

# **ACADEMIC REGULATIONS AND COURSE STRUCTURE**

**CHOICE BASED CREDIT SYSTEM**

## **MLR17**

### **Master of Technology (M.Tech)**

**M. Tech. - Regular Two Year Degree Program  
(For batches admitted from the academic year 2017 - 2018)**



**MARRI  
LAXMAN  
REDDY**

**GROUP OF INSTITUTIONS**

# **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 to 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 and 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**

**M. Tech. - Regular Two Year Degree Program  
(For batches admitted from the academic year 2017 - 18)**

For pursuing two year post graduate Masters Degree Programme of study in Engineering (M.Tech) offered by MLR 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 2017-18 onwards. Any reference to “Institute” or “College” in these rules and regulations shall stand for MLR 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, MLR 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. 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 90 credits and secure all the 90 credits.

The minimum instruction days in each semester are 90.

**3. 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

**4. 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 within 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 Chief Controller of Examinations. For this, the HOD of the department 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.
- 6.8 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:

<b>% of Marks Secured (Class Intervals)</b>	<b>Letter Grade (UGC Guidelines)</b>	<b>Grade Points</b>
90% and above ( $\geq 90\%$ , $\leq 100\%$ )	O (Outstanding)	10
Below 90% but not less than 80% ( $\geq 80\%$ , $< 90\%$ )	A <sup>+</sup> (Excellent)	9
Below 80% but not less than 70% ( $\geq 70\%$ , $< 80\%$ )	A (Very Good)	8
Below 70% but not less than 60% ( $\geq 60\%$ , $< 70\%$ )	B <sup>+</sup> (Good)	7
Below 60% but not less than 50% ( $\geq 50\%$ , $< 60\%$ )	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  $\geq 6$  (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

$$\text{SGPA} = \frac{\sum_{i=1}^N C_i G_i}{\sum_{i=1}^N C_i} \dots \text{For each Semester,}$$

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.

#### Illustration of Computation of SGPA

Course	Credit	Grade Letter	Grade Point	Credit Point (Credit x Grade)
Course1	3	A	8	3 x 8 = 24
Course2	4	B+	7	4 x 7 = 28
Course3	3	B	6	3 x 6 = 18
Course4	3	O	10	3 x 10 = 30
Course5	3	C	5	3 x 5 = 15
Course6	4	B	6	4 x 6 = 24

Thus, **SGPA = 139/20 = 6.95**

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

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

**(i.e., up to 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 1<sup>st</sup> 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.

**For CGPA Computation**

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credits : 20 SGPA : 6.9	Credits : 22 SGPA : 7.8	Credits : 25 SGPA : 5.6	Credits : 26 SGPA : 6.0	Credits : 26 SGPA : 6.3	Credits : 25 SGPA : 8.0

$$\text{Thus, CGPA} = \frac{20 \times 6.9 + 22 \times 7.8 + 25 \times 5.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0}{144} = 6.73$$

144

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 Examination Branch 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 30%, 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 and Literature Survey in the same domain. A candidate has to secure a



- minimum of 50% of marks to be declared successful for Project Phase-I. If he fails to fulfill minimum marks, he has to reappear during the supplementary examination.
- 8.10 For Project Phase-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 Chief Controller of Examinations. The candidate has to secure minimum of 50% marks in Project Dissertation.
- 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 Chief Controller of Examinations. For this, the HOD of the Department 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 favorable, the candidate shall revise and resubmit the Thesis. If the report of the examiner is unfavorable again, the thesis shall be summarily rejected.
- 8.15 If the report of the examiner is favorable, Project dissertation 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 dissertation.

## 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 90 Credits (with CGPA  $\geq 6.0$ ), 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	Grade to be Secured
First Class with Distinction	CGPA $\geq 8.00$
First Class	$\geq 7.00$ to $< 8.00$ CGPA
Second Class	$\geq 6.00$ to $< 7.00$ CGPA

- 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. WITHOLDING 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 MLR17 Academic Regulations.

**12. 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 College.

**MALPRACTICES RULES  
DISCIPLINARY ACTIONFOR / IMPROPER CONDUCT IN EXAMINATIONS**

<b>S. No</b>	<b>Nature of Malpractices/Improper conduct</b>	<b>Punishment</b>
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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 connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the principal for further action to award suitable punishment.	

# **COURSE STRUCTURE**

## AEROSPACE ENGINEERING

I M.Tech. I Semester								
Course Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B17601	Mathematical Modeling	4	-	-	4	30	70	100
B17602	Aerodynamics of Flight Vehicles	4	-	-	4	30	70	100
B17603	Flight Vehicle Structures	4	-	-	4	30	70	100
	<b>Core Elective - I</b>	4	-	-	4	30	70	100
	<b>Core Elective – II</b>	4	-	-	4	30	70	100
	<b>Open Elective-I</b>	4	-	-	4	30	70	100
B17604	Digital Simulation Lab-I	-	-	4	2	30	70	100
B17605	Seminar-I	-	-	4	2	50	-	50
<b>TOTAL</b>		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

I M.Tech. II Semester								
Course Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B17616	Space Transportation Systems	4	-	-	4	30	70	100
B17617	Aerospace Sensors and Measurement Systems	4	-	-	4	30	70	100
B17618	Avionics	4	-	-	4	30	70	100
	<b>Core Elective – III</b>	4	-	-	4	30	70	100
	<b>Core Elective – IV</b>	4	-	-	4	30	70	100
	<b>Open Elective-II</b>	4	-	-	4	30	70	100
B17619	Digital Simulation Lab-II	-	-	4	2	30	70	100
B17620	Seminar-II	-	-	4	2	50	-	50
<b>TOTAL</b>		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

**II M.Tech. I Semester**

Course Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B17631	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B17632	Project Work and Review-I	-	-	-	12	50	-	50
<b>TOTAL</b>		-	-	-	<b>16</b>	-	-	<b>150</b>

**II M.Tech. II Semester**

Course Code	Course Title	Hours per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B17633	Project Phase-II & Dissertation	-	-	-	18	50	150	200
<b>TOTAL</b>		-	-	-	<b>18</b>	<b>50</b>	<b>150</b>	<b>200</b>

**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 M.Tech II Semester								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25801	Advanced Database Engineering	4	-	-	4	30	70	100
B25802	Advanced Data Structures & Algorithms	4	-	-	4	30	70	100
B25803	Advanced Operating Systems	4	-	-	4	30	70	100
	<b>Core Elective - 1</b>	4	-	-	4	30	70	100
	<b>Core Elective - 2</b>	4	-	-	4	30	70	100
	<b>Open Elective-1</b>	4	-	-	4	30	70	100
B25804	Data Structures and Algorithms Lab	-	-	4	2	30	70	100
B25805	Seminar-1	-	-	4	2	50	-	50
<b>TOTAL</b>		24		8	28	260	490	750

I M.Tech II Semester								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25812	Web Services and Service Oriented Architecture	4	-	-	4	30	70	100
B25813	Advanced Computer Networks	4	-	-	4	30	70	100
B25814	Cloud Computing	4	-	-	4	30	70	100
	<b>Core Elective – 3</b>	4	-	-	4	30	70	100
	<b>Core Elective – 4</b>	4	-	-	4	30	70	100
	<b>Open Elective - 2</b>	4	-	-	4	30	70	100
B25815	Web Services Lab	-	-	4	2	30	70	100
B25816	Seminar-II	-	-	4	2	50	-	50
<b>TOTAL</b>		24		8	28	260	490	750

II M.Tech I Semester								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25823	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B25824	Project Phase-I	-	-	-	12	50	-	50
<b>TOTAL</b>		-	-	-	16	50	100	150

<b>II M.Tech II Semester</b>								
<b>Course Code</b>	<b>Course Title</b>	<b>Periods per Week</b>			<b>Credits</b>	<b>Scheme of Examination Maximum Marks</b>		
		<b>L</b>	<b>T</b>	<b>P</b>		<b>Internal (CIE)</b>	<b>External (SEE)</b>	<b>Total</b>
B25826	Project Phase –II & Dissertation	-	-	-	18	50	150	200
<b>TOTAL</b>					18	50	150	200

<b>OPEN ELECTIVES</b>			
<b>OE1</b>		<b>OE2</b>	
B25830	Internet of Things	B25833	Introduction to Web Markup Languages
B25831	Software Project Management	B25834	Adhoc & Sensor Networks
B25832	Cryptography and Network Security	B25835	Software Testing Methodologies
<b>CORE ELECTIVE</b>			
<b>CE1</b>		<b>CE2</b>	
B25806	Mobile Computing	B25809	Information Security
B25807	Data Warehousing and Mining	B25810	Scripting Languages
B25808	Natural Language Processing	B25811	Mobile Application Development
<b>CE3</b>		<b>CE4</b>	
B25817	Artificial Intelligence	B25820	Social Media & Web Mining

**DIGITAL SYSTEMS AND COMPUTER ELECTRONICS**

<b>I M.Tech I Semester</b>								
Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20601	VLSI Technology and Design	4	-	-	4	30	70	100
B20602	Digital System Design	4	-	-	4	30	70	100
B20603	Microcontrollers for Embedded System Design	4	-	-	4	30	70	100
	<b>Core Elective I</b>	4	-	-	4	30	70	100
	<b>Core Elective II</b>	4	-	-	4	30	70	100
	<b>Open Elective I</b>	4	-	-	4	30	70	100
B20613	Simulation Lab	-	-	4	2	30	70	100
B20614	<b>Seminar</b>	-	-	4	2	50	--	50
<b>Total</b>		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>I M.Tech II Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20615	Wireless LANs and PANs	4	-	-	4	30	70	100
B20616	Digital Signal Processors and Architectures	4	-	-	4	30	70	100
B20617	Low power VLSI design	4	-	-	4	30	70	100
	<b>Core Elective III</b>	4	-	-	4	30	70	100
	<b>Core Elective IV</b>	4	-	-	4	30	70	100
	<b>Open Elective II</b>	4	-	-	4	30	70	100
B20627	Embedded Systems Laboratory	-	-	4	2	30	70	100
B20628	<b>Seminar</b>	-	-	4	2	50	--	50
<b>Total</b>		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>II M.Tech I Semester</b>								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20629	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B20630	Project Phase-I	-	-	-	12	50	-	50
<b>TOTAL</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>50</b>	<b>100</b>	<b>150</b>

<b>II M.Tech II Semester</b>								
Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20631	Project Phase –II & Dissertation	-	-	-	18	50	150	200
<b>TOTAL</b>					18	50	150	200

<b>OPEN ELECTIVES</b>			
<b>OE1</b>		<b>OE2</b>	
B20610	CMOS mixed signal circuit design	B20624	Advanced Operating systems
B20611	Embedded Real time operating systems	B20625	Internetworking
B20612	Sensors and actuators	B20626	Embedded Networking

<b>CORE ELECTIVES</b>			
<b>CE1</b>		<b>CE2</b>	
B20604	Advanced Data Communication	B20607	Hardware Software Codesign
B20605	Image and Video Processing	B20608	CMOS digital integrated Circuit design
B20606	Embedded System Design	B20609	Wireless Communication and Networks
<b>CE3</b>		<b>CE4</b>	
B20618	CPLD and FPGA Architectures and applications	B20621	Advanced Computer architecture
B20619	Embedded Computing	B20622	TCP/IP and ATM networks
B20620	Network Security and cryptography	B20623	Design for testability

**EMBEDDED SYSTEMS**

<b>I M.Tech I Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25501	Embedded System Design	4	-	-	4	30	70	100
B25502	VLSI Technology and Design	4	-	-	4	30	70	100
B25503	Embedded Real time operating systems	4	-	-	4	30	70	100
	Core Elective I	4	-	-	4	30	70	100
	Core Elective II	4	-	-	4	30	70	100
	Open Elective I	4	-	-	4	30	70	100
B25513	Embedded C laboratory	-	-	4	2	30	70	100
B25514	<b>Seminar</b>	-	-	4	2	50	--	50
<b>Total</b>		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>I M.Tech II Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25515	Digital Signal Processors and Architectures	4	-	-	4	30	70	100
B25516	Embedded Networking	4	-	-	4	30	70	100
B25517	Low power VLSI design	4	-	-	4	30	70	100
	Core Elective III	4	-	-	4	30	70	100
	Core Elective IV	4	-	-	4	30	70	100
	Open Elective II	4	-	-	4	30	70	100
B25527	Advanced Embedded Systems Lab	-	-	4	2	30	70	100
B25528	<b>Seminar</b>	-	-	4	2	50	--	50
<b>Total</b>		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>II M.Tech I Semester</b>								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25529	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B25530	Project Phase-I	-	-	-	12	50	-	50
<b>TOTAL</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>50</b>	<b>100</b>	<b>150</b>

<b>II M.Tech II Semester</b>								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum		
		L	T	P		Internal (CIE)	External (SEE)	Total
B25531	Project Phase –II & Dissertation	-	-	-	18	50	150	200
<b>TOT</b>					18	50	150	200

<b>OPEN ELECTIVES</b>			
<b>OE1</b>		<b>OE2</b>	
B25510	Embedded C	B25524	Design for testability
B25511	Advanced Data Communication	B25525	Advanced Computer Architecture
B25512	Microcontrollers for Embedded System Design	B25526	Wireless LANs and PANs

<b>CORE ELECTIVES</b>			
<b>CE1</b>		<b>CE2</b>	
B25504	Digital System Design	B25507	Hardware Software Codesign
B25505	Image and Video Processing	B25508	Embedded Computing
B25506	Soft Computing Techniques	B25509	Sensors and Actuators
<b>CE3</b>		<b>CE4</b>	
B25518	Network Security and cryptography	B25521	CPLD and FPGA Architectures and applications
B25519	Internetworking	B25522	System on chip architecture
B25520	Wireless Communication and networks	B25523	Advanced Operating systems

## Thermal Engineering

<b>I M.Tech I Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B22101	Advanced Thermodynamics	4	-	-	4	30	70	100
B22102	Advanced I.C. Engines	4	-	-	4	30	70	100
B22103	Advanced Fluid Mechanics	4	-	-	4	30	70	100
	Core Elective I	4	-	-	4	30	70	100
	Core Elective II	4	-	-	4	30	70	100
	Open Elective I	4	-	-	4	30	70	100
B22104	Thermal Engineering Lab	-	-	4	2	30	70	100
B22105	<b>Seminar</b>	-	-	4	2	50	--	50
Total		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>I M.Tech II Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B22112	Combustion & Environment	4	-	-	4	30	70	100
B22113	Computational Fluid Dynamics	4	-	-	4	30	70	100
B22114	Advanced Heat and Mass Transfer	4	-	-	4	30	70	100
	<b>Core Elective III</b>	4	-	-	4	30	70	100
	<b>Core Elective IV</b>	4	-	-	4	30	70	100
	<b>Open Elective II</b>	4	-	-	4	30	70	100
B22115	Computational Methods Lab	-	-	4	2	30	70	100
B22105	<b>Seminar</b>	-	-	4	2	50	--	50
Total		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>II M.Tech I Semester</b>								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination		
		L	T	P		Internal (CIE)	External (SEE)	Total
B22123	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B22124	Project Phase-I	-	-	-	12	50	-	50
		-	-	-	16	50	100	150

<b>II M.Tech II Semester</b>								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B22125	Project Phase –II & Dissertation	-	-	-	18	50	150	200
<b>TOTAL</b>					18	50	150	200

<b>OPEN ELECTIVES</b>			
<b>OE1</b>		<b>OE2</b>	
B22130	Advanced Optimization Techniques &	B22132	Advanced Finite Element Analysis
B22131	Nanofluids	B22133	Energy Management

<b>CORE ELECTIVES</b>			
<b>CE1</b>		<b>CE2</b>	
B32106	Non Conventional Energy Sources	B32109	Thermal and Nuclear Power Plants
B32107	Refrigeration & Air Conditioning	B32110	Thermal Measurements & process controls
B32108	Turbo Machines	B32111	Advanced Materials for Thermal Systems
<b>CE3</b>		<b>CE4</b>	
B32117	Advanced Material Science	B32120	Convective Heat Transfer
B32118	Cryogenic Engineering	B32121	Equipment Design for Thermal Systems
B32119	Jet Propulsion & Rocket Engineering	B32122	Solar Energy Technology



## CAD/CAM

<b>I M.Tech I Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20401	Advanced CAD	4	-	-	4	30	70	100
B20402	Advanced Finite Element Analysis	4	-	-	4	30	70	100
B20403	Precision Engineering	4	-	-	4	30	70	100
	<b>Core Elective I</b>	4	-	-	4	30	70	100
	<b>Core Elective II</b>	4	-	-	4	30	70	100
	<b>Open Elective I</b>	4	-	-	4	30	70	100
B20404	Computer Aided Design Lab	-	-	4	2	30	70	100
B20405	<b>Seminar</b>	-	-	4	2	50	--	50
Total		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>I M.Tech II Semester</b>								
Course Code	Course Title	Periods per week			Credits	Scheme of Examination Maximum marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20412	Design of Hydraulics and Pneumatics	4	-	-	4	30	70	100
B20413	Flexible Manufacturing Systems	4	-	-	4	30	70	100
B20414	Computer Aided Manufacturing	4	-	-	4	30	70	100
	<b>Core Elective I</b>	4	-	-	4	30	70	100
	<b>Core Elective II</b>	4	-	-	4	30	70	100
	<b>Open Elective I</b>	4	-	-	4	30	70	100
B20415	Advanced Computer Aided Manufacturing Lab	-	-	4	2	30	70	100
B20416	<b>Seminar</b>	-	-	4	2	50	--	50
Total		<b>24</b>		<b>8</b>	<b>28</b>	<b>260</b>	<b>490</b>	<b>750</b>

<b>II M.Tech I Semester</b>								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20423	Comprehensive Viva-Voce	-	-	-	4	-	100	100
B20424	Project Phase-I	-	-	-	12	50	-	50
		-	-	-	16	50	100	150

<b>II M.Tech II Semester</b>								
Course Code	Course Title	Periods per Week			Credits	Scheme of Examination Maximum Marks		
		L	T	P		Internal (CIE)	External (SEE)	Total
B20425	Project Phase –II & Dissertation	-	-	-	18	50	150	200
<b>TOTAL</b>					18	50	150	200

<b>OPEN ELECTIVES</b>			
<b>OE1</b>		<b>OE2</b>	
B20430	Numerical Methods for Partial Differential Equations	B20432	Engineering Research and Methodology
B20431	Production and Operations Management	B20433	Quality Engineering in Manufacturing

<b>CORE ELECTIVES</b>			
<b>CE1</b>		<b>CE2</b>	
B30406	Design for Manufacturing and Assembly	B30409	Advanced Mechanics of Composite
B30407	Advanced Mechanics of Solids	B30410	Total Quality Management
B30408	Advanced Mechatronics	B30411	Stress Analysis and Vibrations
<b>CE3</b>		<b>CE4</b>	
B30417	Industrial Robotics	B30420	Design Optimization
B30418	Computational Fluid Dynamics	B30421	Intelligent Manufacturing Systems
B30419	Automation in Manufacturing	B30422	Computer Aided Process Planning