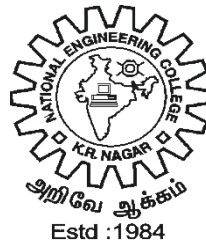# NATIONAL ENGINEERING COLLEGE, K.R.NAGAR, KOVILPATTI
(An Autonomous Institution, Affiliated to Anna University, Chennai)

REGULATIONS – 2019

OUTCOME BASED EDUCATION & CHOICE BASED CREDIT SYSTEM

Estd :1984

B.E. / B.Tech. DEGREE PROGRAMMES
(Applicable to students admitted from the Academic year 2019-2020 and subsequently under Choice based Credit System)

VISION

- Transforming lives through quality Education and research with human values.

MISSION

- To maintain excellent infrastructure and highly qualified and dedicated faculty.

- To provide a conducive learning environment with an ambience of humanity, wisdom, creativity and team spirit.

- To promote the values of ethical behavior and commitment to the society.

- To partner with academic, industrial and government entities to attain collaborative research.

NATIONAL ENGINEERING COLLEGE, KOVILPATTI – 628 503

(An Autonomous Institution, Affiliated to Anna University, Chennai)

2019 REGULATIONS FOR FOUR YEAR B.E / B.Tech DEGREE PROGRAMMES*
(for the batches of students admitted in 2019 - 2020 and subsequently under Choice Based Credit System)*

The following Regulations shall be applicable for all the U.G. Degree Programmes offered at National Engineering College, K.R. Nagar, Kovilpatti from the academic year *2019 – 2020* onwards.

1.0   PRELIMINARY DEFINITIONS AND NOMENCLATURE

1. "***Programme***" means under graduate degree programme. i.e., B.E. / B.Tech. Degree Programme.
2. "***Specialization***" means discipline of B.E. / B.Tech. Degree Programme, like Mechanical Engineering, Information Technology, etc.,
3. "***Course***" means a Theory / Integrated or Practical course that is normally studied in a semester, like Engineering Graphics, Fundamentals of Computing and Programming, etc.,
4. "***Controller of Examinations***" means the authority of the Institution who is responsible for all the activities of the End Semester Examinations of this Institute.
5. "***Dean (Academic)***" means the authority of the Institution who is responsible for initiating all the academic activities for the implementation of relevant rules and regulations.
6. "***Head of the Institution***" means the Principal of the College / Institution.
7. "***Head of the Department***" means Head of the Department concerned.
8. "***University***" means **ANNA UNIVERSITY, CHENNAI**.

2.0   QUALIFICATIONS FOR ADMISSION

2.1   Admission to First Semester
The candidates seeking admission for the first semester of the eight semester B.E. / B.Tech. Degree programme:

i. Shall be required to have a pass in Higher Secondary Examinations of (10+2) in the academic stream with Mathematics, Physics and Chemistry as main courses of study conducted by the Government of Tamilnadu or an examination accepted by the Syndicate of Anna University as equivalent there to.

(*OR*)

ii. Shall be required to have a pass in Higher Secondary Examination of Vocational Stream (Vocational groups in Engineering / Technology) as prescribed by the Government of Tamil Nadu.

2.2   Lateral Entry Admission
i. The candidates who possess the Diploma in Engineering / Technology awarded by the State Board of Technical Education, Tamil Nadu or its equivalent are eligible to apply for admission to the third semester of B.E. / B.Tech. Programme corresponding to the branch of study.

(*OR*)

ii. The candidates who possess the Degree in Science (B.Sc.) (10+2+3 stream) with mathematics as a course at the B.Sc. level are eligible to apply for admission to the third semester of B.E. / B.Tech. Such candidates shall undergo two additional engineering courses in the third or fifth and fourth or sixth semesters respectively as prescribed by the respective Chairman of Board of Studies.

2.3   They should also satisfy other eligibility rules as prescribed by the Anna University and Director of Technical Education, Government of Tamil Nadu, Chennai, from time to time.

3.0   UG PROGRAMMES OFFERED
1. B.E. - Mechanical Engineering
2. B.E. - Electronics and Communication Engineering
3. B.E. - Computer Science and Engineering
4. B.E. - Electrical and Electronics Engineering
5. B.E. - Civil Engineering
6. B.Tech. - Information Technology
7. B.Tech. – Artificial Intelligence and Data Science

4.0   STRUCTURE OF THE PROGRAMMES

The Curriculum and Syllabi under Regulations 2019 are implemented based on the recommendations of **AICTE, New Delhi** and **UGC, New Delhi** with a view of achieving excellence in the quality of education by keeping the requirements of enhancing the employability Skill and producing well-rounded engineers for the benefit of Industry, Society and Nation as a whole. Further, the structure of the programme is designed by keeping in mind, the Outcome-Based Education (OBE) and Choice Based Credit System (CBCS). The course content of each course is fixed in accordance with the Programme Educational Objectives (PEOs), Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs).

The CBCS enables the students to earn credits across programmes and provides flexibility for slow and fast learners in registering the required number of credits in a semester. The CBCS facilitates the transfer of credits earned in different departments / Centers of other recognized / accredited universities or institutions of higher education in India and abroad either by studying directly or by online method.

The curriculum of every programme is designed with a total number of credits ranging from *162 to 166 (120 to 126* for lateral entry) [Refer **Annexure-I**].

4.1   Categorization of Courses

Every B.E./B.Tech Degree Programme will have a curriculum with syllabi consisting of theory and practical courses that shall be categorized as given in *Table -1.*

TABLE-1   CATEGORY OF COURSES

Sl. No	Coursework – Subject Area	The range of Total credits %
1.	Humanities and Social Sciences including Management courses	3.6 % - 08%
2.	Basic Science courses	13% - 17%
3.	Engineering Science courses	12% - 20%
4.	Programme Core courses	30% - 45%
5.	Programme Elective courses relevant to chosen specialization / branch;	09% - 15%
6.	Open Elective courses from other technical and /or emerging subject areas;	3.6% - 11%
7.	Skill Development courses	07% - 09%
8.	Mandatory courses	(non – credit)

i. **Humanities and Social Sciences** include English, Communication Skill laboratory and Management courses

ii. **Basic Science Courses** include Chemistry, Physics, Biology and Mathematics

iii. **Engineering Science Courses** include Workshop, Drawing, Basics of Electrical / Electronics / Mechanical / Civil / Computer / Instrumentation Engineering

iv. **Programme Core Courses (PCC)** include the core courses relevant to the chosen programme of study.

v. **Programme Elective Courses (PEC)** include the elective courses relevant to the chosen programme of study.

vi. **Open Elective Courses (OEC)** include inter-disciplinary courses which are offered in other Engineering/Technology Programme of study.

vii. **Skill Development Courses (SDC)** include the courses such as Project, Seminar and Inplant training / Internship for improving Employability Skills.

viii. **Mandatory courses (MAC)** include Personality and Character development and the courses recommended by the regulatory bodies such as AICTE, UGC, etc.

4.2 In addition, the students shall enroll, in any one of the one credit Non-CGPA courses in each category listed in *Table-2* and earn a minimum of two credits (one from each category) for the award of the degree. The details for assessing these activities are given in *Annexure– II*.

TABLE-2   CATEGORY OF ONE CREDIT NON-CGPA COURSES

Category	Code	Courses	Credit
Personality and Character Development	NCG11	Sports	1
	NCG12	Yoga for Youth Empowerment	
	NCG13	National Cadet Corps	
	NCG14	National Service Scheme	
	NCG15	Extra Curricular Activities	
Allied Skills / Value Added Courses	NCG21	Co Curricular Activities	1
	NCG22	English Proficiency Certification	
	NCG23	NPTEL online courses related to Allied Skills	
	NCG24	Foreign / Vernacular Languages	
	NCG25	Aptitude Proficiency Certification	
	NCG26	Globally accepted Certification Courses	
	NCG27	Socially Responsible Activities	
	NCG28	Critical and Creative Thinking	
Mandatory courses recommended by the AICTE, UGC, etc.		As prescribed in the Curriculum of each Programme	

4.3   Number of Courses per Semester

The curriculum of the semester (vide **Clause 5.2)** shall normally have a blend of 2 to 7 theory / integrated courses and laboratory courses not exceeding 4. Each course may have credits as per **Clause 4.4**.

4.4   Credit System

In the credit system,

TABLE – 3   CREDIT SYSTEM

One Period of Lecture(L) per week	1 credit
One period of Tutorial (T) per week	1 credit
One period of Practical (P) / Drawing / Lab / Workshop practice / project per week	0.5 credit

The length of the semesters shall be 15 to 18 weeks. Credit for a course shall vary from 1 to 4. The L: T: P pattern that shall be followed for various courses is given in *Table-4*.

TABLE – 4   CREDIT PATTERN

Type of course	Lectures (Periods/ week)	Tutorials (Periods/ week)	Practical work (Periods/ week)	Credits (L:T:P)	Total credits	Total (Periods/ week)
1 credit	1	0	0	1:0:0	1	1
	0	0	2	0:0:1	1	2
1.5 credit	0	0	3	0:0:1.5	1.5	3
2 Credit	2	0	0	2:0:0	2	2
	1	0	2	1:0:1	2	3
3 Credit	3	0	0	3:0:0	3	3
	2	1	0	2:1:0	3	3
	2	0	2	2:0:1	3	4
	0	0	6	0:0:3	3	6
4 Credit	2	1	2	2:1:1	4	5
	3	1	0	3:1:0	4	4
	3	0	2	3:0:1	4	5

4.5   Inplant Training / Internship

4.5.1   All the students should undergo Internship / Inplant Training at industry or research organization or university or Live-in-Lab for the period of one month and its equivalent credit is 2. The Heads of the Departments shall ensure that the necessary arrangements are made in this regard.

4.5.2   **Live-in-Lab**

It is an experiential learning programme for the students to understand the problems of the population living in villages and to identify projects to address the problems, develop solutions, put into practice, assess results and ultimately reveal innovative multidisciplinary solutions for the betterment of rural people and rural economy. The interested students shall go to the village adopted by the institution from the third year onwards, and they have to stay at least for two weeks continuously in that village. During the stay, they can interact with the village population and identify the problem. Further, they have to provide a solution to the problems identified at the end of the period of study to consider the same as an internship. The Principal and Head of the department should ensure that all the necessary arrangements are made in this regard.

4.6   ONLINE COURSES / SELF STUDY COURSES

4.6.1   Students may be permitted to earn credit through online courses (which are provided with certificate) with the approval of Head of the Department and Dean (Academic) subject to a maximum of 15 credits. The credit may be transferred with the due approval procedures as per clauses 15.1 (b) for either programme core, elective, one credit or open elective course. However, for core courses, before course registration for the corresponding semester in which the course is offered, the student has to submit the certificate with valid score to Dean (Academic) Office.

4.6.2   The student shall study one Trans-disciplinary course (Management course under Humanities and Social Sciences) prescribed in the curriculum through self-study mode with the approval of Head of the Department. The student shall study on their own under the guidance of a faculty member nominated by the Head of the Department. No formal lectures need to be delivered. The evaluation methodology shall be the same as that of a theory course.

4.6.3   If a student has a publication in SCI listed journals as the first author, he/she shall be exempted from one elective course.

4.7   One credit courses

One credit elective course shall be offered by the department itself or in collaboration with the industry/research organizations / higher learning institutions. A student will also be permitted to

register for the one-credit courses offered by other departments with approval of both the Heads of the departments. If more number of such one-credit courses is offered by any department, three elective courses of 1 credit shall replace a 3 credit elective course as given in *Table -6*.

TABLE – 6   REPLACEMENT OF ONE CREDIT COURSES

Number of one credit earned		Eligible to replace	
Core electives	Interdisciplinary electives	PEC	OEC
3	0	1	-
2	1	1	-
1	2	-	1
0	3	-	1

4.8   PROJECT WORK / INDUSTRY PRACTICE

4.8.1   Project work

Project work is one of the skill development courses in the curriculum. Under the supervision of a faculty member, final year student is required to do some innovative work for a societal problem with the knowledge gained after undergoing various theory and laboratory courses during their study. A single student or group of students (not exceeding 4 per group) shall exhibit both analytical and practical skills through their project work.

Project work-I carries 3 credits, and shall be registered in the 7th semester. Project work-II carries 6 credits and shall be registered in 8th semester and it need not be a continuation of project work –I.

4.8.2   Industry Practice

Industry practice is a skill development course in the curriculum, wherein the student has to undergo industrial training under the industry mentor in a specific domain for one semester continuously. The students may register for industry practice during 8th semester.

The students who have got internship offer in a company for a duration of 10 to 15 weeks, shall register for Industry practice instead of Project work-II with the proper approval from Industry, Placement cell and concerned Head of the Department. They have to register the course within one week after the commencement of 8th semester.

4.8.3   Those students who have undertaken industrial projects during the eighth semester should have completed their courses prescribed in the curriculum well in advance otherwise they can do such a course through online mode subject to a maximum of one course.

4.9   Industrial Visit

Every student is required to go for one Industrial visit every year starting from the second year of the programme. The Heads of the Departments shall ensure that the necessary arrangements are made in this regard.

4.10   Medium of Instruction

The medium of instruction shall be English for all the courses, examinations, seminar, presentations and project / thesis / dissertations reports.

4.11   Verticals (*For the batches admitted from 2021 – 2022 onwards*)

Elective courses are listed in groups called verticals that represent a particular area of specialisation / domain. Students are permitted to choose all the Electives from a particular vertical or from different verticals.

4.12   Eligibility Criteria for registration of Honors and Minor Degree

The students opt for Honors or Minor degree, have **to earn additional 18 credits** apart from the mandatory credits prescribed in the curriculum for the particular programme.

▪ For **Honors with Specialization**, the students will be permitted to register the courses in the same discipline in any one of the vertical from V Semester onwards provided the marks earned by the students until III semester should be of CGPA 7.50 and above and cleared all the courses in the first attempt.

▪ For **Honors**, the students will be permitted to register the courses in the same discipline from more than one vertical from V Semester onwards provided the marks earned by the students until III semester should be of CGPA 7.50 and above and cleared all the courses in the first attempt.

▪ For **Minor**, the students will be permitted to register the courses, in any one of the verticals from other discipline from Semester V onwards provided the marks earned by the students until Semester III is CGPA 7.50 and above.

5.0   DURATION OF THE PROGRAMMES

5.1   The minimum and maximum periods for completion of the UG programmes are given below.

TABLE – 7 DURATION OF THE PROGRAMMES

Programme	Minimum No. of semesters	Maximum No. of semesters
B.E. / B.Tech.	8	14
B.E. / B.Tech. Lateral Entry	6	12

Each semester normally consists of 90 working days. In any contingent situation, the number of working days per semester shall not be less than 65 days. The Principal is given the discretionary powers to decide the number of working days in such contingencies. The Principal shall ensure that every teacher imparts instruction as per the number of periods specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught.

5.2   For regulations, the academic year has been divided into two semesters, the Odd semester normally spanning from June to November and the Even semester from December to May.

5.3   The First semester of B.E. / B.Tech. Degree Programme normally spans from August to December and Second semester from January to May.

5.4   The total duration of the programme reckoned from the commencement of the first semester to which the student was admitted, shall not exceed the maximum duration specified in **clause 5.1** irrespective of the period of break of study (**vide clause 20.1)** or prevention (**vide clause 7.4**) in order that the student may be eligible for the award of the degree (**vide clause 17.0**)

6.0   REGISTRATION

6.1   Each student, on admission shall be assigned to a Faculty Advisor / Mentor (vide **clause 8.0**) who shall advise her/him about the academic programs and counsel on the choice of courses considering the academic background and student's career objectives. With the advice and consent of the Faculty Advisor, the student shall register for a set of courses he/she plans to take up for the Semester.

6.2   Every student shall enroll for the courses of the succeeding semester during the last week of the current semester. However, the student shall confirm the enrollment by registering for the courses within first five working days after the commencement of the concerned semester. Further, the student has to register for the end semester examination by paying the prescribed fee for that particular course. If he/she has not registered for the end semester examination in the semester concerned, then he/she has to re-register for the courses in the subsequent semesters and satisfy the requirements as per **clauses 7.0 & 6.10.2**

6.3   If a student is prevented from writing End Semester Examination (ESE) of a course due to lack of attendance, the student has to register for that course again, when offered next, attend the classes and fulfill the attendance requirements as per **clause 7.0**.

6.4   If the theory course in which the student has been prevented from writing end semester examination due to lack of attendance in a programme elective course or an open elective, then the student may register for the same or any other Programme elective or open elective course respectively in the subsequent semesters during the minimum period of study. However, if the students are unable to complete the courses within the minimum said duration, they shall register their courses in the subsequent academic year irrespective of Odd or Even semester. However, the maximum credits in a semester should not exceed 30.

6.5   If a student finds that he/she has registered for more courses than his/her capability to study in a semester, he/she can withdraw one or more of courses before the end of 2nd week of the semester.

6.6   The information on the list of all the courses offered in every department specifying the credits, the prerequisites, a brief description of syllabus or list of topics, the instructor who is offering the course and the time slot shall be made available in the college website.

6.7   In any department, the preference for registration shall be given to the students of that department for whom the course is a programme core course.

6.8   The registration for any course shall be on first come first served basis, provided the student fulfills prerequisites for that course if any. Every effort shall be made by the Department / Centre to accommodate as many students as possible.

6.9   No course shall be offered by a department unless a minimum of **5** students are registered for that course.

6.10   **Flexibility to Add or Drop Courses**
6.10.1 A student has to earn the total number of credits specified in the curriculum of the respective programme of study to be eligible to obtain the degree. However, if the student wishes, the student is permitted to earn more than the total number of credits prescribed in the curriculum of the student's programme.

6.10.2 From the third to eighth semester, the student has the option of registering for additional courses or dropping existing courses. However, the student shall register for a **maximum of 32 credits** and a minimum of 12 credits (except in seventh and eighth semesters).

6.10.3 The student shall register for the Project work in the VIII semester only.

6.10.4 The student shall register for the Product Development Laboratory in the V / VI semester. The evaluation methodology shall be the same as that of Mini Project work.

6.10.5 A student can earn a maximum of 2 one-credit courses per semester.

6.10.6 The students shall register and complete their courses within the minimum duration of the degree programme as per clause 5.1. However, if the students are unable to register the courses within the said duration, they shall register their courses in the subsequent academic year irrespective of Odd or Even semester. However, the maximum credits in a semester should not exceed 30.

7.0   **REQUIREMENTS FOR APPEARING FOR THE END SEMESTER EXAMINATION OF A COURSE**

A student who has fulfilled the following conditions (**vide Clauses 7.1 - 7.2**) shall be deemed to have satisfied the requirements for appearing for End semester examination of a particular course.

7.1   Ideally every student is expected to attend all periods and earn 100% attendance in all the courses. However, he/she shall secure not less than 75% attendance in each course in that semester.

7.2 If student secures attendance of 65% and above but less than 75% in any course in the current semester due to medical reasons (hospitalization / accident / specific illness) or due to participation in the College / University / State / National / International level Sports events with prior permission from the Principal / competent authority, the student shall be given exemption from the prescribed attendance requirement and he/she shall be permitted to appear for the semester examinations of that course.

7.3 A candidate shall normally be permitted to appear for the End Semester Examination of the course if he/she has satisfied the attendance requirements (**subject to clause 7.1 - 7.2**) and has registered for examination in those courses of that semester. A candidate who has already appeared for a course in a semester and passed the examination is not entitled to reappear in the same course for improvement of letter grades.

7.4 Those students who have not satisfied the conditions specified in **clauses 7.1 - 7.2** and who secure **less than 65%** attendance in a course will not be permitted to write the End Semester Examination of that course. The student has to register and repeat this course in a subsequent semester when it is offered subject to the provisions under **clause 6.10.2**

7.5 Students who have not satisfied the attendance requirements as per **clauses 7.1 & 7.2** and registration requirements as per the **clause 6.2** in all the courses in a particular semester have to re-do the courses in the corresponding semester in the subsequent academic years subject to **clause 20.1**. Also, such students are not eligible to register for the subsequent semester.

7.6 Those students who missed their End Semester Examinations owing to their participation in national and international level Sports, NCC & NSS events shall be permitted with due approval of Head of the Institution to appear for special examinations.

8.0 FACULTY ADVISER (MENTOR)

Facilitating the students in choosing their courses of study and for general advice on the academic programme, the Head of the Department will allocate a fixed number of students to a teaching faculty of the department who shall function as Mentor for them throughout their period of study. Mentors shall advise the students in registering of courses, monitor their attendance and progress and counsel them periodically. If necessary, the Mentor may also discuss with or inform the parents about the progress of the students through concerned Head of the Department.

8.1 Every student will be under the care and guidance of a faculty who is appointed as his / her Mentor. About 20 students will be assigned to each Mentor who will also act as their local guardian and assist them in all matters of academic as well as other activities.

8.2 Student counseling plays a vital role in a student's life. Hence, the students are advised to meet their Mentor frequently and discuss their problems freely with them. They should also take care to see that all information concerning their progress and achievements in the college is duly entered in the record sheet.

8.3 The Mentor will maintain a Record Sheet for each of his / her wards. The record sheet will contain all information concerning the students' attendance, grades obtained in the End Semester Examinations, monthly tests, achievements if any in Curricular, Co-curricular and Extra-curricular activities and disciplinary proceedings if any taken against the student.

9.0 CLASS COMMITTEE

9.1 A Class Committee consists of all teachers handling courses of the concerned class, student representatives - cross-section of students (academically good, average, poor) and a chairperson who is a faculty not handling any course for the class. The overall goal of the Class Committee is to improve the teaching-learning process. The functions of the Class Committee include:

- Solving the problems experienced by students in the classroom and the laboratories.
- Clarifying the regulations of the degree programme and the details of rules therein.
- Informing the student representatives about the academic schedule including the date of assessments (Tests & Assignments) and the syllabus coverage for each assessment.

- Analyzing the performance of the students of the class after each test and finding the ways and means of solving problems, if any
- Identifying the weak students, if any, and requesting the teachers concerned to provide some additional help or guidance or coaching to such weak students.

9.2 The class committee for a class under a particular programme is normally constituted by the Head of the department. However, if the students of different programmes are mixed in a class (like the first semester which is generally common to all programmes), the class committee is to be constituted by the Head of the Department concerned.

9.3 The class committee shall be constituted in the first week of commencement of any semester.

9.4 At least 6 student representatives (usually 3 boys and 3 girls) shall be included in the class committee.

9.5 The chairperson of the class committee may invite the Mentor(s) and the Head of the Department to the meeting of the class committee.

9.6 The Principal may participate in any class committee meeting.

9.7 The chairperson is required to prepare the minutes of every meeting, submit the same to HOD within two working days after the meeting and arrange to circulate among the concerned students and teachers. If there are some points in the minutes requiring action by the management, the same shall be brought to the notice of the management by the head of the institution.

9.8 The class committee shall meet four times in a semester:
- The first meeting, two weeks after commencement of the classes.
- The second meeting, a week after the first internal assessment results.
- The third meeting, after the second internal assessment results.
- The fourth meeting, after the evaluation of End semester Examinations to finalize the grades based on clause 15.1 of R-2019. The student representatives will not be present for this meeting. (for the batch admitted during 2020 – 2021 only)

9.9 During these meetings, the student members representing the entire class, shall meaningfully interact and express the opinions and suggestions of other students of the class to improve the effectiveness of the teaching-learning process.

10.0 COURSE COMMITTEE FOR COMMON COURSES

Each common theory course offered to more than one group of students 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 Coordinator shall be made by the Head of the Department/Head of the Institution depending upon whether all the teachers teaching the common course belong to a single department or several departments. The 'Course committee' shall meet as often as possible and ensure uniform evaluation of the tests and arrive at a common scheme of evaluation for the tests. Wherever it is feasible, the course committee may also prepare a common question paper for the assessment test(s). Guidelines for the evaluation of CO attainment and continuous assessment shall be given by the Coordinator of common course committee.

11.0 SYSTEM OF EXAMINATION AND ASSESSMENT PROCEDURE

11.1 Performance in each course of study shall be evaluated based on (i) continuous internal assessment throughout the semester and (ii) End Semester Examinations (ESE) at the end of the semester.

11.2 EVALUATION OF THE COURSES (*For the batches admitted during 2019 – 2020 and 2020 - 2021 only*)

Each course, both theory / integrated and practical including project work and Industry Practice shall be evaluated for a maximum of 100 marks as detailed in *Table – 8 (a)*.

TABLE – 8 (a)   EVALUATION OF THE COURSES

S. No.	Category of Course	Continuous Assessment	End Semester Examinations
1.	Theory / Integrated Courses	50 marks	50 Marks
2.	Laboratory Courses	50 Marks	50 Marks
3.	Product Development Laboratory	50 Marks	50 Marks
4.	Project Work - I & II	50 Marks	50 Marks
5.	Industry Practice	--	100 Marks

11.2 (a) EVALUATION OF THE COURSES (*For the batch admitted from 2021 – 2022 onwards*)

Each course, both theory / integrated and practical including project work and Industry Practice shall be evaluated for a maximum of 100 marks as detailed in   *Table - 8 (b)*.

TABLE – 8 (b) EVALUATION OF THE COURSES

S. No.	Category of Course	Continuous Assessment	End Semester Examinations
1.	Theory Courses	40 marks	60 Marks
2.	Laboratory Courses	60 Marks	40 Marks
3.	Theory Courses with Laboratory Component	50 Marks	50 Marks
4.	Product Development Laboratory	60 Marks	40 Marks
5.	Project Work - I	40 Marks	60 Marks
6.	Project Work - II	40 Marks	60 Marks
7.	Industry Practice	--	100 Marks

11.3   Conduct of End semester examination through hybrid mode (*From 2021 – 22 Odd Semester onwards*)

End semester examination shall be conducted through hybrid mode. However, the students have to come to the college and attend the examination in physical mode under the supervision of hall invigilators assigned by chief superintendent.

Questions will be randomly generated (for Part-A & Part-B) from the question bank and each student will get different questions from online exam portal.

– Part A - (MCQ / Fill in the blanks / Descriptive with weightage of one / two marks) - to be answered through PC / Laptop with safe exam browser

– Part-B, each student has to write the answers in the answer booklet.

However, the distribution of marks and time duration are based on CO requirements of the particular course.

At the end of the examination, he/she has to scan the answer script and upload the same in the examination server. Part-A, will be evaluated automatically by the system and Part-B will be evaluated electronically by the appointed faculty.

The evaluated answer scripts will be made available to the students in digital form for verification and clarification before the publication of results for transparency.

Results will be processed and published through digital mode and grade sheets will also be issued in digital form and made available in digital locker.

11.3.1 For one-credit courses, the End Semester Examination of 1-hour duration shall be conducted as and when the course is completed (if necessary). If an industry expert conducts a course, then a

committee consisting of the head of the department, subject expert and industrial expert handling the course may be constituted to normalize the evaluation. The grades of the students completing the one-credit courses will be finalized based on the grading patterns listed in Table 16 as per clause 15.1 (ii). The grades earned by the students for the one-credit courses which do not opt for conversion into elective, will not be included in the computation of CGPA.

11.4   Integrated Courses (Theory Courses with Laboratory Component / Laboratory Courses with Theory Component)

Integrated courses shall be assessed with equal weightage for continuous assessment (CA) marks and end semester (ESA) examination marks. Weightage for CA and ESA should be 50% each. The distribution of marks for the theory and laboratory component in the continuous assessment and end semester examination for different type of courses are provided in the **Table-9**.

TABLE – 9

L	T	P	C	Continuous Assessment (CA)		End semester examination
1	0	4	3	Laboratory (25%)	Theory (25%)	Laboratory only (50%)
1	0	2	2	Laboratory (25%)	Theory (25%)	Laboratory only (50%)
2	0	2	3	Theory (25%)	Laboratory (25%)	Theory (25%) Laboratory (25%)
3	0	2	4	Theory (25%)	Laboratory (25%)	Theory (35%) Laboratory (15%)
2	0	4	4	Theory (25%)	Laboratory (25%)	Theory (15%) Laboratory (35%)

The weighted average shall be converted into 50 marks for continuous assessment.

Note: The Experiential learning (E) hours prescribed in R-2019 B.Tech. – AI&DS curriculum structure may be treated as equivalent to Practical hours (P).

11.4.1   Integrated courses shall be designed with 3 to 5 course outcomes for laboratory component and 3 to 5 course outcomes for theory component. Continuous assessment of the laboratory component of the integrated course shall be done as specified in **Table-11** of clause 12.2 and continuous assessment of theory component shall be done as per the **Table-10** of clause 12.1.

For end semester examination, the assessment shall be laboratory only or assessment of both theory and laboratory component with proper weightage for each component as given in **Table 9**.

11.5   The End Semester Examination for the **mini project / project work** shall consist of evaluation of the final report submitted by the student or students of the project group (of not exceeding 4 students) by an external examiner followed by a viva-voce examination conducted separately for each student by a committee consisting of the External examiner, Internal examiner and Guide.

11.6   The End Semester Examinations of practical courses shall be evaluated by *Internal Examiners*.

11.7   The End Semester Theory Examinations shall be conducted by Chief Superintendent appointed by the Principal. The Hall Superintendents from the college shall invigilate the halls during theory examinations.

11.8   Students involved in malpractice during end semester examinations shall appear before the inquiry committee, and the committee will give the punishment as per the college norms.

11.9   Scribes may be appointed for conducting examination for a student with disabilities on request to Principal through Head of the department concerned with necessary documents. Based on the request and genuinely, the Principal may appoint the scribe for the disabled student as per the norms.

11.10 Product Development Laboratory

The End Semester Examination for the Product Development Laboratory shall consist of an evaluation of the final report submitted by the student or students of the group (of not exceeding 4 students) by the panel of examiners consisting of faculty coordinator, Guide and a common examiner from other programme nominated by the COE.

11.11 Preservation of assessed answer books

All answer books shall be preserved for six consecutive semesters in the strong room of Examination Cell.

12.0 PROCEDURE FOR AWARDING MARKS FOR CONTINUOUS ASSESSMENT

For all the courses, the continuous assessment (CA) shall be made through CO attainment of the individual student. Each course shall have a set of Course Outcomes. The total CO attainment by the student shall be reduced to 50 Marks for theory / integrated / practical courses including project work.

12.1 Theory / Integrated Courses

Continuous assessment for each theory / integrated course shall be evaluated through tests and other appropriate assessment tools like Quiz, Presentation, Open book test, Viva Voce, etc as per the discretion of the course Instructor. The guidelines for the evaluation of continuous assessment marks in theory/integrated courses shall be implemented as given in *Table-10*

TABLE – 10 EVALUATION OF CONTINUOUS ASSESSMENT FOR THEORY / INTEGRATED COURSE

CO	Blooms Level	Assessment Test		MCQT / ASMT / Tutorial		Viva / Seminar / Presentation		CES		Total Attainment for CO (100%)
		Marks	wtg	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks
1.			50%		20%		20%		10%	
2.										
:										
N.										
TOTAL ATTAINMENT (Average of all COs)										

Wtg. – weightage; MCQT – Multiple Choice Question Type; ASMT – Assignment
CES – Course End Survey

Note: The procedure enumerated in table 10 has to be prepared by the course coordinator before the commencement of the semester, and it should be approved by the class committee.

12.2 Practical Courses

Continuous assessment for practical courses shall be evaluated through CO attainment of the student by assessing the student performance during the laboratory class, model examination and oral examination. For assessing the CO, the class committee has to frame rubrics. The weightages shall be given to each assessment as given in *Table -11* to evaluate attainment of COs.

TABLE – 11 EVALUATION OF CONTINUOUS ASSESSMENT FOR PRACTICAL COURSES

CO	BL	Laboratory practice		Model Exam		Viva-Voce		CES		Total Attainment for CO
		Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks
1.			40%		30%		20%		10%	
2.										
:										
N.										
TOTAL ATTAINMENT (Average of all COs)										

Wtg. – weightage

12.3 Mini Project Work

Mini **p**roject work may be assigned to a single / group of students not exceeding 4 per group. The mini project shall carry 100 marks and shall be evaluated through internal assessment only. The Head of the Department concerned shall constitute a review committee for each programme. The

review committee shall conduct three review meetings per semester. The student shall make a presentation on the progress made to a three-member review committee. The project guide will be one of the members of the review committee. For assessing the CO attainment, the review committee shall frame rubrics with the approval of Head of the Department. The distribution of marks for the evaluation of mini project is detailed in *Table -12.*

TABLE – 12 EVALUATION OF CONTINUOUS ASSESSMENT FOR MINI PROJECT WORK

Review - I (20 Marks)		Review - II (30 Marks)		Review - III (50 Marks)		Total (Marks)
Committee	Guide	Committee	Guide	Project report evaluation	Viva-voce	
10	10	15	15	40	10	100

12.4   Project Work

Project work may be assigned to a single / group of students not exceeding 4 per group. The Head of the Department concerned shall constitute a review committee for each programme. The review committee shall conduct three review meetings per semester. The student shall make a presentation on the progress made to a three-member review committee. The project Guide will be one of the members of the review committee. Those students who have undertaken industrial projects during the eighth semester should have completed their courses prescribed in the curriculum well in advance as per the *clause 6.10* otherwise they can do such a course through online mode subject to a maximum of one course.

12.4.1 The continuous assessment marks for the project shall be evaluated through CO attainment of the student assessing presentation made by the students in the review meetings. For assessing the CO attainment, the review committee shall frame rubrics with the approval of Head of the Department. The CO attainment of the student shall be reduced to 50 Marks and rounded to the nearest integer. The continuous assessment and End semester examination marks for project work and the viva voce examination will be distributed as indicated below.

TABLE – 13 EVALUATION OF CONTINUOUS ASSESSMENT FOR PROJECT WORK

CO	BL	Review I		Review II		Review III		CES		Total Attainment for CO
		Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks
1.			30%		30%		30%		10%	
2.										
:										
N.										
TOTAL ATTAINMENT (Average of all COs)										

12.4.2 The Project Report prepared by the student according to the approved guidelines and duly signed by the Guide and Head of the Department shall be submitted to the Head of the Department.

12.4.3 The End semester examination of the project work will be based on the evaluation of the project report submitted by the student(s) followed by a Viva-Voce Examination by a team consisting of a common internal examiner (other than the guide), External Examiner and Guide. The Controller of Examinations shall appoint the common internal and the external examiners for evaluation from the panel of examiners submitted by the Head of the Department concerned with the approval of the Board of Studies.

12.4.4 If a student fails to submit the project report on or before the specified deadline, he/she is deemed to have failed in the project work and shall re-enroll for the same in a subsequent semester. If he/she fails in the viva-voce examination of Project work, he/she shall resubmit the project report within 30 days from the date of declaration of the results. For this purpose, the same Internal and External examiner shall evaluate the re-submitted report.

12.5 Comprehension

Comprehensive examination shall be conducted to evaluate the analytical ability and the comprehensive knowledge gained by the students in all the courses he/she had undergone till then. Comprehension of a student shall be evaluated by a committee constituted by the Head of the Department as detailed in *Table-14.*

TABLE – 14 EVALUATION OF COMPREHENSIVE EXAMINATION

Assessment-I (20 Marks)		Assessment-II (30 Marks)			Assessment-III (50 Marks)		Total (Marks)
MCQT/QUIZ	Viva-Voce	MCQT / QUIZ	GD/ Presentation/ Seminar	Viva Voce	MCQT	Viva-voce	
10	10	10	10	10	30	20	100

12.6 Seminar / Research Paper / Patent Review

The seminar/case study is to be considered as purely Internal (with 100% Internal marks only). Every student is expected to present a seminar on a research paper/patent in their specialization. A three-member committee appointed by the Head of the Department will evaluate the seminar. The evaluation shall be based on the seminar paper (40%), presentation (40%) and response to the questions asked during the presentation (20%).

12.7 Internship / Industrial Training

The Industrial / Practical Training, Internship shall carry 100 marks and shall be evaluated through Internal assessment only. At the end of Industrial / Practical training / Internship, the candidate shall submit a certificate from the organization where he/she has undergone training and a brief report. The evaluation will be made based on the report and a viva-voce examination conducted internally by a three member Departmental Committee constituted by the **Head of the Department.** The certificate (issued by the organization) submitted by the students shall be attached to the mark list and sent to the Controller of Examinations. The details for assessing those courses are given in *Annexure – III*.

12.7.1 Live-in-Lab

- At the end of the study, the students have to submit a report as a group consisting of maximum of 6 numbers to the department about the visit which includes the date of visit, questionnaires prepared for the identification of problem, justification and the suggestions/solutions given for the identified problem. Photo proof is essential for all activities.

- The report will be evaluated by a committee constituted by the controller with the approval of the Principal as per the procedure formulated for the evaluation of the project.

- All such projects will be considered as Internship.

- The best solution will be rewarded suitably.

12.8 Industry Practice

After the completion of the industry practice as per **clause 4.8.2,** the student shall submit a completion certificate endorsed by the industry mentor. The industry mentor shall submit a feedback / confidential report to the concerned HODs. The course shall carry 100 marks and shall be evaluated through End Semester Examination (ESE) only. The ESE shall be conducted by the two member committee consisting of internal faculty member and external expert (preferably from industry) nominated by the COE in consultation with HOD.

12.9 One Credit Courses

The one-credit course shall carry 100 marks (50% of continuous assessment & 50% of End semester Examination) and shall be evaluated through continuous assessment and End Semester

Examination. Two continuous assessments shall be conducted during the semester by the department. The CO attainment of the student for that course shall be evaluated as per the procedure detailed for the theory courses. The end semester examination shall be conducted for the 1-hour duration for 30 marks.

12.10 Monitoring Committee for Continuous Assessment

The monitoring committee is constituted by the HOD, which consists of two senior faculty members from the department to ensure quality in continuous assessment (CA) process and assessment outcomes. The roles and responsibilities of the committee in evaluating the academic process are as follows:

1. To verify the teaching learning process carried out as per Course plan.
2. To audit IAT question paper and other assessments.
3. To ensure the consistency and unbiased mark allocation.
4. To suggest the corrective measures, if needed.
5. Submit the committee report to the Head of the Department.

13.0 ACADEMIC AUDIT

Each Staff member shall maintain an "*ATTENDANCE AND ASSESSMENT RECORD*" for every semester which consists of attendance marked in each Lecture / Practical / Project work class, the assessment marks and the record of class work (topic covered), separately for each course. The attendance and assessment record should be submitted to the Head of the Department periodically (at least three times in a semester). The Head of the Department will verify the details given by the Staff member. At the end of the semester, the record should be verified by the Principal who will keep this document in safe custody (for five years). The Academic Audit Committee appointed by the Principal may inspect the records of attendance and assessment for both current and previous semesters.

14.0 PASSING REQUIREMENTS (*Applicable for the students admitted in 2019-2020 only*)

For the students admitted in the academic year 2019-2020, passing requirements, award of grades etc are followed as per Regulation-2015.

14.a PASSING REQUIREMENTS *(Applicable for the students admitted in the Academic year 2020 – 2021 only)*

i. A student shall be deemed to have passed a theory / laboratory course / integrated course, if the total mark secured by him/her (CA+ESE) is 50%. However it is mandatory for the students to appear in the End Semester Examinations.

ii. A student is deemed to have passed industrial training, Inplant training, Internship, Mini Project and Project work, if the total mark secured by him/her is at least 50%.

iii. The internal assessment marks obtained by the candidate in the first appearance shall be retained and considered valid for all subsequent attempts till the candidate secures a pass. However, from the third attempt onwards if a candidate fails to obtain pass marks (Internal Assessment + End Semester Examination) then the candidate shall be declared to have passed the examination if he/she secures at least 50% marks in the end semester theory / practical examination.

iv. A student is deemed to have passed a laboratory course consisting of two parts (Part A & Part B), if he/she secures 50% marks (CA+ESE) in two parts put together.

v. If a student appears in a course conducted exclusively as arrear examination, then his / her grade in that course will be based on the grade range allotted for the same score in that course in the immediately preceding regular examination.

vi. If a student appears in a course as arrear examination which is being conducted as a regular examination for another batch of regular students, then his / her grade in that course will be based on the grade range allotted to the same score in that course applicable to the above batch of regular students.

vii.   A student, who is not registered or not qualified to register for want of attendance in the end semester examination or withdraws from final examination, has to register for all such courses at the next available opportunity and complete them.

viii.   If a student who has registered for a one-credit course or additional course does not clear the same successfully, it will be treated on par with a course withdrawn by a student.

14.b   PASSING REQUIREMENTS *(Applicable for the students admitted from 2021 – 2022 onwards)*

A student who secures not less than 50% of total marks prescribed for the course [Internal Assessment + End semester University Examinations] with a minimum of 45% of the marks prescribed for the end-semester University Examination, shall be declared to have passed the course and acquired the relevant number of credits. This is applicable for both theory and laboratory courses (including project work).

If a student fails to secure a pass in a theory course / laboratory course (except electives), the student shall register and appear only for the end semester examination in the subsequent semester. In such case, the internal assessment marks obtained by the student in the first appearance shall be retained and considered valid for all subsequent attempts till the student secures a pass. However, from the third attempt onwards if a student fails to obtain pass marks (IA + End Semester Examination), then the student shall be declared to have passed the examination if he/she secures a minimum of 50% marks prescribed for the University end semester examinations alone.

14.1   CREDIT TRANSFER

Students may study online courses with NPTEL, Udemy, Coursera etc (which are provided with Certificate) with the approval of Department & Dean (Academic) subject to a maximum of 15 credits. The approved list of online courses will be provided by the office of Dean Academic from time to time. The Credit Equivalence shall be as follows:

The online course with minimum of 15 contact hours or 4 weeks duration may be considered as equivalent to one credit. Online courses with one, two, three, and four credits may be considered for credit transfer.

14.1.1   NPTEL online courses

The grade will be fixed in the class committee based on the marks obtained by the student and the credit will be transferred based on the student acceptance.

14.1.2   Other platform online courses

The student should submit the course completion certificate provided by the competent authority to the concerned HOD. Based on the HOD recommendation, the student shall register for the particular course in the Dean (Academic) office. He / she has to pay the exam fees for attending the End Semester Examination (ESE).

The Institution will conduct the ESE for 100 marks and evaluation of the course will be done by the subject expert and the result will be declared. The grade will be fixed in the class committee based on the marks obtained by the student in the ESE and the credit will be transferred based on the student acceptance.

15.0   AWARD OF LETTER GRADES (*Applicable for the students admitted in 2019-2020 only*)

15.1   All assessments of a course will be done on an absolute mark basis. Each student based on his/her performance will be awarded a final letter grade and grade point, based on the performance of the student relative to others who have registered for that particular theory course. However, if the class strength is less than 25, then the grading system shown in *Table-16* of **clause 15.1 (ii)** will be followed.

i.   The letter grade and the grade point to each student studying theory / integrated courses (Internal and End semester examinations) are generally awarded based on the statistical parameters, Mean (μ) and Standard Deviation (σ) of the distribution of marks as detailed in *Table-15*.

TABLE -15 AWARD OF LETTER GRADES

The range of Marks in % (CA+ESE)	Letter Grade	Relative Grade Point
$M \geq \left[(\mu+1.65\sigma)\right]$	O	10
$\mu+1.65\sigma > M \geq \mu+0.85\sigma$	A$^+$	9
$\mu+0.85\sigma > M \geq \mu$	A	8
$\mu > M \geq \mu-0.9\sigma$	B$^+$	7
$\mu-0.9\sigma > M \geq \mu-1.8\sigma$	B	6
$M < \mu-1.8\sigma$ (or) $M < 50$ Whichever is less	RA	0
Shortage of Attendance	SA	0
Absent	AB	0
Withdrawal from examination	W	0

Note: RA - Reappearance in a Course

$$\mu = \frac{1}{n}\sum_{j=1}^{n}M_i \qquad \text{and} \qquad \sigma = \sqrt{\frac{\sum_{j=1}^{n}\left(M_i - \mu\right)^2}{n}}$$

Where,

M_i - Total mark secured (CA+ESE) by the 'i'th student in the course

n – no. of students who appeared for the examination in that particular course

Note: if the maximum marks awarded in a course is greater than or equal to 95% and the class average(μ) is greater than or equal to 70% then the letter grade and grade point shall be awarded based on the guidelines detailed in ***clause 15(ii) & Table-16***.

ii. The letter grade and grade point for other courses including Laboratory courses, Industrial Training, Internship**,** In Plant Training, One credit courses, Mini Project, Project work and Elective courses (having strength less than 25) shall be awarded by converting the marks obtained in that course in to a grade based on the guidelines detailed in ***clause 14 (ii) & Table-13***.

TABLE – 16 AWARD OF LETTER GRADES
(having strength less than 25)

The range of Marks in %	Letter Grade	Relative Grade Point
$M > (X-k)$	O	10
$(X-k) \geq M > (X-2k)$	A$^+$	9
$(X-2k) \geq M > (X-3k)$	A	8
$(X-3k) \geq M > (X-4k)$	B$^+$	7
$(X-4k) \geq M \geq (X-5k)$	B	6
$M < 50$	RA	0
Shortage of Attendance	SA	0
Absent	AB	0
Withdrawal from examination	W	0

RA - Reappearance in a Course

Where,

- M – Marks secured (CA+ESE)
- X – maximum marks secured in a class
- k – class interval

The class intervals (k) shall be evaluated for the purpose of awarding the grades by dividing the difference between highest mark secured (X) in a Course and the minimum pass mark by the total number of grades (O, A$^+$, A, B$^+$ and B). However, if the class interval (k) is less than 7, then (k) will be considered as 7.

$$k = \frac{X - 50}{5}$$

iii. The **Performance Analysis Committee** chaired by the Principal, consisting of the Dean (Academic), Controller of Examinations and all the Heads of the Departments will by collective wisdom, normalize the marks secured by the students in each course and finalize the grade range for that course so as to ensure that the clustering and grading decisions have been made in a reasonably balanced manner.

iv. For converting the marks obtained in the online courses into a letter grade and grade points, the procedure detailed in *clauses 15 (ii) & (iii) & Table-16* shall be followed. For this purpose, the maximum and minimum marks awarded for passing requirement shall be obtained from the agency which conducts the online courses.

15.0 AWARD OF LETTER GRADES *(Applicable for the students admitted in the Academic year 2019 – 2020 and 2020 – 2021)*

15.1(a) Class Committee for fixing grades

After evaluating the end semester answer scripts of each regular course, (Theory / Laboratory / Integrated course / Project / Internship / In-plant Training / Research paper and Patent Review), the list of marks (CA+ESE) will be handed over to the chairman of the class committee. The Class committee will fix the grade ranges during the fourth class committee meeting. In this meeting student members shall not be permitted to attend.

If the mark secured by the student is less than 50, he/she will be awarded with RA grade (Re Appearance). All other grades will be decided in the class committee meeting. While fixing the grades, the following guidelines will be adopted:

1. To fix the grade range, the marks less than 50 shall be omitted.
2. To fix the grades, the mean mark shall be at the middle of the 'A' grade range.
3. To calculate the mean value, the marks 50 and above only shall be considered.
4. To decide the range for each grade, approximately normal distribution shall be followed.
5. Submit the grade ranges and grades to office of Controller of Examinations.

TABLE -17.1   AWARD OF LETTER GRADES
(Applicable for the students admitted in 2019-20 and 2020 – 2021 batches only)

Letter grade	Grade points	Marks range
O (Outstanding)	10	Decided by the Class Committee
A$^+$ (Excellent)	9	
A (Very Good)	8	
B$^+$ (Good)	7	
B (Above average)	6	
RA (Re Appearance)	0	< 50
SA (Shortage of Attendance)	0	
AB (Absent)	0	
W (Withdrawal from Examination)	0	

TABLE -17.2   AWARD OF LETTER GRADES
(Applicable for the students admitted from 2021 – 2022 onwards)

Letter grade	Grade points	Marks range
O (Outstanding)	10	Decided by the Class Committee
A$^+$ (Excellent)	9	
A (Very Good)	8	
B$^+$ (Good)	7	
B (Above average)	6	
C (Satisfactory)	5	
U (Re Appearance)	0	< 50
SA (Shortage of Attendance)	0	
AB (Absent)	0	
W (Withdrawal from Examination)	0	

15.1(b) For converting the marks obtained in the online courses into a letter grade and grade points, the procedure detailed in *clause 15.1(a) &* **[(***Table – 17.1 - **Applicable for the students admitted in 2020 – 2021 batch only) / (Table – 17.2 - Applicable for the students admitted from 2021 – 2022 onwards)***]** shall be followed. For this purpose, the maximum and minimum marks awarded for passing requirement shall be obtained from the agency which conducts the online courses. However, if the mark secured by the student is above the minimum passing requirement and less than 50, he/she will be awarded with **B Grade** (*Applicable for the students admitted in 2019 – 2020 and 2020 – 2021 batch only) /* **C Grade** *(Applicable for the students admitted from 2021 – 2022 onwards)* for the online courses.

15.0   AWARD OF LETTER GRADES *(Applicable for the students admitted from 2021 – 2022 onwards)*

15.1(c) The award of letter grades will be decided based on relative grading principle. The relative grading is applicable to ONLY those students who have passed the examination as per the passing requirements enumerated above. For those students who have not passed the examination, Reappearance (U) shall be awarded as shown in the below Table.

For those students who have passed the course, the relative grading shall be done. The marks of those students who have passed only shall be given as input to the software developed for relative grading. The evolved relative grading method normalizes the results data using the BOX-COX transformation method and computes the grade range for each course separately and awards the grade to each student.

For a given course, if the students' strength is greater than 30, the relative grading method shall be adopted. However, if the students' strength is less than or equal to 30 then the fixed grading shall be followed with the grade range as specified below.

O	A+	A	B+	B	C	U
91 - 100	81 - 90	71 - 80	61 - 70	56 - 60	50 – 55	< 50

The performance of a student shall be reported using letter grades, each carrying certain points as detailed below:

Letter grade	Grade points
O (Outstanding)	10

A⁺ (Excellent)	9
A (Very Good)	8
B⁺ (Good)	7
B (Average)	6
C (Satisfactory)	5
U (Re Appearance)	0
SA (Shortage of Attendance)	0
AB (Absent)	0
W (Withdrawal from Examination)	0

A student is deemed to have passed and acquired the corresponding credits in a particular course if he/she obtains any one of the following grades: "O", "A+", "A", "B+","B", "C".

'SA' denotes shortage of attendance and hence prevented from writing the end semester examinations. 'SA' will appear only in the result sheet.

"U" denotes that the student has failed to pass in that course. "**W**" denotes **withdrawal** from the exam for the particular course. The grades U and W will figure both in the Grade Sheet as well as in the Result Sheet. In both cases, the student has to appear for the End Semester Examinations.

If the grade U is given to **Theory Courses/ Laboratory Courses it is not required to satisfy the** attendance requirements, but has to appear for the end semester examination and fulfill the passing requirements to earn a pass in the respective courses.

If the grade U is given to **EEC (Employability Enhancement Course) (except Project Work), which are evaluated only through internal assessment,** the student shall register for the course again in the subsequent semester, fulfill the passing requirements to earn pass in the course. However, attendance requirement need not be satisfied.

15.2   Grade Sheet

After the results are declared, Grade Sheets will be issued to each student which will contain the following details:
- The College Name and Affiliated University.
- The list of courses enrolled during the semester, and the grades scored.
- The Grade Point Average (GPA) for the semester
- The Cumulative Grade Point Average (CGPA) of all courses enrolled from the first semester onwards.

GPA for a semester is the ratio of the sum of the products of the credits assigned to each course and the grade point obtained for that course to the sum of the total number of credits acquired in the semester.

CGPA will be calculated similarly, considering all the courses enrolled from the first semester to last semester rounded up to 2 decimal points. "RA," "SA" and "AB" grades will be excluded for calculating GPA and CGPA.

$$GPA/CGPA = \frac{\sum_{i=1}^{n} C_i \, GP_i}{\sum_{i=1}^{n} C_i}$$

where C_i - is the Credits assigned to the course

GP_i - is the point corresponding to the grade obtained for each Course

n - is a number of Courses successfully cleared during the particular semester in the case of GPA and during all the semesters in the case of CGPA.

15.2.1 If a student decides not to opt for Honours, after completing certain number of additional courses, the additional courses studied shall be considered instead of the Professional Elective

courses which are part of the curriculum. If the student has studied more number of such courses than the number of Professional Elective courses required as per the curriculum, the courses with higher grades shall be considered for the calculation of CGPA. Remaining courses shall be printed in the mark sheet, however, they will not be considered for calculation of CGPA.

15.2.2 If a student decides not to opt for Minor, after completing certain number of courses, the additional courses studied shall be considered instead of Open Elective courses which are part of the curriculum. If the student has studied more number of such courses than the number of open electives required as per the curriculum, the courses with higher grades shall be considered for calculation of CGPA. Remaining courses shall be printed in the mark sheet, however, they will not be considered for calculation of CGPA.

16.0   TRANSPARENCY IN EVALUATION

Before the publication of End Semester results, the students are allowed to verify the answer scripts of all subjects. Consequently, the application for revaluation of the answer scripts for those subjects is not permitted.

The verification of answer scripts is not allowed for practical courses, one credit courses, seminars, practical training and project work.

17.0   ELIGIBILITY FOR THE AWARD OF THE DEGREE

A student shall be declared to be eligible for the award of the Degree only when he/she has

i.   Successfully gained the required number of total credits *160 to 166 credits (116 to 126 credits for Lateral entry)* as specified in the curriculum corresponding to his/her Programme within the stipulated time.

ii.   Successfully completed the B.E./B.Tech. Degree programme within 7 (SEVEN) years (FOURTEEN consecutive semesters) from the date of admission to the first semester of the programme and 6 (SIX) years (TWELVE consecutive semesters) for the lateral entry candidates from the date of admission to the third semester of the programme.

iii.   Successfully completed any additional courses prescribed by the Dean (Academic), whenever any candidate is readmitted under Regulations other than R – 2019.

iv.   Successfully undergone Non-CGPA courses specified in clause 4.2 of Regulations 2019 and Curriculum of the programme concerned.

v.   Successfully completed the field visit / industrial training, if any, as prescribed in the curriculum.

vi.   No disciplinary action is pending against him/her.

vii.   The award of the Degree must have been approved by the syndicate of the University.

18.0   CLASSIFICATION OF THE DEGREE AWARDED

18.1   First Class with Distinction

A candidate who satisfies the following conditions shall be declared to have passed the examination in First Class with Distinction.

▪ Should have passed the End Semester Examination in all the courses of all the eight semesters (six semesters in the case of lateral entry) in his/her First attempt within five years (four years in the case of lateral entry) which includes authorized break of the study of one year. Withdrawal from examination (vide *clause 19.0*) will not be considered as an attempt.
▪ Should have secured a CGPA of not less than 8.50
▪ Should not have been prevented from writing end semester examination due to lack of attendance in any of the courses.

B.E. / B.Tech. (Honours with specialization) in the same discipline
- The student should have earned additionally a minimum of 18 credits from a vertical of the same discipline.
- Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 8.50.

B.E. / B.Tech. (Honours)
- The students should have earned additional courses (minimum of 18 credits) from more than one vertical of the same discipline.
- Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 8.50.

B.E. / B.Tech. (Minor in other Specialization)
- The student should have earned additionally a minimum of 18 credits in any one of the verticals of other discipline.
- Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 8.50.

18.2   First Class

A candidate who satisfies the following conditions shall be declared to have passed the examination in First Class.
- Should have passed the End Semester Examination in all the courses of all the eight semesters (six semesters in the case of lateral entry) within five years (four years in the case of lateral entry). One year authorized break of study (if availed of) or prevention from writing the End Semester examination due to lack of attendance (if applicable) is included in the duration of five years (four years in the case of lateral entry) for the award of First Class.
- Should have secured a CGPA of not less than 7.00 (*Applicable for the students admitted in 2019 – 2020, 2020 - 2021 batches only) /* 6.50 *(Applicable for the students admitted from 2021 – 2022 onwards)*

B.E. / B.Tech. (Honours with specialization) in the same discipline
- The student should have earned additionally a minimum of 18 credits from a vertical of the same discipline.
- Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 7.50.
- Withdrawal from writing end semester examination will not be considered as an attempt.

B.E. / B.Tech. (Honours)
- The students should have earned additional courses (minimum of 18 credits) from more than one vertical of the same discipline.
- Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 7.50.
- Withdrawal from writing end semester examination will not be considered as an attempt.

B.E. / B.Tech. (Minor in other Specialization)

- The student should have earned additionally a minimum of 18 credits in any one of the verticals of other discipline.
- Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits.
- Should have earned a minimum CGPA of 6.50.

18.3   Second Class

All other candidates (not covered in **clauses 18.1 and 18.2**) who qualify for the award of degree (**vide clause 17.0**) shall be declared to have passed the examination in second class.

18.4   A candidate who is absent in semester examination in a course/project work after having registered for the same shall be considered to have appeared in that examination for the purpose of classification. (Subject to **clause 19.0 & 20.0**)

19.0   PROVISION FOR WITHDRAWAL FROM END-SEMESTER EXAMINATION

19.1   A candidate may be granted permission to withdraw from appearing for the examination of any one course or consecutive examinations of more than one course in a semester examination for valid reasons and on the prior application.

19.2   Such withdrawal shall be permitted only once during the entire period of study.

19.3   Withdrawal application is valid only if the student is otherwise eligible to write the examination (**clause 7**) and if it is made within TEN working days before the commencement of the end semester examination in that course or courses and also recommended by the HOD and approved by the Principal.

19.4   Notwithstanding the requirement of mandatory TEN working days notice applications for withdrawal for special cases under extraordinary conditions will be considered on the merit of the case.

19.5   Withdrawal shall not be construed as an appearance for the eligibility of a candidate for First Class with Distinction.

19.6   Withdrawal from the End semester examination is NOT applicable to arrear courses of previous semesters.

19.7   The candidate shall reappear for the withdrawn courses during the examination conducted in the subsequent semester.

19.8   Withdrawal is permitted for the end semester examinations in the final semester, only if, the period of study of the student concerned does not exceed five years as per **clause 18.1.**

20.0   PROVISION FOR AUTHORISED BREAK OF STUDY

20.1   Break of Study shall be granted only once for valid reasons for a maximum of one year during the entire period of study of the degree programme. However, in the extraordinary situation, the candidate may apply for an additional break of study not exceeding another one year by paying the prescribed fee for a break of study. If a candidate intends to temporarily discontinue the programme in the middle of the semester for valid reasons, and to rejoin the programme in a subsequent year, permission may be granted based on the merits of the case provided he/she applies to the Director, Academic Courses, Anna University, Chennai, in advance, but not later than the last date for registering for the end semester examination of the semester in question, through the Principal stating the reasons therefore and the probable date of rejoining the programme.

20.2   The student is permitted to rejoin the programme after the break of study shall be governed by the Curriculum and Regulations in force at the time of rejoining. If the Regulation is changed, then, those candidates may have to do additional courses as prescribed by the Dean (Academic).

20.3   The authorized break of study (for a maximum of one year) will not be counted for the duration specified for passing all the courses for the purpose of classification. However, an additional break of study granted will be counted for the purpose of classification.

B.E. / B.Tech. Degree Programmes - Regulations 2019
as Amended & Approved in 19th Academic Council Meet on 15th July 2023

20.4   The total period for completion of the programme reckoned from the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in *clause 5.1* irrespective of the period of break of study so that he/she may be eligible for the award of the degree.

20.5   If any student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted "Break of Study" or "Withdrawal" is not applicable for this case.

21.0   DISCIPLINE

Every student is required to decently dress to observe discipline and decorum both inside and outside the college and not to indulge in any activity which affects the prestige of the college/university.

22.0   REVISION OF REGULATIONS AND CURRICULUM

The curriculum and syllabi under this regulation will be for **four years**. However, the Academic Council of the College reserves the right to revise or change or amend the regulations, the scheme of examinations, the curriculum and the syllabi from time to time if found necessary.

23.0   SPECIAL CASES

In the event of any clarification in the interpretation of the above rules and regulations, they shall be referred to the Standing Committee. The Standing Committee will offer suitable interpretations/ clarifications/amendments required for the special case on such references and get them ratified in the next meeting of the Academic Council. The decision of the Academic Council will be final.

ANNEXURE - I

MINIMUM TOTAL CREDITS FOR B.E. / B.Tech. DEGREE

PROGRAMMES OFFERED IN THE INSTITUTION

Sl. No.	Name of the Programme	Regular students		
		Total Credits* *(Applicable for the students admitted from 2019 – 2020, 2020-2021 only)*	**Total Credits*** *(Applicable for the students admitted from 2021 – 2022)*	**Total Credits*** *(Applicable for the students admitted from 2022 – 2023)*
1.	B.E. Mechanical Engineering	164	166	168
2.	B.E. Electronics and Communication Engineering	164	166	168
3.	B.E. Computer Science and Engineering	163	165	167
4.	B.E. Electrical and Electronics Engineering	165	167	169
5.	B.E. Civil Engineering	164	166	168
6.	B.Tech. Information Technology	160	162	164
7.	B.Tech. Artificial Intelligence and Data Science	-	-	164

Sl. No.	Name of the Programme	Lateral Entry students		
		Minimum Total Credits* *(Applicable for the students admitted from 2019 – 2020, 2020-2021 only)*	**Minimum Total Credits*** *(Applicable for the students admitted from 2021 – 2022)*	**Minimum Total Credits*** *(Applicable for the students admitted from 2022 – 2023 onwards)*
1.	B.E. Mechanical Engineering	123	125	126
2.	B.E. Electronics and Communication Engineering	123	125	126
3.	B.E. Computer Science and Engineering	121	123	124
4.	B.E. Electrical and Electronics Engineering	124	126	127
5.	B.E. Civil Engineering	122	124	125
6.	B.Tech. Information Technology	118	120	121
7.	B.Tech. Artificial Intelligence and Data Science	-	-	124

*   Minimum Total Credits to be earned by the Lateral entry student admitted to the particular UG Programme to become eligible for the award of Degree under **Clause 4.0** of Regulations 2019 (UG).

ANNEXURE – II

NCG11   **SPORTS**

1.	Pre – requisites / Eligibility Conditions	-
2.	Detail of Course Content / Syllabus	As prescribed by the Physical Education department
3.	Duration of the Course	50 Hours per Year Minimum contact hours required – 38 Hours per Year
4.	Assessment Procedure	As decided by the Physical Education department
5.	Criteria for allocation of credit	Participation in Ties /Zone/Inter Zone / Open Tournament or representation in intramural Sports & Games with 75% attendance in ground practice / Pass on Examination conducted by Physical Education department.
6.	In case of failure	(If the student score less than 50 marks in the above criteria) Repeat the course

NCG12   **YOGA FOR YOUTH EMPOWERMENT**

1.	Pre – requisites / Eligibility Conditions	As prescribed by Yoga class practitioners
2.	Detail of Course Content / Syllabus	
3.	Duration of the Course	60 Hours per Year. Minimum contact hours required – 45 Hours per Year
4.	Assessment Procedure	-
5.	Criteria for allocation of credit	Completion certificate issued by the NEC Yoga Club / Yoga class practitioners

NCG13   **NATIONAL CADET CORPS (NCC)**

1.	Pre – requisites / Eligibility Conditions	Student should be a citizen of India. He / She should have the minimum physical fitness as per NCC wing requirement
2.	Detail of Course Content / Syllabus	Norms as prescribed by NCC wing
3.	Duration of the Course	
4.	Assessment Procedure	
5.	Criteria for allocation of credit	80% parade attendance in both I & II year NCC training period

NCG14   **NATIONAL SERVICE SCHEME (NSS)**

1.	Pre – requisites / Eligibility Conditions	-
2.	Detail of Course Content / Syllabus	
3.	Duration of the Course	2 years
4.	Assessment Procedure	-
5.	Criteria for allocation of credit	Attend one orientation programme and active participation certificate for 120 contact hours / year or active participation certificate in 5 activities

NCG15   **EXTRA-CURRICULAR ACTIVITIES**

1.	Pre – requisites / Eligibility Conditions	-
2.	Detail of Course Content / Syllabus	Periodical meetings, Blood Donation Camp, Orphanage visit, Awareness Programmes, Test related to YRC (Multiple Choice Questions)
3.	Duration of the Course	One year
4.	Assessment Procedure	Evaluation will be based on attending periodical meetings (Attendance) / Camp / Orphanage visit / Test / Awareness Programmes
5.	Criteria for allocation of credit	Active participation certificate with good conduct in YRC club activities

NCG21   **CO CURRICULAR ACTIVITIES**

1.	Pre – requisites / Eligibility Conditions	-
2.	Detail of Course Content / Syllabus	Activities as decided by the respective professional chapters Convener / Coordinator
3.	Duration of the Course	20 contact hours on specific programme organized by the respective clubs.
4.	Assessment Procedure	Based on attendance and assessment of learning as per the objective of the programme.
5.	Criteria for allocation of credit	Successful completion of specific allied skills training like presentation skills, organization skills, technical skills etc conducted by professional chapters IEEE / ISTE / IE(I) / CSI and all other approved chapters and department associations, with a minimum of 20 contact hours and being ensured by the concerned staff coordinators.

NCG22   **ENGLISH PROFICIENCY CERTIFICATION**

1.	Pre – requisites / Eligibility Conditions	As prescribed by the certifying authority
2.	Detail of Course Content / Syllabus	
3.	Duration of the Course	
4.	Assessment Procedure	
5.	Criteria for allocation of credit	A certificate for attending BEC course / Minimum score in TOFEL iBT / GRE / IELTS
6.	In case of failure	Repeat the course

NCG23   **NPTEL ONLINE COURSES RELATED TO ALLIED SKILLS**

1.	Pre – requisites / Eligibility Conditions	
2.	Detail of Course Content / Syllabus	As prescribed by NPTEL
3.	Duration of the Course	4 weeks
4.	Assessment Procedure	As prescribed by NPTEL
5.	Criteria for allocation of credit	Successful completion of the course

NCG24   FOREIGN / VERNACULAR LANGUAGES

1.	Pre – requisites / Eligibility Conditions	-
2.	Detail of Course Content / Syllabus	As prescribed by the course conducting Universities / Schools
3.	Duration of the Course	
4.	Assessment Procedure	
5.	Criteria for allocation of credit	Pass certificate issued by the competing authority
6.	In case of failure	Repeat the course

NCG25   APTITUDE PROFICIENCY CERTIFICATION

1.	Pre – requisites / Eligibility Conditions	As prescribed by the course coordinator
2.	Detail of Course Content / Syllabus	
3.	Duration of the Course	40 periods with minimum 70% of attendance
4.	Assessment Procedure	As prescribed by the course coordinator
5.	Criteria for allocation of credit	Pass in End Examination / Minimum score in GMAT / CAT / NAC / MAT
6.	In case of failure	Repeat the course

NCG26   GLOBALLY ACCEPTED CERTIFICATION COURSES

1.	Pre – requisites / Eligibility Conditions	Prior permission from the HOD is must
2.	Detail of Course Content / Syllabus	As prescribed by the certifying authority
3.	Duration of the Course	
4.	Assessment Procedure	
5.	Criteria for allocation of credit	Proof for the successful completion of the course provided by the globally accepted certifying agencies like HPATA / Microsoft / National Instruments (Lab View) / Oracle / IBM / **CISCO Networking Academy** / ADOBE / REDHAT / Sun Micro systems / JAVA / Softwares related to Mechanical and Civil Engineering

NCG28   CRITICAL AND CREATIVE THINKING

1.	Pre – requisites / Eligibility Conditions	Prior permission from the HOD is must
2.	Detail of Course Content / Syllabus	Refer **Annexure - IV**
3.	Duration of the Course	15 Hours
4.	Assessment Procedure	As per the procedure specified for theory courses
5.	Criteria for allocation of credit	Proof for the successful completion of the course provided by the course instructor

<center>**ANNEXURE – III**</center>

INDUSTRIAL TRAINING   **CREDIT: 2**

1.	Pre – requisites / Eligibility Conditions	After completion of the third semester. The student may undergo Industrial training in reputed organization after getting prior permission from HOD
2.	Detail of Course Content / Syllabus	Inplant training in any organization like BSNL, TTPS, BHEL, NLC etc related to their programmes
3.	Duration of the Course	Minimum of Four weeks
4.	Assessment Procedure	1. Student has to submit a report. 2. Evaluation Committee will be constituted by the respective department HOD to assess the report based on the following criteria's. • Evaluation of report given by the student (40%) • Student's presentation (40%) • Oral Examination (20%)
5.	Criteria for allocation of credit	Satisfactory completion certificate issued by the respective department HOD based on the performance of the student and a certificate from the organization concerned.

INTERNSHIP   **CREDIT: 2**

1.	Pre – requisites / Eligibility Conditions	After completion of the third semester. The student may undergo intensive training after getting prior permission from HOD
2.	Detail of Course Content / Syllabus	Internship Training in R & D organization like CSIR, DRDO, IITs and IISC etc related to their programmes
3.	Duration of the Course	Minimum of four weeks
4.	Assessment Procedure	1.Student has to submit a report for Internship 2.Evaluation Committee will be constituted by the respective department HOD to assess the report based on the following criteria's. • Internship Report (40%) • Student's presentation (40%) • Oral Examination (20%)
5.	Criteria for allocation of credit	Satisfactory completion certificate issued by respective department HOD based on the performance of the student and a certificate obtained from the organization concerned.

ANNEXURE - IV

NCG28   **CRITICAL AND CREATIVE THINKING**   **CREDIT: 1**

Course Outcome:
> CO1: After completing the course the students will be critical thinkers and creative problem solvers by generating new ideas.

Creativity is not an external force or a rare skill, it is a habit that can be learned and exercised every day. This course challenges preconceived notions about creativity and provides valuable tools that will unlock this skill to help you generate better ideas faster. We will lead you through few short, fun exercises that will bring little creativity and will also bring out your hidden thinking skills that you might not have realized before.

INTRODUCTION
Types of Human Thinking
Remembering and Recalling - Understanding - Applying - Analyzing - Evaluating – Creating
Opposing Categories of Types of Thinking
Vertical vs. Lateral Thinking - Concrete Thinking vs. Abstract Thinking - Convergent Thinking vs. Divergent Thinking - Logical vs. Analytical Thinking - Creative Thinking vs. Analytical Thinking - Sequential (linear) Thinking vs. Holistic Thinking
Errors in thinking
Partialism - Adversary Thinking - Time scale error - Initial Judgement - Arrogance and Conceit
Thinking Formula
AIMS Goals Objective - Consider all factors - Plus Minus Interesting - Other Peoples View - Alternatives Possible choices

CRITICAL THINKING SKILLS
Interpretations Skill - Analysis Skill - Inference Skills - Evaluation - Explanation - Self Regulation Skills

CREATIVE THINKING & INNOVATION
Creative vs. Critical Thinking - Creativity vs. Innovation - Invention vs. Innovation - Creativity and Innovation in Entrepreneurship - Creative Team and Collaborative Thinking - Exploring Innovation and Creativity within Organizations

DESIGN THINKING
What is Design Thinking - Design thinking process: Empathy understanding of Problem, Define the problem, Ideate (Generating new ideas for Problem Solving), Prototype, Test

IDEATION TOOLS AND METHODS
Brainstorming - Reverse Brainstorming - Mind mapping tool - SWOT Analysis - SCAMPER method