

**B.S.ABDUR RAHMAN
UNIVERSITY**

B.S.ABDUR RAHMAN INSTITUTE OF SCIENCE & TECHNOLOGY
(Established under Section 3 of the UGC Act, 1956)

(FORMERLY B.S.ABDUR RAHMAN CRESCENT ENGINEERING COLLEGE)
Seethakathi Estate, G.S.T. Road, Vandalur, Chennai - 600 048.



**REGULATIONS (2009), CURRICULUM AND SYLLABUS
FOR
B.Tech. CIVIL ENGINEERING
(Eight Semesters / Full time)
(Updated upto June 2012)**

REGULATIONS -2009 FOR B.TECH DEGREE PROGRAMMES

1.0 PRELIMINARY DEFINITIONS & NOMENCLATURE

In these Regulations, unless the context otherwise requires:

- i) **"Programme"** means B.Tech. Degree Programme
- ii) **"Branch"** means specialization or discipline of B.Tech Degree Programme like Civil Engineering, Polymer Technology, etc.,
- iii) **"Course"** means a theory or practical subject that is normally studied in a semester, like Mathematics, Physics, Engineering Graphics, Computer Practice, etc.,
- iv) **"University"** means B.S.Abdur Rahman University.
- v) **"Dean (Academic Courses)"** means Dean (Academic Courses) of B.S. Abdur Rahman University.
- vi) **"Dean (Students)"** means Dean(Students) of B.S.Abdur Rahman University
- vii) **"Controller of Exams"** means the Controller of Examination of B.S. Abdur Rahman University, who is responsible for conduct of examinations and declaration of results.

2.0 ADMISSION

- 2.1 a) Candidates for admission to the first semester of the eight semester B.Tech. degree programme shall be required to have passed the Higher Secondary Examination of the (10+2) curriculum (Academic stream) prescribed by the appropriate authority or any other examination of any university or authority accepted by the University as equivalent thereto.
- 2.1 b) Candidates for admission to the third semester of the eight semester B.Tech. programme under lateral entry scheme shall be required to have passed the Diploma examination in Engineering / Technology of the Department of Technical Education, Government of Tamilnadu or any other examination of any other authority accepted by the University as equivalent there to.
- 2.2 Notwithstanding the qualifying examination the candidate might have passed, the candidate shall also write an entrance examination prescribed by the University for admission. The entrance examination shall test the proficiency of the candidate in Mathematics, Physics and Chemistry on the standards prescribed for plus two academic stream.

2.3 The eligibility criteria such as marks, number of attempts and physical fitness shall be as prescribed by the University from time to time.

3.0 BRANCHES OF STUDY

3.1 Regulations are applicable to the following B.Tech. degree programmes in various branches of Engineering and Technology, each distributed over eight semesters with two semesters per academic year.

B.TECH. DEGREE PROGRAMMES:

Civil Engineering

Mechanical Engineering

Aeronautical Engineering

Automobile Engineering

Polymer Technology

Electrical and Electronics Engineering

Electronics and Communication Engineering

Electronics and Instrumentation Engineering

Computer Science and Engineering

Information Technology

4.0 STRUCTURE OF PROGRAMMES:

4.1 Every Programme will have a curriculum with syllabi consisting of theory and practical courses such as,

- i) General core courses comprising mathematics, basic sciences, engineering sciences, humanities and engineering arts.
- ii) Core courses of Engineering / Technology
- iii) Elective courses for specialization in related fields.
- iv) Workshop practice, laboratory work, industrial training, seminar presentation, project work, education tours, etc.,
- v) NCC/NSS/NSO/YRC activities for character development.

4.2 Each course is normally assigned certain number of credits with one credit per lecture period per week, one credit per tutorial period per week, one credit for two - three periods of laboratory or practical or seminar or project work per week and one credit for four weeks of industrial training during semester vacations.

4.3 Each semester curriculum shall normally have a blend of lecture courses not exceeding six and practical courses not exceeding four.

4.4 For the award of the degree, a student has to earn certain minimum total number of credits specified in the curriculum of the relevant branch of study. This minimum will lie between 175 and 185 credits, depending on the branch.

4.5 The medium of instruction, examinations and project report will be English, except for courses on languages other than English.

5.0 DURATION OF THE PROGRAMME

A student is ordinarily expected to complete the B.Tech. programme in eight semesters (six semesters in the case of lateral entry student), but in any case not more than 14 semesters (12 semesters in the case of lateral entry student). Each semester shall normally consist of around 90 working days or 450 working hours. Semester end examination will normally follow immediately after the last working day of the semester.

6.0 FACULTY ADVISOR

To help the students in planning their courses of study and for general counseling on the academic programme, the Head of the Department of the student will attach a certain number of students to a teacher of the Department who shall function as Faculty Advisor for the students throughout their period of study. Such Faculty Advisor shall advise the students and approve the courses to be taken by the students during registration and enrolment every semester.

7.0 COMMON COURSE COMMITTEE

Each common theory course offered to more than one discipline or group, shall have a "Course Committee" comprising all the teachers teaching the common course with one of them nominated as Course Coordinator. The nomination of the course **Co-coordinator** shall be made by the Head of the Department / Dean (Academics), depending on whether all the teachers teaching the common course belong to the same department / different departments.

8.0 CLASS COMMITTEE

During first semester, a common Class Committee will be constituted for all branches by the Dean (Academic Courses). During other semesters, separate Class Committees will be constituted by the respective Head of the Department of the students.

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- 8.1** The first semester Class Committee composition will be as follows:
- i) Course Co-coordinators of all common courses.
 - ii) Teachers of all other individual courses.
 - iii) One male and one female first semester student of each branch of B.Tech, to be nominated by the Head of the Institution.
 - iv) All first semester Faculty Advisors as optional Special Invitees.
- 8.2** The composition of the class committee for each branch of B.Tech , from 2nd to 8th semester, will be as follows:
- i) One senior faculty member preferably not teaching to the concerned class, appointed as Chairman by the Head of the Department
 - ii) Teachers of individual courses
 - iii) Two students, (preferably one male and one female) of the class per group of 30 students or part thereof, to be nominated by the Head of the Department, in consultation with the faculty advisors.
 - iv) All faculty advisors of the class
 - v) Teacher-in-charge of UG programme
 - vi) Head of the Department
- 8.3** The class committee shall meet at least thrice during the semester. The first meeting will be held within two weeks from the date of class commencement, in which the type of assessments, like test, assignment, assignment based test etc., will be decided for the first, second and third assessments. The second meeting will be held within a week after the date of first assessment report, to review the students' performance and for follow up action. The third meeting will be held within a week after the second assessment report, to review the students' performance and for follow up action.
- 8.4** During these three meetings the student members representing the entire class, shall meaningfully interact and express opinions and suggestions of the class students to improve the effectiveness of the teaching-learning process.
- 8.5** The class committee, **excluding the student members and the invited members**, shall meet within 10 days from the last day of the end-semester examination to analyse the performance of the students in all the components of assessments and decide the grades secured by students in each course. The grades in a common course shall be decided by the concerned course committee and shall be presented to the class committee(s) by the concerned course coordinator.
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9.0 REGISTRATION AND ENROLMENT

- 9.1** Except for the first semester, every student shall register for the ensuing semester during a specified week before the end semester examination of the current semester. Every student shall submit a completed Registration form indicating the list of courses intended to be credited during the ensuing semester. Late registration with the approval of Dean (AC) along with a late fee will be permitted up to the last working day of the current semester.
- 9.2** From the second semester onwards, all students shall pay the prescribed fees for the semester on a specific day at the beginning of the semester confirming the registered courses. Late enrolment, with the approval of Head of the Institution along with a late fee, will be permitted up to two weeks from the date of commencement of classes. If a student does not enroll, his/her name will be removed from rolls.
- 9.3** The students of first semester shall register and enroll at the time of admission by paying the prescribed fees.
- 9.4** A student should have registered for all preceding semesters before registering for a particular semester.

10.1 CHANGE OF A COURSE

A student can change a course within a period of 15 days from the commencement of the course, with the approval of the Dean(AC), on the recommendation of the Head of the Department of the student.

10.2 WITHDRAWAL FROM A COURSE

A student can withdraw from a course at any time before the second assessment for genuine reasons, with the approval of the Dean(AC), on the recommendation of the Head of the Department of the student.

11.0 TEMPORARY BREAK OF STUDY FROM A PROGRAMME

A student can take a one time temporary break of study covering the current semester and/or next semester period with the approval of the Head of the Institution at any time before the start of third assessment of current semester, within the maximum period of 14 or 12 semesters as the case may be. If any students is debarred for want of attendance or suspended due to any act of indiscipline it will not be considered as break of study.

12.0 CREDIT LIMIT FOR ENROLMENT & MOVEMENT TO HIGHER SEMESTER

- 12.1** A student can enroll for a maximum of 30 credits during a semester period including redo courses.

12.2 The minimum credits required to move to 3rd semester B. Tech shall be 10 credits earned in the 1st semester. There will be no such minimum credit requirement to move to the remaining 4th to 8th semesters.

However, a student who secured "I" grade in all the courses of that semester is not eligible to move to the next higher semester.

12.3 A student who has not satisfied the NCC / NSS / NSO / YRC requirements (vide clause 19) will not be eligible to register for the fifth semester courses, even though he / she may satisfy all other requirements.

13.0 SUMMER TERM COURSES

13.1 A student can register for a maximum of three courses during summer term, If such courses are offered by the concerned department during the summer term. Fast-track summer courses of 30 periods for 3 credit courses and 40 periods for 4 credit courses will be offered for students with I grades. They may also opt to redo such courses during regular semesters with slotted time-tables.

13.2 The Head of the Department, in consultation with the department consultative committee and with the approval of the Head of the Institution may arrange for the conduct of a few courses during the summer term, depending on the availability of teachers during summer and subject to a specified minimum number of students registering for each of such courses.

13.3 However, in the case of students who have completed eighth semester, but having arrears in the earlier semesters in a maximum of two courses, summer courses may be offered, even if less than minimum students are registering for the course.

13.4 The number of contact hours and the assessment procedure for any course during summer term will be the same as those during regular semesters except that there is no provision either for withdrawal from a summer term course or for substitute examination.

14.0 ASSESSMENT PROCEDURE AND PERCENTAGE WEIGHTAGE OF MARKS

14.1 Every theory course shall have a total of four assessments during a semester as given below:

Assessment No.	Course coverage in weeks	Duration	Weightage of marks
Assessment 1	1 to 4	1.5 hours	50/3
Assessment 2	5 to 8	1.5 hours	50/3
Assessment 3	9 to 12	1.5 hours	50/3
Semester End Exam	1 to 18 (full course)	3 hours	50

- 14.2** The pattern of questions, for at least one of the tests, shall be the same as stipulated for the semester end examination by the University. Teachers handling courses are given the option to substitute with other suitable alternate type of evaluation approved by the class committee and the HOD. The details of such a scheme shall be announced to the students and informed to the Dean(AC) at the beginning of the semester.
- 14.3** Every practical course will have 75% weightage for laboratory assessment and 25% for semester end examination.
- 14.4** In the case of Industrial training, the student shall submit a report, which will be evaluated along with an oral examination by a committee of teachers, constituted by the Head of the department. A progress report from the industry will also be taken into account for evaluation.
- 14.5** In the case of project work, a committee of teachers constituted by the Head of the Department will carry out three periodic reviews. Based on the project report submitted by the student, an oral examination (viva-voce) will be conducted as the end-semester examination, for which one external examiner, approved by the Controller of Examinations, will be included. The weightage for periodic review will be 50% and remaining 50% for the semester end examination.
- 14.6** Assessment of seminars and comprehension will be carried out by a committee of teachers constituted by the Head of the Department.
- 15.0 SUBSTITUTE EXAMINATIONS**
- 15.1** A student who has missed, for genuine reasons, a maximum of two of the four assessments of a course may be permitted to write a substitute examination. However, permission to take up a substitute examination will be given under exceptional circumstances, such as accident or admission to a hospital due to illness, etc.
- 15.2** A student who misses any assessment in a course shall apply in a prescribed form to the Dean (AC) through the Head of the department within a week from the date of missed assessment. However the substitute tests and

examination for a course will be conducted within two weeks after the last day of the end-semester examinations.

16.0 PASSING AND DECLARATION OF RESULTS AND GRADE SHEET

16.1 All assessments of a course will be made on absolute marks basis. However, the Class Committee without the student members and the invited members shall meet within 10 days after the end-semester examinations and analyse the performance of students in all assessments of a course and award letter grade. The letter grades and the corresponding grade points are as follows:

Letter grade	Grade points
S	10
A	9
B	8
C	7
D	6
E	5
U	0
I	--
W	--

"W" denotes withdrawal from the course

"I" denotes inadequate attendance in the course and hence prevention from writing semester end examination.

"U" denotes unsuccessful performance in the course.

16.2 A student who earns a minimum of five grade points in a course is declared to have successfully completed the course. Such a course cannot be repeated by the student

16.3 The results, after awarding of grades, shall be signed by the Chairman of the Class Committee and Head of the Department and declared by the Controller of Examinations.

16.4 Within two weeks from the commencement of classes for the next semester, a student can apply for revaluation of his / her semester end examination answer paper in a course, on payment of a prescribed fee, through proper application to Dean(AC), who shall constitute a revaluation committee consisting of Chairman of the Class Committee as convener, the teacher of the course and a senior member of faculty knowledgeable in that course. The committee shall meet within a week to revalue the answer paper and

submit its report to the Controller of Examinations for consideration and decision

- 16.5** After results are declared, grade sheets shall be issued to each student, which will contain the following details. The list of courses enrolled during the semester including summer term courses, if any, and the grade scored, the Grade Point Average (GPA) for the semester and the Cumulative Grade Point Average (CGPA) of all courses enrolled from first semester onwards. GPA is the ratio of the sum of the products of the number of credits of courses registered and the points corresponding to the grades scored in those courses, taken for all the courses, to the sum of the number of credits of all the courses in the semester, including summer courses, if any.

If C_i , is the number of credits assigned by for i^{th} course and GP_i is the Grade Point obtained in the i^{th} course

$$GPA = \frac{\sum_i (C_i)(GP_i)}{\sum_i C_i}$$

The Cumulative Grade Point Average CGPA shall be calculated in a similar manner, considering all the courses enrolled from first semester.

"I" and "W" grades will be excluded for calculating GPA .

"U", "I" and "W" grades will be excluded for calculating CGPA

- 16.6** After successful completion of the programme, the Degree will be awarded with the following classifications based on CGPA.

Classification	CGPA
First Class with Distinction	8.50 and above and passing all examinations in the first appearance and completing the programme within the normal 8 or 6(for lateral entry) semesters.
First Class	6.50 and above and completing the programme within a maximum of 10 or 8 (for lateral entry) semesters.
Second Class	All others

17.0 ATTENDANCE REQUIREMENT AND COURSE REPETITION

17.1 A student shall earn 100% attendance in the contact periods of every course, subject to a maximum relaxation of 25% for genuine reasons like on medical grounds, representing the University in approved events etc., to become eligible to appear for the end-semester examination in that course, failing which the student shall be awarded "I" grade in that course. If the course is a core course, the candidate should register for and repeat the course when it is offered next.

17.2 The teacher of each course shall cumulate the attendance details for the semester and furnish the names of the students who have not earned the required attendance in that course to the Dean(AC) through the Head of the Department. There upon, the Dean (AC) shall announce, course-wise, the names of such students prevented from writing the semester end examination in each course.

17.3 A student should register to re-do a core course wherein "I" or "W" grade is awarded. If the student is awarded, "I", or "W" grade in an elective course either the same elective course may be repeated or a new elective course may be taken.

A student who is awarded '**U**' grade in a course will have the option of either to write semester end arrear exam at the end of the subsequent semesters, or to redo the course during summer term / regular semester.

If a student chooses to write the semester end arrear examination for the course, the grade will be calculated based on

either

continuous assessment marks already earned along with marks of the arrear examination

or

the arrear examination marks

only, **whichever is higher.**

The above procedure will be applicable for the First Year (First and Second Semester) and not for the remaining B.Tech Programmes.

From the Third Semester onwards the marks earned earlier in the continuous assessment for the course, will be used for grading along with the marks earned in the Semester end arrear examination for the course.

18.0 ELECTIVE CHOICE: OPTION TO DO PROJECT ALONE IN FINAL SEMESTER

18.1 Apart from the various elective courses listed in the curriculum for each branch of specialization, the student can choose a maximum of two electives from any other specialization under any department, during the entire period of study, with the approval of the Head of the parent department and the Head of the other department offering the course.

18.2 In the curriculum of eighth semester, along with the project work, if two elective courses alone are listed, then the Head of the Institution may permit a student, as per approved guidelines, on the recommendation of the Head of the department, to do a full semester major industrial project work. In such a case, the above two elective courses or any other two elective courses in lieu thereof have to be enrolled during any semester including the summer, preceding or succeeding the project work, if offered.

19.0 PERSONALITY AND CHARACTER DEVELOPMENT

19.1 All students shall enroll, on admission, in any of the personality and character development programmes, NCC / NSS / NSO/YRC and undergo practical training.

- ⌘ **National Cadet Corps (NCC)** will have to undergo specified number of parades.
- ⌘ **National Service Scheme (NSS)** will have social service activities in and around Chennai.
- ⌘ **National Sports Organisation (NSO)** will have sports, games, drills and physical exercises.
- ⌘ **Youth Red Cross (YRC)** will have social service activities in and around Chennai.

19.2 Every student shall put in a minimum of 75% attendance in the practical training specified by the concerned authority. Normally this is to be completed during the first year. For valid reasons, the Dean(AC) may permit a student to complete this requirement in the second year. **However, before enrolling for fifth semester, a student should have completed the training and produced a certificate from the appropriate authority of NCC / NSS / NSO / YRC for having satisfactorily completed the prescribed training.**

20.0 DISCIPLINE

- 20.1** Every student is required to observe disciplined and decorous behavior both inside and outside the campus and not to indulge in any activity which will tend to bring down the prestige of the Institution.
- 20.2** Any act of indiscipline of a student, reported to the Dean (Students), will be referred to a Discipline and Welfare Committee, nominated by the Vice-Chancellor, for taking appropriate action.

21.0 ELIGIBILITY FOR THE AWARD OF DEGREE

- 21.1** A student shall be declared to be eligible for the award of the B.Tech. degree provided the student has:
- i) successfully completed all the required courses specified in the programme curriculum and earned the number of credits prescribed for the specialization, within a maximum period of 14 semester (12 semesters for lateral entry) from the date of admission, including break of study.
 - ii) Completed the NCC/NSS/NSO/YRC requirements.
 - iii) no dues to the Institution, Library, Hostels, NCC, NSS, NSO, YRC and
 - iv) no disciplinary action pending against him/her.
- 21.2** The award of the degree must have been approved by the University.

22.0 POWER TO MODIFY

Notwithstanding all that has been stated above, the Academic Council has the right to modify the above regulations from time to time.
