	260	490	750

II M.Tech. I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B17631	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B17632	Project Work and Review-I	-	-	-	18	50	-	50
TOTAL		-	-	-	22	-	-	150
II M.Tech. II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B17633	Project Work and Review-II	-	-	-	6	50	-	50
B17634	Project Evaluation (Viva-voce)	-	-	-	16	-	150	150
TOTAL		-	-	-	22	50	150	200
OPEN ELECTIVES								
OE-I				OE-II				
B17635	Air Transportation Systems	B17637			Airlines Operations and Scheduling			
B17636	Airport Management	B17638			Introduction To Aircraft Industry			
CORE ELECTIVE								
CE-I				CE-II				
B17606	Fundamentals of Aerospace Engineering	B17611			Air-breathing Propulsion			
B17607	Aircraft Systems	B17612			Modeling and Simulation of Fluid Flows			
B17608	Continuum Mechanics	B17613			Flight Navigation and Surveillance Systems			
B17609	Computational Structural Analysis	B17614			Helicopter Aerodynamics			
B17610	Jets, Missiles and Rockets	B17615			Engineering Analysis of Flight Vehicles			
CE-III				CE-IV				
B17621	Mechanics of composite structures	B17626			Industrial Aerodynamics			
B17622	Air Traffic Management Systems	B17627			Experimental stress analysis			
B17623	Flight vehicle Design	B17628			Computational Approaches to Aerospace Vehicle Design			
B17624	Hypersonic Aerodynamics	B17629			Aero elasticity			
B17625	Fatigue and Fracture Mechanics	B17630			Propellant Technology			

COMPUTER SCIENCE & ENGINEERING

I Semester								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B15801	Data Structures and Algorithms	3	-	-	3	30	70	100
B15802	Advanced Operating Systems	3	-	-	3	30	70	100
B15803	Database Internals	3	-	-	3	30	70	100
	Core Elective - 1	3	-	-	3	30	70	100
	Core Elective - 2	3	-	-	3	30	70	100
	Open Elective-1	3	-	-	3	30	70	100
B15804	Data Structures and Algorithms Lab	-	-	4	2	30	70	100
B15805	Seminar-1	-	-	4	2	50	-	50
TOTAL		18		8	22	260	490	750

II Semester								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B15812	Web Services and Service Oriented Architecture	3	-	-	3	30	70	100
B15813	Advanced Computer Networks	3	-	-	3	30	70	100
B15814	Cloud Computing	3	-	-	3	30	70	100
	Core Elective – 3	3	-	-	3	30	70	100
	Core Elective – 4	3	-	-	3	30	70	100
	Open Elective - 2	3	-	-	3	30	70	100
B15815	Web Services Lab	-	-	4	2	30	70	100
B15816	Seminar-II	-	-	4	2	50	-	50
TOTAL		18		8	22	260	490	750

III Semester								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B15823	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B15824	Project Work and Review-I	-	-	-	18	50	-	50
TOTAL					22	50	100	150

IV Semester								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B15825	Project Work and Review-II	-	-	-	6	50	-	50
B15826	Project Evaluation (Viva-voce)	-	-	-	16	-	150	150
TOTAL					22	50	150	200

OPEN ELECTIVES			
OE1		OE2	
B15830	Big Data Analytics	B15833	Bioinformatics
B15831	Storage Area Networks	B15834	Web Mining
B15832	Fundamentals of Web Design	B15835	Semantic Web & Social Networks
CORE ELECTIVE			
CE1		CE2	
B15806	Android Application Development	B15809	Data Warehousing and Mining
B15807	Distributed Databases	B15810	Pattern Recognition
B15808	High Speed Networks	B15811	Internet of Things
CE3		CE4	
B15817	Software Architecture and Design Patterns	B15820	Software Process and Project Management
B15818	Information Retrieval Systems	B15821	Distributed Computing
B15819	Wireless networks and Mobile Computing	B15822	Soft Computing

CAD/CAM

I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10401	Advanced CAD	3	-	-	3	30	70	100
B10402	Advanced Finite Element Analysis	3	-	-	3	30	70	100
B10403	Precision Engineering	3	-	-	3	30	70	100
	Core Elective I	3	-	-	3	30	70	100
	Core Elective II	3	-	-	3	30	70	100
	Open Elective I	3	-	-	3	30	70	100
B10404	Computer Aided Design Lab	-	-	4	2	30	70	100
B10405	Seminar-I	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10412	Design of Hydraulics and Pneumatics	3	-	-	3	30	70	100
B10413	Flexible Manufacturing Systems	3	-	-	3	30	70	100
B10414	Computer Aided Manufacturing	3	-	-	3	30	70	100
	Core Elective III	3	-	-	3	30	70	100
	Core Elective IV	3	-	-	3	30	70	100
	Open Elective II	3	-	-	3	30	70	100
B10415	Advanced Computer Aided Manufacturing Lab	-	-	4	2	30	70	100
B10416	Seminar-II	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

III Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10423	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B10424	Project Work and Review-I	-	-	-	18	50	-	50
TOTAL		-	-	-	22	50	100	150

IV Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10425	Project Work and Review-II	-	-	-	6	50	-	50
B10426	Project Evaluation (Viva-voce)	-	-	-	16	-	150	150
TOTAL		-	-	-	22	50	150	200

OPEN ELECTIVES			
OE1		OE2	
B10430	Numerical Methods for Partial Differential Equations	B10432	Engineering Research and Methodology
B10431	Production and Operations Management	B10433	Quality Engineering in Manufacturing
CORE ELECTIVE			
CE1		CE2	
B10406	Design for Manufacturing and Assembly	B10409	Advanced Mechanics of Composite Materials
B10407	Advanced Mechanics of Solids	B10410	Total Quality Management
B10408	Advanced Mechatronics	B10411	Stress Analysis and Vibrations
CE3		CE4	
B10417	Industrial Robotics	B10420	Design Optimization
B10418	Computational Fluid Dynamics	B10421	Intelligent Manufacturing Systems
B10419	Automation in Manufacturing	B10422	Computer Aided Process Planning

THERMAL ENGINEERING

I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B12101	Advanced Thermodynamics	3	-	-	3	30	70	100
B12102	Advanced I.C. Engines	3	-	-	3	30	70	100
B12103	Advanced Fluid Mechanics	3	-	-	3	30	70	100
	Core Elective I	3	-	-	3	30	70	100
	Core Elective II	3	-	-	3	30	70	100
	Open Elective I	3	-	-	3	30	70	100
B12104	Thermal Engineering Lab	-	-	4	2	30	70	100
B12105	Seminar -I	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B12112	Combustion & Environment	3	-	-	3	30	70	100
B12113	Computational Fluid Dynamics	3	-	-	3	30	70	100
B12114	Advanced Heat and Mass Transfer	3	-	-	3	30	70	100
	Core Elective III	3	-	-	3	30	70	100
	Core Elective IV	3	-	-	3	30	70	100
	Open Elective II	3	-	-	3	30	70	100
B12115	Computational Methods Lab	-	-	4	2	30	70	100
B12116	Seminar-II	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

II Year I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B12123	Comprehensive Viva-Voce	--	--	--	4	--	100	100
B12124	Project Work and Review-I	--	--	-	18	50	--	50
TOTAL		--	--	-	22	50	100	150

II Year II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B12125	Project Work and Review-II	--	--	-	6	50	--	50
B12126	Project Evaluation (Viva-voce)	--	--	-	16	--	150	150
TOTAL		--	--	-	22	50	150	200

OPEN ELECTIVES			
OE1		OE2	
B12130	Advanced Optimization Techniques & Applications	B12132	Advanced Finite Element Analysis
B12131	Nanofluids	B12133	Energy Management
CORE ELECTIVE			
CE1		CE2	
B12106	Non Conventional Energy Sources	B12109	Thermal and Nuclear Power Plants
B12107	Refrigeration & Air Conditioning	B12110	Thermal Measurements & process controls
B12108	Turbo Machines	B12111	Advanced Materials for Thermal Systems
CE3		CE4	
B12117	Advanced Material Science	B12120	Convective Heat Transfer
B12118	Cryogenic Engineering	B12121	Equipment Design for Thermal Systems
B12119	Jet Propulsion & Rocket Engineering	B12122	Solar Energy Technology

EMBEDDED SYSTEMS

I Year I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B1A5501	Embedded System Design	3	-	-	3	30	70	100
B1A5502	VLSI Technology and Design	3	-	-	3	30	70	100
B1A5503	Embedded Real time operating systems	3	-	-	3	30	70	100
	Core Elective I	3	-	-	3	30	70	100
	Core Elective II	3	-	-	3	30	70	100
	Open Elective I	3	-	-	3	30	70	100
B1A5504	Embedded C laboratory	-	-	4	2	30	70	100
B1A5505	Seminar	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

I Year II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B1A5512	Digital Signal Processors and Architectures	3	-	-	3	30	70	100
B1A5513	Embedded Networking	3	-	-	3	30	70	100
B1A5514	Low power VLSI design	3	-	-	3	30	70	100
	Core Elective III	3	-	-	3	30	70	100
	Core Elective IV	3	-	-	3	30	70	100
	Open Elective II	3	-	-	3	30	70	100
B1A5515	Advanced Embedded Systems Lab	-	-	4	2	30	70	100
B1A5516	Seminar	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

II Year I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B1A5523	Comprehensive Viva-Voce	--	--	--	4	--	100	100
B1A5524	Project Work and Review-I	--	--	-	18	50	--	50
TOTAL		--	--	-	22	50	100	150
II Year II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B1A5525	Project Work and Review-II	--	--	-	6	50	--	50
B1A5526	Project Evaluation (Viva-voce)	--	--	-	16	--	150	150
TOTAL		--	--	-	22	50	150	200

OPEN ELECTIVES			
OE1		OE2	
B1A5530	Embedded C	B1A5533	Design for Testability
B1A5531	Advanced Data Communication	B1A5534	Advanced Computer Architecture
B1A5532	Microcontrollers for Embedded System Design	B1A5535	Wireless LANs and PANs
CORE ELECTIVE			
CE1		CE2	
B1A5506	Digital System Design	B1A5509	Embedded Computing
B1A5507	Hardware Software Co-design	B1A5510	Image and Video Processing
B1A5508	Soft Computing Techniques	B1A5511	Sensors and Actuators
CE3		CE4	
B1A5517	Network Security and cryptography	B1A5520	CPLD and FPGA Architectures and applications
B1A5518	Internetworking	B1A5521	System on chip architecture
B1A5519	Wireless Communication and networks	B1A5522	Advanced Operating systems

DIGITAL SYSTEMS & COMPUTER ELECTRONICS

I Year I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10601	VLSI Technology and Design	3	-	-	3	30	70	100
B10602	Digital System Design	3	-	-	3	30	70	100
B10603	Microcontrollers for Embedded System Design	3	-	-	3	30	70	100
	Core Elective I	3	-	-	3	30	70	100
	Core Elective II	3	-	-	3	30	70	100
	Open Elective I	3	-	-	3	30	70	100
B10604	Simulation Lab	-	-	4	2	30	70	100
B10605	Seminar	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

I Year II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10612	Wireless LANs and PANs	3	-	-	3	30	70	100
B10613	Digital Signal Processors and Architectures	3	-	-	3	30	70	100
B10614	Low power VLSI design	3	-	-	3	30	70	100
	Core Elective III	3	-	-	3	30	70	100
	Core Elective IV	3	-	-	3	30	70	100
	Open Elective II	3	-	-	3	30	70	100
B10615	Embedded Systems Laboratory	-	-	4	2	30	70	100
B10616	Seminar	-	-	4	2	50	-	50
TOTAL		18	-	8	22	260	490	750

II Year I Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10623	Comprehensive Viva-Voce	--	--	--	4	--	100	100
B10624	Project Work and Review-I	--	--	-	18	50	--	50
TOTAL		--	--	-	22	50	100	150

II Year II Semester								
Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal	External	Total
B10625	Project Work and Review-II	--	--	-	6	50	--	50
B10626	Project Evaluation (Viva-voce)	--	--	-	16	--	150	150
TOTAL		--	--	-	22	50	150	200

OPEN ELECTIVES			
OE1		OE2	
B10627	CMOS mixed signal circuit design	B10630	Advanced Operating systems
B10628	Embedded Real time operating systems	B10631	Internetworking
B10629	Sensors and actuators	B10632	Embedded Networking
CORE ELECTIVE			
CE1		CE2	
B10606	Advanced Data Communication	B10609	Hardware Software Co-Design
B10607	Image and Video Processing	B10610	CMOS digital integrated Circuit Design
B10608	Embedded System Design	B10611	Wireless Communication and Networks
CE3		CE4	
B10617	CPLD and FPGA Architectures and applications	B10620	Advanced Computer architecture
B10618	Embedded Computing	B10621	TCP/IP and ATM networks
B10619	Network Security and Cryptography	B10623	Design for Testability

Detailed Syllabus Available in www.mlrinstitutions.ac.in