

**Mahatma Gandhi University**

**Course Regulations**

**of**

**B.Tech. Degree Courses (Revised)**

**(With effect from 2010 admissions)**

## **1. Conditions for Admissions**

Candidates for admission to the B.Tech. Engineering degree course shall be required to have passed the Higher Secondary Examination of State Board of Kerala or 12th Standard V.H.S.E., C.B.S.E., I.C.S.E. or examinations recognized equivalent by any Universities of Kerala thereto with mathematics, physics and chemistry as optional subjects, with 50% marks in Mathematics and 50% marks in Physics, Chemistry, and Mathematics put together. Candidates belonging to scheduled caste and scheduled tribe need only a pass in the qualifying examination.

Candidates have to qualify the State Level Entrance examination conducted by the Commissioner of Entrance Examinations or State level/National level Entrance Examination approved by the Government of Kerala as equivalent. They shall also satisfy the conditions regarding age and physical fitness as prescribed by the Mahatma Gandhi University

Criteria for selection and method of admission to merit/management seats for Engineering degree courses conducted by Government/Aided/Self-financing colleges affiliated to Mahatma Gandhi University shall be governed by the rules/regulations framed by the Commissioner of Entrance Examinations or other competent authority appointed by the Government of Kerala, in consultation with the University and without contravening with the stipulation of the All India Council for Technical Education (AICTE). In all matters related to selection and admission, the decisions of the University shall be final. The students admitted by affiliated colleges violating the above regulations will not be eligible for registration to University Examinations and contravention of the regulations shall lead to withdrawal/suspension of affiliation.

## **2. Admission to Diploma Holders**

A candidate who has a diploma in engineering awarded by the State Board of Technical Examination or an examination recognized equivalent by the State Board of Technical Education after undergoing regular course of 3 years in an institute approved by AICTE, securing a cumulative minimum of 50% marks in the second and third years diploma examination shall be eligible to be admitted to the first year B.Tech. programme of the Mahatma Gandhi University (hereafter, the University, unless otherwise specified) if he/she has qualified the entrance examination conducted by the Commissioner of Entrance Examinations or State level/National level Entrance Examination approved by the Government of Kerala as equivalent.

Diploma holders with 60% marks (50% in case of SC/ST) are also eligible for admission to the 3<sup>rd</sup> semester (regular full-time batch) engineering degree course (B.Tech.) under the lateral entry scheme provided they qualify the Entrance Examination conducted for the lateral entry scheme by the state Government. These students are not required to study any deficiency papers of the combined first and second semesters. Admission of all candidates under the lateral entry scheme shall be completed latest by commencement of 3<sup>rd</sup> semester classes.

### **3. Subjects of Study**

The subjects of study, both theory and practical, shall be in accordance with the prescribed scheme and syllabi of each branch of study.

### **4. Duration of the Course**

The course for the B.Tech degree shall extend over a period of four academic years comprising of eight semesters. The first and second semesters shall be combined; the scheme and syllabi for combined first and second semesters (S<sub>1</sub>&S<sub>2</sub>) will be common for all branches of study. The maximum duration permissible for taking the B.Tech. Degree is fixed as 8 years. For lateral entry students maximum duration permissible for taking the B.Tech. Degree is fixed as 7 years.

Classes of combined first and second semesters shall be started latest by 1<sup>st</sup> August in all affiliated engineering colleges of Mahatma Gandhi University; however admission to first year shall be completed by 31<sup>st</sup> August.

The minimum number of working days in combined first and second semesters shall be 150 days. In 3<sup>rd</sup> to 8<sup>th</sup> semesters, there shall be minimum 90 working days.

### **5. Branches of Study**

1. Civil Engineering (CE)
2. Mechanical Engineering (ME)
3. Electrical and Electronics Engineering (EE)
4. Electronics and Communication Engineering (EC)
5. Electronics & Instrumentation Engineering (EI )
6. Instrumentation and Control Engineering (IC)
7. Applied Electronics and Instrumentation Engineering (AI)
8. Computer Science and Engineering (CS)
9. Information Technology (IT)
10. Polymer Engineering (PO)
11. Automobile Engineering (AU)
12. Aeronautical Engineering (AN)
13. Production Engineering (PE)

### **6. Course Calendar**

The course calendar, published by the University, shall be followed by all affiliated engineering colleges. Within a week after the commencement of classes of each semester, Head of each Institution should forward the list of faculty members working in the college along with their qualification and years of teaching experience, to the University. This is a mandatory requirement which should be strictly followed by Head of each Institution. Head of each Institution shall ensure the availability of sufficient number of regular faculty members having experience and qualifications (as per AICTE guidelines) in the institution.

## 7. Assessment of Students

Assessment of students for each subject will be done by internal continuous assessment and Semester-End examinations. Internal assessment shall be conducted throughout the semester. It shall be based on internal examinations, assignments (such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.) as decided by the faculty handling the course, and regularity in the class. Assignments of every semester shall preferably be submitted in Assignment Book, which is a bound book similar to laboratory record.

Semester-End examinations of theory and practical subjects will be conducted by the University. Semester-End examinations of combined first and second semesters and 3<sup>rd</sup> to 6<sup>th</sup> semesters will be conducted only once in a year; failed or improvement candidates will have to appear for the Semester-End examinations along with regular students. However, Semester-End examinations of 7<sup>th</sup> and 8<sup>th</sup> semesters will be conducted once in every semester. Head of institution should take necessary steps to prevent any malpractices in the Semester-End examinations. If any such instances are detected, they should be reported to the University without any delay.

Internal assessment marks of each theory subject should have a class average limited to 80%. If the class average of internal assessment marks of any theory subjects is greater than 80%, existing normalization procedure should be applied to limit it to 80%. If the class average is not greater than 80%, absolute marks should be given.

For practical subjects, internal assessment marks and Semester-End examination marks individually should have a class average limited to 80%. If the class average of internal assessment marks or Semester-End examination marks of practical subjects is greater than 80%, the existing normalization procedure should be applied to limit the class average to 80%. If it is not greater than 80%, absolute marks should be given.

All the students in the nominal roll of the class on the closing day of semester should be considered for normalization of internal marks. All the students who have passed the Semester-End practical examination should be considered for normalisation of marks of Semester-End practical examinations.

Internal assessment marks of theory and practical subjects, both absolute and normalised, should be published in the college 10 days before sending it to the University so as to enable the students to report any corrections.

### (a) Assessment in Theory Subjects

The marks allotted for internal continuous assessment and Semester-End university examinations shall be 50 marks and 100 marks respectively with a maximum of 150 marks for each theory subject.

The weightage to award internal continuous assessment marks should be as follows:

Test papers (minimum two) – 60%

Assignments (minimum two) such as home assignments, problem solving, group discussions, quiz,

literature survey, seminar, term-project, software exercises, etc.	– 20%
Regularity in the class	– 20%

The sessional marks awarded for attendance shall be awarded in direct proportion to the percentage of attendance secured by the candidate in the subject. Full credit for regularity in the class can be given only if the candidate has secured minimum 90% attendance in the subject.

### **(b) Assessment in Practical Subjects**

Internal continuous assessment and Semester-End practical examinations will have weightage in the student's performance of practical subjects, with 50 marks allotted for internal continuous assessment and 100 marks for Semester-End examinations.

The weightage to award internal continuous assessment marks should be as follows:

Test papers	– 30%
Regular work/drawing/workshop record/lab record/ Class performance	– 50%
Regularity in the class	– 20%

An external examiner and an internal examiner, appointed by the University, shall conduct the Semester-End examinations of practical subjects. These examiners should necessarily have minimum two years teaching experience at engineering degree level.

Award of marks in the Semester-End practical examinations (except Project) should be as follows:

Viva voce	– 30%
Procedure and tabulation form, Conducting experiment, results and inference	– 70%

No candidate will be permitted to attend the Semester-End practical examinations unless he/she produces certified record of the laboratory.

Strict measures will be taken by the University to monitor the laboratory facilities, laboratory experiments conducted, standard of Semester-End practical examinations, etc. in every affiliated engineering college. In this regard, an expert team comprising of at least three subject experts from government/government-aided engineering colleges from within/outside the University shall be formulated to assess these aspects in affiliated engineering colleges. This expert team should visit each engineering college at least once in a semester and submit a detailed report to the University regarding the laboratory facilities, laboratory experiments conducted, and standard of Semester-End practical examinations in each college.

## 8. Pattern of Questions for Semester-End Examinations of Theory Subjects

The question papers of Semester-End examinations of theory subjects shall be able to perform achievement testing of the students in an effective manner. The question paper shall be prepared

- (a) covering all sections of the course syllabus
- (b) unambiguous and free from any defects/errors
- (c) emphasizing knowledge testing, problem solving & quantitative methods
- (d) containing adequate data/other information on the problems assigned
- (e) having clear and complete instructions to the candidates.

Duration of Semester-End examinations will be 3 hours. The pattern of questions for theory subjects shall be as follows:

**PART A: Short answer questions (one/two sentences)                    5 x 3 marks=15 marks**

All questions are compulsory. There should be at least one question from each module.

**PART B: Analytical/Problem solving questions                            5 x 5 marks=25 marks**

All questions are compulsory. There should be at least one question from each module.

**PART C: Descriptive/Analytical/Problem solving questions        5 x 12 marks=60 marks**

Two questions from each module with choice to answer one question.

**Maximum Total Marks: 100**

Weightage for categories such as problem solving, descriptive, drawing, or diagrammatic questions shall be specified along with the syllabus of any subject, if necessary. Model question paper shall be prepared for each subject at the time of framing the syllabus. This same model question paper along with the syllabus must be sent to the question-paper setter every time for framing the questions. The model question paper shall be made available to students.

It is permitted to have an entirely different pattern of questions especially for subjects involving drawing, design, etc. However, the modified pattern to be followed shall be clearly specified along with the syllabus of the particular subject. All question paper setters should supplement the scheme and key for the evaluation

## 9. Minimum for Pass

A candidate shall be declared to have passed in an individual subject of a semester examination if he/she secures not less than 40% marks for the subject in the university

examination and not less than 50% of the total marks of the subject *i.e. university examination marks and sessional marks in that subject put together.*

A candidate shall be declared to have passed in a semester examination in full in first appearance (first registration is considered as first appearance) if he satisfies the above criteria for each theory and practical subject.

Candidates will be assigned grades according to the marks scored.

For Seminar, Project, and Viva Voce (in 8<sup>th</sup> semester), the minimum for a pass shall be 50% of the total marks assigned to the respective examination.

If a candidate has passed all examinations of B.Tech. course (at the time of publication of results of eighth semester) except Viva-Voce in the eighth semester, a re-examination for the Viva-Voce should be conducted within one month after the publication of results. Each candidate should apply for this 'Save a Semester examination' within one week after the publication of eighth semester results.

## **10. Credit System**

Each subject shall have a certain number of credits assigned to it depending upon the academic load and the nature and importance of the subject. The credit associated with each subject will be shown in the prescribed scheme and syllabi. Each course shall have an integer number of credits, which reflects its weightage.

## **11. Grading**

The university shall award the letter grade to students based on the marks secured by them in both internal assessment and Semester-End examinations taken together in the subjects registered. Each letter grade indicates a qualitative assessment of the student's performance and is associated with a specified number of grade points. The grading system along with the grade points for each grade, applicable to passed candidates is shown below. All passed candidate will be allotted a grade S, A, B, C, D, or E according to the total marks scored by him/her.

If a candidate does not pass a subject as per the conditions given in Section (9), he/she will be assigned an Unsatisfactory grade 'U' irrespective of his/her total marks. If a student does not pass a subject in two attempts, the maximum grade he/she can get is 'C' when he/she passes the subject in any subsequent examination, whatever be the marks scored by him/her.

A student is considered to have completed a subject successfully and earned the credits if he/she secures a letter grade other than 'U' in that course. Letter grade 'U' has zero grade point and the candidate has to write the examination again to improve the grade. A student's performance is measured by the number of credits that he/she has earned and by the cumulative grade point average (CGPA) maintained by him/her.

Total marks scored by the passed candidate	Corresponding Grade allotted	Grade Points
136-150	S	10
121-135	A	9.0
106-120	B	8.0
91-105	C	7.0
83-90	D	6.0
75-82	E	5.5
Failed	U	0.0

## 12. Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

- (a) A Semester Grade Point Average (SGPA) shall be computed for all the students for each semester, as follows:

$$SGPA = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$$

where, n is the number of subjects registered during the semester,  $C_i$  is the number of credits allotted to  $i^{\text{th}}$  subject as per the scheme, and  $G_i$  is the grade points corresponding to the grade awarded to the student for the subject.

- (b) A Cumulative Grade Point Average (CGPA) shall be computed for all the students at the end of each semester by taking into consideration their performance in the present and the past semesters as follows:

$$CGPA = \frac{\sum_{i=1}^m C_i G_i}{\sum_{i=1}^m C_i}$$

where, m is the number of courses registered up to that semester,  $C_i$  is the number of credits allotted to  $i^{\text{th}}$  subject as per the scheme, and  $G_i$  is the grade points corresponding to the grade awarded to the student for the subject.

An up-to-date assessment of overall performance of a student is obtained by calculating CGPA. CGPA is weighted average of the grade points obtained in all the subjects registered by the students since he entered the B.Tech. course.



- (c) Both the SGPA and CGPA shall be rounded off to the second place of decimal and recorded as such for ease of presentation. Whenever the CGPAs are to be used for the purpose of determining the merit ranking in a group of students, only the rounded off values shall be made use of.

### **13. Improvement**

Candidates shall be allowed to improve the grade of any two theory subjects in a semester. This can be done only in the immediate subsequent chance. If the candidate gets more marks in the improvement chance, marks scored in the improvement chance will be considered for grading in the subject; otherwise marks scored in the first attempt will be retained. No candidate shall be permitted to improve the marks scored in practical examinations and internal continuous assessment.

### **14. Attendance**

A candidate shall be permitted to appear for the Semester-End examinations only if he/she satisfies the following requirements:

- (a) He/she must secure not less than 75% attendance in the total number of working periods during the first year and in each semester thereafter; and shall be physically present for a minimum of 60% of the total working periods. In addition, he/she also shall be physically present in at least 20% of total attendance for each subject.
- (b) He/she must earn a progress certificate from the head of the institution stating that he/she has satisfactorily completed the course of study prescribed in the semester as required by these regulations.
- (c) His/her conduct must be satisfactory

It shall be open to the Vice Chancellor to grant condonation of shortage of attendance on the recommendation of the head of the institution in accordance with the following norms.

- The shortage shall not be more than 10%
- Condonation will be permitted on medical grounds only.
- Shortage shall not be condoned more than twice during the entire course.
- Candidate who is not eligible for condonation of shortage of attendance shall repeat the semester.

### **15. Eligibility for Promotion to Higher Semester – Procedure for completing the course**

- (a) A student who has secured 75% of attendance and has exhibited satisfactory progress in the class will be eligible for promotion to the next higher semester.

(b) However, before being admitted to the VIII semester classes, the student should have passed in all subjects in the combined first and second semester examination in full.

**Note:** As this is an academic prerequisite, no exemption should be granted in this case, whatever be the causes.

A candidate shall complete the programme and pass all examinations within Eight (8) years since his first admission to the B.Tech programme.

## **16. Registration for end Semester examination**

Every candidate should register for all subjects of the Semester-End examinations of each semester. A candidate who does not register will not be permitted to attend the Semester-End examinations; he/she shall not be permitted to attend the next semester.

A candidate shall be eligible to register for any higher semester (i.e. 3<sup>rd</sup> semester onwards) if he/she has satisfactorily completed the course of study and registered for the examination of the immediate previous semester. He/she should register for the semester at the start of the semester before the stipulated date. University will notify the starting and closing dates for each semester.

## **17. Additional Requirements for the degree**

In addition to the requirement prescribed for the award of B.Tech. degree, each student must complete compulsory social service for a total duration of 15 days during 3<sup>rd</sup> to 7<sup>th</sup> semesters of the course. A record is to be kept showing the details of social service activities undertaken and it should be approved by the Staff Advisor. Head of Institution should verify this compulsory requirement before permitting the student to register for the eighth semester.

Students are expected to undertake industrial training(s) of total 10 days minimum duration or industrial visits (to minimum 2 industries) for studying about the industries of importance to the branch concerned during 4<sup>th</sup> to 7<sup>th</sup> semester. Students may also undertake an educational tour, the tour period shall be considered as part of the working periods of a semester. The tour maybe conducted during the vacation/holidays taking not more than 3 working days, combined with the vacation/holidays if required, between 5<sup>th</sup> and 8<sup>th</sup> semesters for visiting industries (at least two) of importance to the branch concerned. Faculty members shall accompany the students for the industrial visits/educational tour. Each student shall submit detailed bound report(s) of the training/visit/tour to the Head of Department within two weeks after the programme. These bound report(s), signed by the staff advisor or faculty in charge of tour/training/visit and by the head of department, shall also be brought during the final Viva-Voce.

## **18. Examination Monitoring Cell**

Head of the each institution should formulate an Examination Monitoring Cell at the institution for supervising all examinations, especially the internal examinations. This cell, with a senior staff member as Convener, shall consist of minimum three members (one shall be a lady).

The collective responsibilities of the examination monitoring cell are

- (a) officiate as the examination squad to keep a vigil on all Semester-End examinations. If any malpractices are found/reported by invigilators, inform these to the Head of Institution along with a report about the incident. Head of Institution shall forward all such complaints to the University.
- (b) schedule all examinations conducted as part of internal assessment of students.
- (c) to receive any complaint from students regarding issues like out-of-syllabus questions, printing mistakes, etc. of Semester-End examinations of theory and practical subjects. The cell shall investigate these complaints and if necessary forward it to university with specific comments.
- (d) to receive any complaints from students regarding internal examinations, enquire such incidents, and give a report to the Head of Institution for necessary action.

To conduct all the theory examinations, a Chief Superintendent and Senior Assistant Superintendent should be appointed internally by the Head of Institution. At least one external Additional Chief Superintendent from government/government-aided engineering colleges within the University should be appointed by the University for conducting theory examinations in all affiliated self financing Engineering Colleges.

## **19. Electives**

All students shall choose four elective subjects, one in the sixth, one in the seventh and two in eighth semesters from a set of elective subjects prescribed in the syllabus and offered by the institution. There should be at least 25% students of the class for an elective subject to be offered. However, any student having a CGPA of not less than 7.5 shall be permitted to select an elective of his/her choice and register under a faculty subject to the permission from the faculty and Head of Department. The student will have to study this subject on his own (self-study mode) or the classes of this subject shall be taken during off-hours.

A student can opt for interdisciplinary electives, termed as global electives in the syllabus, maximum one during 8<sup>th</sup> semesters subject to the permission from both Heads of Departments and the faculty handling the elective subject. Minimum number of students for a global elective shall be 15 and maximum 60.

New electives may be introduced according to the needs of emerging fields in technology. The name of the elective and its syllabus should be approved by the university before the subject is offered as an elective.

## **20. Class Committee**

Head of institution shall take necessary steps to form a class committee for each class at the start of classes of each semester. This class committee shall be in existence for the

semester concerned. The class committee shall consist of the Head of Department, Staff Advisor of the class, a senior faculty member of the department, a faculty member from another department, and two student representatives (one of them should be a girl in a mixed class). There should be at least two meetings of the class committee every semester; it shall be the responsibility of the Head of Department to convene these meetings. The decisions of the Class Committee shall be recorded in a register for further reference. Each class committee will communicate its recommendations to the Head of Institution.

The responsibilities of the class committee are:

- (a) to review periodically the progress and conduct of students in the class.
- (b) to discuss any problems concerning any subjects in the semester concerned.
- (c) to identify weaker students of the class and suggest remedial measures.
- (d) to review teaching effectiveness and coverage of syllabus.
- (e) discuss any other issue related to the students of the class.

## **21. Eligibility for the Degree**

No candidate shall be eligible for the B.Tech. degree unless he has undergone the prescribed course of study for a period of not less than four academic years in an institution affiliated to the Mahatma Gandhi University and has passed all subjects as per the prescribed syllabus.

No candidate under lateral entry scheme shall be eligible for the B.Tech. degree unless he has undergone the prescribed course of study for a period of not less than three academic years in an institution affiliated to the Mahatma Gandhi University and has passed all subjects of 3<sup>rd</sup> to 8<sup>th</sup> semesters as per the prescribed syllabus.

## **22. Classification of Successful Candidates**

- (a) A candidate who qualifies for the degree, passing all the subjects of the eight semesters within 5 academic years after the commencement of his course of study and secures not less than a CGPA of 8.0 of all the semesters shall be declared to have passed the B.Tech. degree examination in First Class with Honours.
- (b) A candidate who qualifies for the degree, passing all the subjects of the eight semesters within 5 academic years after the commencement of his course of study and secures not less than a CGPA of 6.5 of all the semesters shall be declared to have passed the B.Tech. degree examination in First Class.
- (c) All other candidates who qualify for the degree passing all the subjects of the eight semesters and not covered as per Sections 22 (a) and (b) shall be declared to have passed the B.Tech. degree examination in second class.
- (d) Classification of the lateral entry student can be given based on the CGPA of 3<sup>rd</sup> to 8<sup>th</sup> semesters. The final mark-list of lateral entry students should indicate that (i) the student was admitted through lateral entry scheme (ii) classification is based on CGPA of 3<sup>rd</sup> to 8<sup>th</sup> semesters. He/she should have passed all the subjects of the 3<sup>rd</sup> to 8<sup>th</sup> semesters within 4 academic years after the commencement of the course of study.

It may be indicated in each mark-list that the internal assessment marks and Semester-End examination marks of practical subjects are normalised.

### 23. Grievance Cell

Each college should setup a Grievance Cell with at least four faculty members to look into grievances of the students, if any.

### 24. Anti-Ragging Cell

Head of Institution shall take necessary steps to constitute anti-ragging committee and squad at the commencement of each academic year. The committee and the squad shall take effective steps as specified by the Honorable Supreme Court of India, to prevent ragging.

*Notwithstanding all that has been stated above, the University has right to modify any of the above regulations from time to time as per University rules.*

## Annexure

### Equivalency of Diploma Streams for Part-Time B.Tech. Admission

Sl. No.	Specialisation in Diploma	Branch Equate for B.Tech. Admission
1	Applied Electronics	Electronics and Communication Engineering
2	Electronics	
3	Medical Electronics	
4	Electronics and Avionics	
5	Telecommunication Technology	
6	Electronics and Instrumentation	
7	Electronics and Medical Instrumentation	
8	Electronics Production Technology	
9	Medical Instrumentation	
10	Power Electronics	
11	Biomedical Engineering	

12	Civil	Civil Engineering
13	Architecture	
14	Quantity Survey and Construction Management	
15	Mechanical	Mechanical Engineering
16	Automobile	
17	Tool and Die	
18	Wood and Paper Technology	
19	Computer Engineering	Computer Science and Engineering
20	Computer Application and Business Management	
21	Computer Hardware Maintenance	
22	Information Technology	
23	Electrical	Electrical and Electronics Engineering
24	Instrument Technology	
25	Chemical Engineering	Chemical Engineering