

Chapter XXXIV-G
BACHELOR OF TECHNOLOGY
(EFFECTIVE FROM THE SESSION 2017 – 18)

**Recommended by Faculty on 24.04.2017, vetted by drafting committee on 31.7.2017 and Approved
by the AC on 19.8.2017**

1. Introduction

(a) The Faculty of Engineering & Technology, Aligarh Muslim University offers full-time program leading to the Bachelor of Technology (B. Tech.) degree in Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics Engineering, Mechanical Engineering, and Petrochemical Engineering.

(b) The medium of instruction in B. Tech. Program is English

2. Eligibility

A candidate will be eligible for admission to B. Tech. program if he/she has passed the Senior Secondary School Certificate (10+2) Examination of this University or an Examination recognized by this University as its equivalent with 50% marks in aggregate of English, Physics, Chemistry, and Mathematics, or have passed the Diploma in Engineering Examination of this University with 50% marks in aggregate.

3. Admission

(a) The admissions to the B. Tech. programs will be made normally in the beginning of an academic session. as per the admission policy approved by the Academic Council of the University from time to time. The admission of each student will be made in a particular branch.

(b) A limited number of students may be allowed to change over from one branch of study to another, after first year of study, depending on the availability of seats and their performance in the first two semesters. Merit list for the branch change will be prepared on the basis of CPI of the applicants at the end of II Semester. In case of equal CPI, preference will be given to the student who has scored more aggregate marks in the first two semesters. However, change in branch of a student will not be permissible if:

- (i) The student has not obtained pass grades in all the courses of first two semesters.
- (ii) If CPI of the student is less than 7.5.
- (iii) If his/her branch transfer results in number of students falling below 70% of the approved intake in his/her original branch.

4. Academic session

The academic session is divided into two regular semesters – Odd and Even, each of which shall be of approximately 20 weeks duration. The Odd semester will normally commence in the month of July/August every year, and the Even in the month of December/January. In the beginning of every session the Dean, in consultation with the Chairmen of the departments concerned, shall notify a detailed academic calendar indicating the schedule of teaching, examination, and other activities.

5. Duration of the Program

5.1 Minimum Duration

The minimum duration of the program shall be eight consecutive semesters after admission.

5.2 Maximum Duration

The maximum duration of the program shall be fourteen consecutive semesters after admission.

6. Curriculum and Credit System

6.1 Credit System

Each B. Tech. program will have a curriculum in which every course will be assigned certain credits reflecting its weight and contact periods per week, as given below:

1 Lecture period (L) per week = 1 Credit

- 1 Tutorial period (T) per week = 1 Credit
 1 Practical period (P) per week = 0.5 Credit

In addition to theory and laboratory courses there may be other courses such as seminar, colloquium, project, etc., which will be assigned credits as per their contribution in the program without regard to contact periods.

6.2 Course Categories

The curriculum for each branch will contain courses in the following categories having credits in the ranges given below in such a way that the total of all credits will be equal to that required for the award of degree as specified elsewhere in these ordinances.

Course Categories	Credit Ranges
Basic Sciences (BS) (Courses such as Physics, Chemistry, Mathematics etc)	20-36
Engineering Sciences & Arts (ESA) (Foundation and applied engineering courses that are used across many branches)	20-40
Humanities and Management (HM) (Language, Social science, & Management)	10-18
Departmental Core (DC)	60-116
Departmental Electives (DE)	16-32
Open Electives (OE)	8-16

6.3 Coordinators and Curriculum Development Committee.

There shall be a Chief Coordinator, B. Tech. Programs to be nominated by the Dean, and a Coordinator, B.Tech. Program for each branch in each department, to be nominated by the Chairman of the department concerned. There shall be a Curriculum Development Committee (CDC) in each department and also a central CDC at the Faculty level. The departmental CDC will be constituted by the board of studies of the concerned department. The central CDC will comprise of the following:

1. Senior most Professor of Z.H. College of Engineering & Technology, next to Dean as Chairman
2. Chief Coordinator, B. Tech. Programs, as convener.
3. Chief tabulator, Z.H. College of Engineering & Technology
4. Coordinators of CDC of each department, as member.
5. Three teachers of Z.H. College of Engineering & Technology, nominated by the Faculty, as member for a period of two years.

6.4 The Curriculum Structure

The curriculum for each branch will contain a listing of all courses, with each course having a course category, course number, course title, number of contact periods per week, number of credits assigned, pre-requisite course(s) if any, and the marks assigned to various components of evaluation. It will also have a list of alternative courses in the new curriculum for the old curriculum courses and filler courses to compensate for the shortfall in credits earned by taking alternative courses in any category, if needed. It will also specify all other conditions required for the award of degree.

6.5 Approval of the Curriculum

The curriculum for each branch of B. Tech. program will be prepared by the department concerned and will be approved by the Board of Studies of the department. It will then be vetted by the CDC and will then be placed in the Faculty along with the recommendations of the CDC for approval. Once approved by the Faculty, the Curriculum will be implemented. The same procedure shall be used for any modification in the Curriculum.

7. Registration

7.1 Registration Procedure and Schedule

- (a) Every student is required to register, for each semester, for the courses that he/she wants to pursue in that semester. The student will have to choose any of the following modes of registration:

Mode	Requirements
a	Fulfill class attendance requirement and appear in all components of evaluation.
b	Appear in all components of evaluation.
c	Appear in end semester exam only. Previous sessional marks will be considered.

Registration in modes 'b' and 'c' will be permissible only if the student had registered in mode 'a' and fulfilled attendance requirement in earlier semester. The registration schedule will be announced by the Dean for every semester. The registration procedure will be notified by the Chief Coordinator, B. Tech. Programs.

- (b) A student will normally register for higher semester courses only if he has also registered for un-cleared courses of previous semesters, especially in the case of un-cleared courses of first two semesters.
- (c) A student will have the option to add/delete/alter the courses in his/her registration within a week of the registration subject to such conditions as may be imposed by the department concerned from time to time.
- (d) A student can drop a course from his/her registration by submitting a request to his/her department coordinator up to a date specified on his/her registration card. A registered course will be counted as an attempt even if the student remains absent in the Examination(s).
- (e) No student will be allowed to register for more than 40 credits in a semester.
- (f) A student may be denied registration in a course due to reasons of paucity of staff or space or other facilities, especially in case the student is registering a course for improving the grade in a passed course.
- (g) If a student fails to register in two consecutive semesters without specific permission from the Dean, his/her name may be removed from the rolls of the faculty. Such a student may apply to the Dean for re-admission stating the reasons for not being able to register for two consecutive semesters and the Dean will take suitable decision on the merit of the case.
- (h) Registration for the graduating course will be done after the declaration of the results of each semester. Last date of registration will be notified by the Dean.
- (i) A department may allow a final year student to register up to a maximum of 3 courses, not running in the current semester in mode 'c' (defined in clause 7.1 a), only if without it, graduation of the student will be delayed by at least one semester.
- (j) A department may allow a III-year student to register a final year level theory course running in the current semester provided the student:
 - 1. has CPI equal to or more than 8.5
 - 2. has no backlog courses
 - 3. has cleared the pre-requisite courses of the course he/she wants to register

7.2 Graduating Course

A student may be allowed to register for one course of not more than 4 credits if he/she is able to graduate by passing such a course, irrespective of whether the course is being offered in the current semester to regular students or not, provided that the student has fulfilled the attendance requirement earlier and has been awarded E or I grade in that course. Such a course shall be known as a graduating course.

8 Attendance (In lieu of Chapter XVII of the Academic Ordinances)

Attendance in each course separately is compulsory at least once. Students who have put in 75% or more attendance in a course in a semester will be eligible to appear in the End-Semester Examination of that course. Students who have put in 65% or more but less than 75% attendance in a course may be considered for condonation of shortage of attendance in that course by the condonation committee. Students whose attendance in a course is less than 65% or whose shortage in attendance has not been condoned will not be eligible to appear in the End-Semester Examination of that course and will be awarded grade 'F' in that course and all marks obtained in any component of the course-evaluation will stand cancelled. However, in case a student is repeating a course and the student has already fulfilled the attendance requirement in that course, he/she will not be detained due to shortage of attendance in that course during the repeating semester.

9. Examination and Evaluation (In lieu of Clause (9) of Chapter XV of the existing Academic Ordinances)

9.1 Components of Evaluation

Each course will be evaluated out of 100 marks. The courses will normally have the following components of evaluation:

(a) Theory Courses

Course work	15 marks
Mid-Semester Examination	25 marks
End-Semester Examination	60 marks

(b) Laboratory courses including Seminar, Colloquium, Project, mini-project etc.

Course work	60 marks
End-Semester Examination	40 marks

However, for special academic reasons, some courses may have different weight for different components of evaluation from that given above. Such special reasons will be spelt out clearly in the curriculum.

9.2 Grading System

The combined marks obtained by a student in various components of evaluation of a course shall be converted into regular letter grades with their equivalent grade points as specified below

Grade	Grade points	Description
A+	10	Outstanding
A	9	Excellent
B+	8	Very good
B	7	Good
C	6	Average
D	5	Satisfactory
E	0	Unsatisfactory (Fail)
F	0	Detained due to shortage of attendance
I	0	Incomplete/Absent in the End-Semester Examination
Z	0	Cancelled due to other reasons

The following marks ranges may ordinarily be used for the award of grades to the students in a theory course.

Range	Grade
81 and above	A+
71 and above but less than 81	A
61 and above but less than 71	B+
51 and above but less than 61	B
41 and above but less than 51	C
35 and above but less than 41	D (Minimum Pass Grade)
Less than 35	E

For a lab course the grade ranges will be as follows:

Range	Grade
81 and above	A+
71 and above but less than 81	A
61 and above but less than 71	B+
51 and above but less than 61	B (Minimum Pass Grade)
Less than 51	E

Two grace marks may be awarded by the examiner for passing a course and one grace mark may be awarded by the examiner to elevate the grade. Any fraction in any component of evaluation should be rounded off to the next whole number.

The following distribution of various grades will be considered as normal. In such a case grade range cannot be modified.

Grades	Population Percentage Range	
	Theory Courses	Lab Courses
A+ and A (combined together)	15-50%	25-75%
B+ and B (combined together)	30-70%	25-75%
C and D (combined together)	15-40%	----

For a particular course, if the grade distribution is out of the range as described above, the examiner(s) may propose higher or lower grade, but the final decision rests with the Result Moderation Committee. However, the minimum

passing grade should never be awarded if a student secures below 35 marks (including 2 grace marks) in a theory course and 51 marks (including 2 grace marks) in a lab course.

9.3 Evaluation of a Graduating Course

A graduating course shall be evaluated on the basis of the End-Semester Examination component of the course alone. The student shall appear only in the End-Semester Examination of the graduating course. Grade D shall be awarded if the student concerned obtains 35% or more of the marks allotted to End-Semester Examination alone. In case the marks obtained are less than 35%, grade E will be awarded. Two grace marks, however, will be awarded for passing the course.

9.4 Earned Credits (EC)

If a student passes a course by obtaining grade D or above, he/she earns the credits assigned to that course.

9.5 Performance Indices

At the end of every semester a student's performance will be indicated by Earned Credits (EC), a Semester Performance Index (SPI), and a Cumulative Performance Index (CPI). The SPI is the credit-weighted average of grade points of all courses registered during a semester and is computed as follows:

$$SPI = (C_1G_1 + C_2G_2 + \dots) / (C_1 + C_2 + \dots)$$

Where C_1, C_2, \dots are the credits assigned to courses and G_1, G_2, \dots are the grade points earned in those courses. The CPI is the credit-weighted average of grade points of all courses registered since admission. In case a student has registered a course more than once, the best grade will be considered for calculation of CPI.

9.6 Repetition of a Failed Course

If a student registers a course but fails to fulfill attendance requirement, he/she will be required to register the course (or its alternative) again in mode 'a'.

In case the student completes attendance requirement but fails to secure a pass grade in a course, he/she has option of registering the course again either in mode 'b' or in mode 'c'.

9.7 Repetition of a Passed Course

A student may repeat a course to try to improve his/her grade in that course only once, provided that he/she has passed that course in a single attempt. In such case the student will have to register the course again either in mode 'b' or in mode 'c'. Requirements of mode 'b' and 'c' registrations are same as described in clause 7.1 a. For the purpose of calculating the SPI the recently obtained grade will be considered while for CPI the better of the two grades will be counted.

9.8 Conduct of Examinations

(a) The examiners for the End-Semester Examination of all theory courses will normally be the teacher(s) associated with the course. The Seminar, Colloquium courses will be examined by the teacher(s) associated with the course and one or more examiners from among the teachers of the department to be recommended by the BOS of the department concerned. The laboratory and project courses will be examined by the teachers(s) associated with the course and an external examiner not in the service of the university at the time of examination. In case the external examiner does not turn up for the examination, the Chairman of the department concerned, in consultation with the course in-charge, shall call another person to act as the external examiner, even from within the University, if necessary.

(b) The End-Semester Examination of all graduating courses shall be conducted simultaneously after the declaration of the result of each semester on a date notified by the Dean.

9.9 Moderation Committees

(a) Question Paper Moderation Committee: There shall be a Moderation Committee of the concerned Department consisting of the following members to moderate the Question Papers of the End- Semester Examination.

- (i) Chairman of the Department concerned – (Convener)
- (ii) One senior teacher of the Department in each broad area of specialization (to be appointed by the BOS).

Note: The Paper Setter(s) may be invited, if necessary, to clarify the necessary details of the question paper.

(b) Result Moderation Committee: There shall be a Result Moderation Committee of the concerned Department consisting of the following members to moderate course-wise results of the End- Semester Examinations.

- (i) Chairman of the Department concerned - (Convener)
- (ii) One senior teacher of the Department in each broad area of specialization (to be appointed by the BOS).
- (iii) Examiner(s) concerned.

The Result Moderation Committee will examine the result of each theory course and in case of an abnormal situation; it may take suitable corrective measures in consultation with the examiner(s). The examiner(s) will place the evaluated answer scripts along with the brief solution and marking scheme before the Committee. In case of difference of opinion among the members of the Committee, the majority decision will prevail, in which the examiner(s) will not participate.

10. Degree Requirement

(a) A student who earns 200 credits subject to the break up in various course categories and fulfills such other conditions as may be mentioned in the curriculum will be awarded the degree of Bachelor of Technology. He/she must also pay all University dues as per rules. Moreover, there should be no case of indiscipline pending against him/her.

(b) If a student earns more credits than the minimum required for the award of degree, his/her CPI will be calculated by considering the best grades subject to fulfilling the criteria of required credits as specified in the curriculum.

11. Promotion, Name Removal from the Rolls of the University and Mercy Appeal

11.1 Promotion and Name Removal

The earned credits (EC) of every student will be checked at the end of even number of semesters. The difference between the credits that a student is required to earn by the end of a semester (as per the curriculum) and actual credits earned by the student will be counted as total uncleared credits. The student will be promoted to higher semester if the total uncleared credits is less than or equal to as described in the following table, otherwise his/her result will be declared as "Fail":

Semester	Maximum credit of backlog courses
II	24
IV	24, including not more than 8 credits of first two semesters
VI	24, including not more than 8 credits first four semesters

If a student gets "Fail" result more than thrice, his/her admission to the B. Tech. program will be cancelled and his/her name will be removed from the rolls of the University.

11.2 Mercy Appeal

If the name of a student is removed from the rolls of the University as per provisions of clause 11.1 of these ordinances, he/she may appeal to the Vice-Chancellor stating the reasons for not being able to earn the required credits and the Vice-Chancellor, if he is satisfied with the reasons, may allow the continuation of admission of the student only once during the tenure of the program, extending the total duration of the program by two semesters, at the maximum, beyond 14 semesters, if required. Under no circumstances a student will be allowed to complete the program after the lapse of 16 semesters after admission.

12. Result

(a) If a student passes all the examinations and fulfills all the requirements for the award of degree his/her result will be shown as "Graduated".

(b) The Division awarded to "Graduated" students will be based on CPI as given below:

First Division (Honours) CPI \geq 8.5

First Division	$6.5 \leq \text{CPI} < 8.5$
Second Division	$\text{CPI} < 6.5$

At the end of each semester the CPI obtained by the student can be converted into equivalent percentage of marks by the following formula:

$$\text{Equivalent Percentage} = 10 * \text{CPI}$$

(c) At the end of Odd semester examination, result of the students will be declared as "Continued". At the end of II, IV and VI semester the result will be as follows:

PASS- if the total uncleared credits is zero

PROMOTED-if total uncleared credits is less than or equal to that described in clause 11.1

FAIL- if total uncleared credits is more than that described in clause 11.1

At the end of VIII Semester, if the student fulfills all the conditions for graduation, his/her result will be declared as "GRADUATED", otherwise his/her result will be declared as "FAIL".

(d) If the name of a student is removed from the rolls of the University as per provisions of clause 11.1 of these ordinances his/her result will be shown as "Name Removed".

(e) Ranks/Positions will be determined at the end of even semesters. Only those students who fulfill the following conditions will be eligible for ranks/positions:

- (i) They do not have any break in their studies;
- (ii) They have passed every scheduled course in first attempt;
- (iii) They have passed every course on time as per the curriculum;
- (iv) They have earned credits as per the schedule given in the curriculum;
- (v) They have not improved grade in any course after passing the course.

The students who violate any of the above conditions will not be awarded any rank/position. The ranks/positions will be determined on the basis of CPI.

13. Transitory Clause

Candidates admitted prior to the implementation of these Ordinances shall be governed by the Ordinances (Academic) under which they were admitted. Students who fail in the courses that are no more offered in these new ordinances and new curriculum will be allowed to pass the alternative courses, and in case there are no alternative courses, the old courses may be offered. For such candidates, any marks obtained earlier shall not be taken into account for passing the course(s) and they will have to obtain marks in all components of evaluation afresh. A student admitted previously may apply to the Dean through the Chairman concerned, to be governed by these ordinances. Such cases may be allowed on a case by case basis.

Regulations to Academic Ordinances (Chapter XXXIV-G)
Bachelor of Technology in the Faculty of Engineering & Technology
(To be effective from the Session 2017 – 2018)
Approved by the Faculty in its special meeting held on 20.04.2017

(a) Explanations**1.1 Course Number:**

Every course will have a course number consisting of 7 characters. The first two characters will be alphabets indicating the department that offers or coordinates the course; the third character will be an alphabet indicating the course category, the fourth character will be a numerical digit indicating the year of offering the course in the program; the fifth to seventh characters will be numerical digits that describes the course.

(a) The first two alpha characters will mean the following:

AC = Department of Applied Chemistry

AM = Department of Applied Mathematics

AP = Department of Applied Physics

AR = Department of Architecture

CE = Department of Civil Engineering

CH = Department of Chemical Engineering

CO = Department of Computer Engineering

EE = Department of Electrical Engineering

EL = Department of Electronics Engineering

ME = Department of Mechanical Engineering

PK = Department of Petroleum Studies

EZ = Not belonging to any department Z.H. College of Engineering & Technology

(b) The third alpha characters will mean the following:

C: Departmental Core (DC); E: Departmental Elective (DE); O: Open Elective; A: Engineering Science and Arts (ESA); H: Humanities; S: Basic Sciences (BS)

(c) The fourth character will be 1, 2, 3, or 4 indicating First Year, Second Year, Third Year or Fourth Year of the B. Tech. program.

(d) The fifth and sixth characters will be interpreted as follows:

01 to 79 : Theory Courses

80-89: Courses such as Seminar, Colloquium, Field Work etc

90-99: Laboratory/Practical courses and Projects

(e) The seventh character will be a numerical digit between 0 and 9, indicating version of the course. It will be updated after every revision.

1.2 Faculty Number:

Every student has a Faculty number consisting of 8 characters. The first two characters are numerical digits indicating the year of admission; the third and fourth characters are alphabets indicating the branch of the B. Tech. program; the fifth character is always "B" indicating B. Tech. program; the sixth, seventh and eighth characters are numerical digits that are for identifying a student of a particular batch.

(a) The first two characters will be the right most two digits of the year of admission. Thus students admitted in 2011 will have the first two characters as 11.

(b) The third and fourth characters will be interpreted as follows:

CE = Civil Engineering

EE = Electrical Engineering

CH = Chemical Engineering

EL = Electronics Engineering

ME = Mechanical Engineering

CO = Computer Engineering

PK = Petrochemical Engineering

(c) In case of change of branch after First year, a student's faculty number will be changed as required.

1.3 Marks

- (a) The combined total marks obtained by a student in the course work and the mid-semester examination will be called Sessional Marks.
- (b) The marks obtained by a student in the end-semester examination will be called Examination Marks.

2 Conduct of Teaching

2.1 Course In-charge

Every course will be taught by one or more teachers. The BOS of the concerned department will allocate the teaching load to the teacher(s) and will also designate a course in-charge for each course. If more than one department is involved in the teaching of the course, the course in-charge will be from the coordinating department. The course in-charge will coordinate all the work related to attendance, course work, examination and evaluation. It is necessary that the students are informed about the course in-charge so that they may contact him/her about any problems regarding the course.

2.2 Display of Attendance, Marks etc.

It is essential that the attendance should be displayed to the students twice in a semester, once in the middle and then at the end of a semester by the teacher(s) concerned. The mid-semester marks should be displayed to students normally within 15 days of the examination. The total Sessional marks should be displayed to the students before the beginning of the end-semester examinations. The course in-charge will ensure that the teachers associated with the course make such displays and, in case of complaints from the students in this regard, shall inform the Chairman of concerned department about the problem.

2.3. Offering Courses

- (a) Courses will be offered by the department concerned as per the schedule given in the relevant Curriculum. Departments may also offer a course in both the semesters even though it may be shown in a particular semester.
- (b) Department Elective (DE) courses will be offered depending on the availability of the staff and other facilities and therefore any particular elective course may not be offered even though it may exist in the list of possible elective courses.
- (c) The advisement for Open Elective (OE) courses in various departments will be based on the guidelines approved by the respective Board of Studies.

2.4 Syllabus

Each course will have a syllabus and a teaching schedule which will be made available to the students. The syllabus should include course objectives, course outcomes and pre-requisite courses (if any). The teacher(s) concerned should ensure that some portion, beyond the syllabus, should also be covered in the class.

3 Correction of Errors

In case any error is detected in the marks recorded on the award list, the examiner(s) concerned shall make a request to correct the mistake to the Dean, Faculty of Engg. & Tech. through the Chairman of the concerned department, and shall attach relevant documentary evidence. A committee consisting of the following members shall take suitable remedial measures depending upon the merit of the case.

1. Dean, Faculty of Engg. & Tech. (Chairman)
2. Principal, ZH College of Engg. & Tech.
3. Chairman of the concerned department.
4. One senior member of the Faculty to be nominated by the Dean.
5. Chief Tabulator, B. Tech. Program.

4 Examinations

4.1 Mid-Semester Examination

Mid-semester examination(s) of each course will be of one-hour duration and will be conducted as per norms and schedule notified by the office of the Dean in each semester.

4.2 End-Semester Examination

End-semester examination(s) of each theory course shall be of two hours duration and will be conducted as per norms and schedule notified by the Controller of Examination of the University on the advice of the Dean. The end-semester examinations of laboratory/practical courses, and other courses such as seminar, colloquium, field work and project etc. shall be conducted as notified by the Dean/Chairman concerned.

4.3 Make-up Test

Students who miss the Mid-Semester Examination in a course due to illness or some other extra-ordinary compelling situation may contact the teacher(s) concerned of the course with the request to conduct a make-up test. The teacher(s) shall follow the guidelines in this regard approved by the Faculty from time to time. There shall be no make-up test/examination for end-semester examinations.