Institute of Infrastructure, Technology, Research and Management- Ahmedabad

B.Tech Norms

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Contents

1   Introduction

These norms define the B.Tech norms of passing for students. The B.Tech. programme of IITRAM consists of courses in basic sciences, humanities, social sciences, engineering and technology and other related topics. These courses are from three category of courses. The first category consists of a package of compulsory courses in basic sciences, mathematics and humanities. The second category is the study of engineering sciences and technical skills such as workshop, engineering graphics etc. The emphasis is on imparting a broad based knowledge in general engineering and engineering methodologies. These enable the students to appreciate the links between science and engineering. These courses are common for all undergraduate (UG) programs. In the third category, students are exposed to the subjects in their chosen branch (or field) of study. The aim of these courses is to teach the students the principles, governing systems and processes and develop in them the ability for physical and analytical modeling, design and development. Laboratory courses, field visits, practical trainings, projects, seminars etc. enhance the learning experience. Also, wide choices of elective courses are available in each discipline.

2   Definitions and Abbreviations

2.1   Definitions

For this B.Tech norms manual unless the context otherwise requires

(i) The Act means Institute of Infrastructure, Technology, Research And Management Act , 2012 (Act 5 / 2013).

(ii) The Board means The Board of Governors of Institute of Infrastructure, Technology, Research And Management.

(iii) The University means Institute of Infrastructure, Technology, Research And Management.

(iv) Department means a group of resources and facilities catering to similar disciplines in an area of knowledge.

(v) He includes She.

(vi) Project means and includes any sponsored research, consultancy project or any other activity, which has a valid project number given by the R&D office of the institute.

(vii) Under Graduate Academic Performance Evaluation Committee (UGAPEC) is the committee constituted under section Academic Administration of this norms.

(viii) Department Under Graduate Committee (DUGC) is the committee constituted under section Academic Administration of this norms.

(ix) Dean of Academic Affairs (DOAA) is the dean defined under section Academic Administration of this norms.

(x) Dean of Students Affairs (DOSA) is the dean defined under section Academic Administration of this norms.

(xi) Head of the Department is the head defined under section Academic Administration of this norms.

(xii) Faculty Advisor (FA) is the faculty defined under section Academic Administration of this norms.

(xiii) All other terms used in these regulations have same meaning as defined in the Act.

2.2 Abbreviations

BoG	Board
CA	Competent Authority
DD	Deputy Director
DOAA	Dean of Acdemic Affairs
DOSA	Dean of Students Affairs
DUGC	Department Under Graduate Committee
HOD	Head of Department
UGAPEC	Under Graduate Academic Performance Evaluation Committee

3 Academic Administration

3.1 Organization structure for academic administration

Academic administration of institute is regulated by Under Graduate Academic Performance Evaluation Committee (UGAPEC) for each of its schools. UGAPEC consists of selected faculty members and/or Faculty Advisors (FAs) and Conveners of Department Under Graduate Committee (DUGC). UGAPEC

is headed by Dean of Academic Affairs (DOAA). Though, Dean of Students Affairs (DOSA) is not a member of UGAPEC, he should provide his inputs/opinions/views/ideas on request by UGAPEC. These mentioned terms are explained below:

(i) Under Graduate Academic Performance Evaluation Committee (UGAPEC) -This committee, which is constituted by the Director General (DG) of IITRAM, is an institute level committee. UGAPEC, headed by DOAA, consists of faculty members from all departments. (Atleast one faculty member from each department). Committee is responsible for procedural evaluation of academic performance of students and responsible for declaring the results at the end of each semester. Recommended size of the UGAPEC is 7 but under no circumstances, it should exceed 15. UGAPEC decisions are to be vetted by Academic Council.

(ii) Department Under Graduate Committee (DUGC) and Convener: Each department shall have a committee of 3/5 faculty to be known as Department Under graduate committee and headed by Head of the Department,. This committee should nominate a faculty member as Convener, DUGC. Convener, DUGC approves the courses opted by students of his department. Also, all issues related to academics in department should be addressed by Convener, DUGC. Syllabus of each course in the department shall be approved by DUGC. Director General shall appoint the members of DUGC.

(iii) Dean of Academic Affairs (DOAA): All the student related issues, which are academic in nature as well as all other academic issues are addressed by DOAA.

(iv) Dean of Students Affairs (DOSA): All the student related issues, which are non-academic in nature, are addressed by DOSA.

(v) Head of the Department : Each department shall be headed by the Head of the Department, to be appointed by Director General for a period of three years.

(vi) Faculty Advisor (FA): FA is a faculty member involved in regularly observing the academic performances of students assigned to him/her. Based on the performance of a student, his FA may recommend overloading a course, semester drop, reduction in academic load etc. FA may also suggest some special courses for a student. There shall be as many number of FAs as required from all the departments.

4 Program of Study

4.1 Curriculum

Every department has a prescribed course structure. It prescribes all the courses, laboratories, and other requirements for the degree. It also decides the progression of courses, gives the syllabus and a list of text/ reference book for each course.

4.2 Semesters

There are two regular semesters in a year. The semester which begin in the month of the July every year, is known as Autumn semester and the semester that begins in January is known as Spring semester.

4.3 Course credit structure

For acquiring a particular degree, the student is required to put in a certain quantum of academic work which will be measured in terms of credits. A student earns credits by successfully completing courses and other academic activities every semester. The amount of credit associated with the course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of other activities is dependent upon the quantum of work expected to be put in.

(i) Theory and Laboratory courses: Courses are broadly classified as Theory courses and Laboratory courses. A theory course consists of Lectures (L), and tutorial (T) hours. Practical (P) hours may be there in special cases. Laboratory courses consist of practical hours and may have tutorial hours in special cases. Credit (C) for a course is dependent on the number of hours of instructions per week in that course.

(ii) Seminars and Projects: Some departments may prescribe seminar (S) or project (P). Seminar is a course wherein under the guidance of a faculty member, the student is expected to do an in-depth study in a specialized area. There will be a seminar presentation by the student,before a panel constituted for the purpose by the department . The panel will evaluate the performance of a student.

(iii) B.Tech. Final Year Project: Under the guidance of a faculty member(s), a student in the sixth semester or later is required to do some innovative work related to his branch (or field). These projects may be offered as a single unit of double credit or two modules of single credits.

(iv) Field Visit(s): A department may prescribe field visit(s) as an intregral part of the subject. Students are taken through conducted tours to various industries, places of exemplary infrastructure to study various technologies employed by industries. Field visit(s) carries no credits and is evaluated as pass (PP) or not pass (NP).

(v) Summer Internships: During the summer vacation, after the end semester examination in even semester, a student is placed with organizations/ enterprises/ public sector units/ government bodies etc. for exposure or training to understand the formal communications, work culture and work ethics of the professional environment. Summer internship may be of duration of 4-6 weeks and it does not carry any credits and is evaluated as pass (PP) ot not pass (NP).

4.4 Minimum credit requirements

Each student is required to pass the prescribed minimum courses of the curriculum for his/her programme and to complete the minimum credits requirement for the B.Tech. Degree according to the structure prescribed by each discipline. Minimum number of credits is normally divided into credits as compulsory courses, credits as Institute requirement and credits as Department requirements. The courses generally progress in sequences. Hence some courses may require passing in certain courses as prerequisites. Students are expected to follow the semester wise schedule of courses given in the Course of Study. However, they may choose alternative schedules by adding additional courses. For students with backlog courses, rescheduling may become necessary. Such deviations should be done very carefully and always with advice from the Faculty Advisor.

4.5 Additional learning

Institute may offer honours and minor for a B.Tech Degree programme. As a result, a student of Civil Engineering Department may have honours degree in Civil Engineering with minor in some other discipline of his/her interest. However, credit requirements for this shall vary from department to department.

5 Registration

Registration at the beginning of each semester on the prescribed dates announced in the Academic Calendar is mandatory for every student till he/she

completes his/her programme. If a student does not register in a particular semester without prior permission of the Under Graduate Academic Performance Evaluation Committee (UGAPEC), his/her studentship is liable to be cancelled. Students are not permitted to re-register for the courses which they have already passed. Without registration, any academic activity undergone by a student will not be counted towards the requirements of his/her degree.

5.1 Semester wise registration

Students should register for prescribed courses with approval from Convener, DUGC of their respective department. In first and second semesters, courses common to all branches (or fields) are generally offered. A student is required to register for all the courses listed in the curriculum for these two semesters. From third semester onwards, the registration is dependent on the academic performance of a student in earlier semesters.

Practical trainings, field visits, projects also require prior registration. Since field visits involve logistics like permission from enterprises for the visits, transport arrangements etc., a student can only register for field visits during semester time (and not during the vacations).

5.2 Dropping of semester

A student may opt or be advised to drop an entire semester with prior approval of Department Under Graduate Committee (DUGC)/ UGAPEC due to the following reasons:

(a) During a semester, if a student finds that he/she is unable to cope with the studies and/or does not have sufficient exposure to most of the courses registered in that semester due to severe health problem(s) or some other valid reasons beyond his/her control., he/she can opt to drop the entire semester on advice from the Faculty Advisor and with the recommendation from Convener, DUGC. All these cases must be approved by the UGAPEC. In case of severe health problems, medical certificate(s) issued by designated Medical Officer of IITRAM is essential. If the medical certificate issued by other hospitals, and/or private practitioners, the certificate should be duly authenticated by the Medical Officer at IITRAM.

(b) If a student wants to work in an industry and enterprise or a social service organization with the aim to gain valuable work experience, he/she may

opt for dropping a semester.

(c) A student will not be permitted to drop a semester after the awards of XX grade in end semester examination.

(d) If a student drops the semester after the date of late registration, fees paid for that semester will not be refunded or adjusted in subsequent semesters. However, if a student drops the semester before the date of late registration, he/she has to pay the semester continuation fee for that semester. Semester continuation fee is equal to the 20% of the total stipulated fee, which is prescribed from time to time by institute.

(e) Such break from studies is normally not permitted for a continuous period in excess of one year.

(f) Hostel accommodation and other institutional facilities will not be extended in any semester for which the student has not registered.

5.3   Special features in registration

Academic Overload: A student, who likes to take additional courses as overload, should have CPI of 8.0 or more without any pending backlog courses (courses with FR, XX, or NP grade). On the recommendation of his/ her Faculty Advisor, he/she may be permitted to take one course per semester in addition to the normal academic load as overload subject with a condition of maximum of 6 (six) theory courses in that semester. There should be no relaxation of the CPI criterion for the additional overload. Overloading of courses is subjected to time table constraints. Further, the normal duration of B.Tech. Degree programme cannot be reduced by overloading additional courses.

6   Attendance and Examination

6.1   Attendance

Attendance in the class is compulsory and is monitored. For every student, the institute expects full attendance during every semester of degree programme. However, due to minor illness and other reasons, absence up to 15% is considered on case to case basis. A student not having 85% attendance in a course will not be allowed to appear in the end semester examination and XX grade will be awarded in this case. The student is required to register for the same course in subsequent semesters. However, Director General is

authorized to take final decision for each of the case of less attendance based on the merit of the case.

6.2   Modes of evaluation for theory courses

Various modes of assessment are used for rating student performance in theory course. These include quizzes, class tests, home assignments, group assignments, term project, viva-voce, mid semester test and end semester examination. Relative weightage for in-semester evaluation is typically between 50-60%. This will consist of one mid semester test of minimum two hours duration of about 25-30% weightage to be held as per schedule fixed in the Academic Calendar. Two quizzes (or one quiz and one test), home assignments, group assignments, term project(s), viva-voce shall make up the rest of the assessment. The instructor may also set aside a maximum 10% of the insemester marks for active participation in class and the initiatives shown by the student. Make-up for absence from any in-semester evaluations like mid-sem/tests/quizzes will be at the discretion of the instructor.

The end semester examination will be held as per the schedule fixed in the Academic Calendar and the relative weightage will be 40-50%. It is normally of three hours duration and will cover the full syllabus of the course. The semester end examination is mandatory. The instructor awards an XX grade for those students not appearing in the end semester examination if they have sufficient attendance and satisfactory in-semester performance. Students are eligible for an end semester re-examination only on medical grounds authenticated by designated Medical Officer at IITRAM.

6.3   Modes of evaluation for practical examination

The assessment in a laboratory course will be based on turn-to-turn supervision of the students work, her/his performance in viva voce examinations and group discussions. It is obligatory to maintain a laboratory journal as prescribed by the course instructor. In-semester work will normally carry 75% and the semester-end test 25% weightage respectively. The end semester test may consist of a written test and/or experiment(s). Final examination for laboratory courses will normally be held a week before the final theory examinations. In case of absence from end semester examination, the same rule as those for theory courses is applicable.

6.4 Modes of evaluation of seminars

Seminars are evaluated based on a written report, and an oral presentation before a panel of examiners appointed by the DUGC on the recommendation of supervisor. The supervisor /co-supervisor, when involved, are part of the panel. Grades carrying grade points are awarded based on the quality of the report and performance in the presentation. The evaluation of the seminars should be completed so that the grades can be submitted to the academic office one week before the commencement of the end semester examination.

6.5 Modes of evaluation for field visits

The grading for the works visit is done by the coordinator from the concerned department based on attendance, participation in discussions during the visit and any further criteria set by the department. Accordingly, a Pass (PP) or NP (Not Pass) grade is awarded by the coordinator. The grades are sent to the academic office before the commencement of the semester-end examination.

6.6 Grading

6.6.1 Grades

For every course taken by a student, he/she is assigned a grade based on his/her combined performance over a semester in all the assessments in that course. These grades are described by the letters AA, AB, BB, BC, CC, CD, DD, FR, XX, PP, and NP. Each of these indicates a qualitative assessment of the students performance and also carries the quantitative (numeric equivalent) called the grade point on the scale of 10 as per Table 1.

Table 1: **Grade Points**

Letter grade	Grade point	Remarks
AA	10	
AB	9	
BB	8	
BC	7	
CC	6	
CD	5	
DD	4	Minimum passing grade
FR	0	Need Improvement- Repeat the course
XX	0	Fail due to lack of attendance
PP	Pass	PP and NP do not carry any grade point
NP	Not Pass	Repeat the course or activity

6.6.2 Semester Performance Index (SPI)

The SPI is the weighted average of the grade points obtained in all the courses registered by a student during a semester. Maximum BB grade can be awarded when a student is taking the same course after FR in that course.

6.6.3 Cumulative Performance Index (CPI)

The CPI is the weighted average of the grade points obtained in all the courses registered by the student since he/she entered the institute. Both SPI and CPI are calculated at the end of every semester to two decimal places.

6.6.4 Grade norms

(a) A student is considered to have passed a course if he/she obtains either DD or a better grade.

(b) The grade FR is awarded if in the opinion of the instructor:

   (i) The performance of the student is very poor,

   (ii) The student has inadequate exposure to the course, or

   (iii) The student engages in any kind of malpractice during the semester.

(c) The candidate with FR grade(s) will have to register for the same course(s) in subsequent semesters when the course(s) are offered again. However, he/ she will not be awarded any grade better than BB.

(d) The grade XX is awarded:

  (i) If the student has less than 85% attendance in the course, or

  (ii) If the student has missed a significant number of in-semester evaluations for non-medical reasons.

The candidate with an XX grade will not be allowed to take the end semester examination.

(e) The candidate with XX grade(s) will have to register for the same course(s) in subsequent semesters when the course(s) are offered again. However, he/ she will not be awarded any grade better than BB except for medical grounds.

(f) The grade XX is awarded in a theory/laboratory course if the student has the requisite 85% attendance and has successfully completed all the in-semester evaluation requirements but has not appeared in the end-semester examination due to medical reasons. Such a student is eligible for a make-up examination before the commencement of the next semester if he/she provides the relevant medical documents approved by designated Medical Officer at IITRAM. Upon completion of the make-up examination, due grade will be assigned in the place of XX. If the reason for absence is not medical, the XX grade will revert to an FR grade.

(g) Valid reasons for end-semester make-up examination (including the reasons mentioned elsewhere in this document):

  (i) Serious illness/personal accident of student and/or

  (ii) Serious illness/death/ accident of parent/guardian of student

Each of such cases is to be approved by UGAPEC.

(h) Academic malpractices: In case of malpractice during any of the in-semester evaluations like assignments, quizzes, tests and examinations, the instructor(s) can award an FR grade in the course immediately and report it to the DOAA. If the DOAA feels that the seriousness of the situation warrants it, the matter may be referred to the UGAPEC and/or Academic Council.

6.6.5 Semester grade reports

At the end of each semester, semester grade report (SGR) which reflects the performance of the student in that semester is prepared. This report includes the FR and XX grades as awarded. Four copies of SGR are prepared. The students copy will be disbursed by the academic office of IITRAM. A copy will be sent to respective Faculty Advisor(s) for their information. The parents copy of the grade report will be dispatched to their respective addresses by the academic office. The office copy of the SGR will be retained by the academic office for their record. The SGR of the student with the XX grade for medical reasons is prepared only after the XX grade is converted to a suitable grade after the end semester re-examination. When a failed course with FR grade is cleared at later semester, no new modified grade report for that semester in which the failed grade was awarded will be issued.

6.6.6 Transcripts

Transcript is the consolidated statement of the academic performance of the student for all the semesters since joining the programme and is given to a student on successful completion of programme along with the degree certificate. Student, who has taken multiple attempts to take a course, the transcript will only contain earned pass grade (BB to DD, PP or NP). The course will however be shown in the earlier semester with FR grades with a * mark indication that the student has finally cleared the course. The transcript will list all the courses with semester-wise record of grades with SPI and CPI. Additional courses will be shown separately indicating minor/ honours earned by the student, if institute offers such courses.

6.6.7 Display of end semester performance

In-semester performance of all students is communicated by the instructor before the end semester examination. Those awarded XX grade will be clearly identified in this list. Based on the end semester performance, an instructor may declare FR grade even when a student is absent in end semester examination on valid grounds.

6.6.8 Disclosing the evaluated answer scripts after examinations

- The evaluated answer scripts of quizzes, tests, mid semester test, assignments, and term project reports are returned to the student immediately after evaluation during the semester.

- After the end semester examination, evaluated answer scripts of the end semester examination are shown to the students before the finalization of the grades. The limit fixed for such a disclosure is three days before the last day for the submission of grades to the academic office. Evaluated answer scripts are preserved by the academic office for a minimum period of one semester.

7 Continuation and Termination of Programme

Academic performance of students will be monitored regularly and efforts will be made to identify those who are unable to cope with the studies. This may often be due to a lack of aptitude or improper study habits. Early recognition of this problem permits corrective actions to be taken in time. UGAPEC will at the end of each semester review the students performance and suggest corrective measures. A student is required to maintain a minimum of 4.5 SPI and 4.5 CPI at the end of any semester in his/her programme. UGAPEC will recommend early termination of a student in the following situations:

(i) **During the first and second years:** Students accumulating 4 or more FR grades in theory courses at the end of any semester

(ii) **During the third and subsequent years;** Students accumulating 6 or more FR grades in theory courses at the end of any semester

7.1 Conditional promotion (Academic probation)

A student having two FR grades in theory courses at the end of any semester during the first four semesters of the programme will be allowed to register for the next semester. He/she is required to qualify in these courses before the completion of the programme. He /she can in consultation with the Faculty Advisor arrange to take the course when it is offered concurrently with the prescribed courses for the current semester. Or he/she can complete his/her degree requirements over a longer than-normal duration (subject to adherence to the maximum duration of six years). Such students must apply for this scheme formally in consultation with their Faculty Advisor at the commencement of a semester for consideration and approval of the DOAA.

7.2 Reduced load programme (RLP)

A student will be assigned to reduced load programme (or RLP) will be allowed to complete the programme under following situations:

(i) If CPI is more than 4.00 but less than 4.50 at the end of any semester, or

(ii) If three FR grades accumulated in theory courses in the first four semesters of programme, or

(iii) If five FR grades accumulated in theory courses in the last four semesters of programme.

Such students will not be permitted overloading of course at any stage of their programme. According to guidance of Faculty Advisor, he/she may clear the courses of FR grades along with other courses over a longer duration than normal duration of programme. The duration of programme should not exceed six years. Upon attaining academic performance levels, which no longer necessitates studies under RLP, a student can opt to study under normal scheme and may complete his programme in normal duration. Students under RLP must first register for their backlog courses, if offered in that semester before registering for other prescribed courses of that semester. However, Faculty Advisor can recommend exceptions to avoid cascading effects due to pre-requisites for other courses.

8 Award of Degree

8.1 Award of degree

On successful completion of the prescribed requirements for the B.Tech programme the required degree will be conferred on a student in an annual convocation of the institute. The degree certificate will indicate the relevant branch and specializations if any in the engineering branch in which the student has graduated (For example, Bachelor of Technology in Civil Engineering) Along with the degree certificate the student will be given a transcript giving semester wise details of academic accomplishments. The additional courses taken will be separately mentioned in the transcript. An overall CPI for all the academic work done by the student will be given. For conferment of degree, a student has to fulfil the following requirements:

(i) The student should have taken and passed all the courses prescribed for the degree under the general and departmental requirements.

(ii) He/she should have satisfactorily fulfilled other academic requirements like practical training, field visits, seminars and projects as specified by the discipline.

(iii) The student should have paid all the dues to the institute.

(iv) The student should have no case of indiscipline pending against him/her.

The final degree certificate will not mention any class whatsoever. Only the CPIs will be given in the transcript. However, for all practical purposes, following guidelines should be followed to interpret the division using CPI figure of a student:

Table 2: **Interpretation of the Class**

CPI	Division
CPI$\geq$7.5	Distinction
6.5$\leq$CPI$<$7.5	First Division
5.5$\leq$CPI$<$6.5	Second Division
4.5$\leq$CPI$<$5.5	Pass Class

8.2   Award of medals

Institute will award the medals to outstanding students based on the policy for award of medals prevailing at the time of convocation.

9   Change and Modification of Academic Policies

Academic policies should be reviewed by UGAPEC every year before commencement of a semester and changes /modifications should be recommended to Academic Council for approval. On the other hand, in the interest of students or in the interest of institute, any formal or informal decision taken by UGAPEC, DOAA, DOSA, Faculty Advisor or any other institute body may be changed by Director General (DG) of institute.