

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

## **REGULATIONS – 2015**

**OUTCOME BASED EDUCATION & CHOICE BASED CREDIT SYSTEM**



**B.E. / B.Tech. DEGREE PROGRAMMES**

(Applicable to students admitted from the Academic year 2015-2016)

## **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.

## REGULATIONS – 2015

### OUTCOME BASED EDUCATION & CHOICE BASED CREDIT SYSTEM

#### Common to all B.E. / B.Tech. Degree Programmes (8 – Semester)

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 **2015 – 2016** 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 a 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. - Electronics and Instrumentation Engineering
6. B.E. - Civil Engineering
7. B.Tech. - Information Technology

## **4.0 STRUCTURE OF THE PROGRAMME**

The Curriculum and Syllabi under Regulations 2015 is designed keeping in mind the Outcome Based Education (OBE) and Choice Based Credit System (CBCS). The course content of each course shall be fixed in accordance with the Program Educational Objectives (PEOs), Program Outcomes (POs) 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 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 total number of credits ranging from **162 to 176 (120 to 134** 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**

Course Category	Range of Total credits (%) as per AICTE
Foundation Courses	30 – 40%
Programme Core	40 – 55%
Programme Elective	10 -15%
Open Elective	05 -10%
Mandatory	05 -10%

- i. **Foundation courses** are classified into Common and Specific courses.

**Common Foundation Courses (CFC)** include Mathematics, Basic Sciences, Engineering Sciences and Skill Based Courses.

**Specific Foundation Courses (SFC)** include the basic courses specific to a programme of study.

- ii. **Programme Core Courses (PCC)** include the core courses relevant to the chosen programme of study and the Employability Enhancement courses such as Project, Seminar and Inplant training/ Internship.
- iii. **Programme Elective Courses (PEC)** include the elective courses relevant to the chosen programme of study.
- iv. **Open Elective Courses (OEC)** include Inter-disciplinary and Trans-disciplinary courses. The students shall study Inter-disciplinary courses offered in other Engineering/Technology Programmes through regular mode and Trans-disciplinary courses through self study mode.
- v. **Mandatory courses (MAC)** include the courses recommended by the regulatory bodies such as AICTE, UGC etc as given in **Table-2**.

**TABLE-2 MANDATORY COURSES**

Course Title	L	T	P	C
Technical English / Professional English	3	0	0	3
Professional Ethics and Human Values	3	0	0	3
Environmental Science and Engineering	3	0	0	3
Communication Skills Laboratory	0	0	2	1

- vi. Every student shall undergo one Interdisciplinary and one Transdisciplinary course.

#### 4.2 One Credit Non CGPA Courses

In addition, the students shall enroll, in any one of the one credit Non CGPA courses in each category listed in **Table-3** 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 – 3**  
**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	YRC	
Allied Skills	NCG21	CO/Extra Curricular Activities	1
	NCG22	English Proficiency Certification	
	NCG23	Soft Skills	
	NCG24	Foreign / Vernacular Languages	
	NCG25	Aptitude Proficiency Certification	
	NCG26	Globally accepted Certification Courses	
	NCG27	Socially Responsible Activities	
	NCG28	Critical and Creative Thinking	

#### 4.3 Number of Courses per Semester

Curriculum of semester (vide **Clause 5.2**) shall normally have a blend of 2 to 7 theory / integrated courses and laboratory courses not exceeding 5. Each course may have credits as per **Clause 4.4**.

#### 4.4 Credit System

In credit system, one credit refers to

- One period of lecturing per week for a theory course.
- Two periods per week for *Tutorial / Drawing / Lab / Workshop practice / project*.
- The contact periods per week for Tutorials and Practical can only be in multiples of 2.

The length of the semesters shall be 18 to 20 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

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
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	2	0	2:1:0	3	4
	2	0	2	2:0:1	3	4
	0	0	6	0:0:3	3	6
4 Credit	2	2	2	2:1:1	4	6
	3	2	0	3:1:0	4	5
	3	0	2	3:0:1	4	5

#### 4.5 Industrial Training/Internship

4.5.1 The students may undergo Industrial Training for a period as specified in the curriculum during summer / winter vacation. The number of credits shall be assigned as detailed in **Table-5**.

The students may undergo internship at research organization / university for the period prescribed in the curriculum. The number of credits shall be assigned as detailed in **Table-5**.

In such cases Industrial Training / Internship needs to be undergone continuously from one organization only. The student is allowed to undergo maximum of 3 months during the entire duration of study.

TABLE – 5

Duration of Training / Internship	Credits
2 Weeks	1
4 Weeks	2
6 Weeks	3
8 or more Weeks	4

#### 4.5.2 Live-in-Lab

It is an experienced learning programmes for the students to recognize 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 multidisciplinary innovative solutions for betterment of rural people and rural economy. The interested students shall go to the village adopted by the institution from third year onwards and they have to stay at least for two weeks continuously in that village. During the stay, they can interact with village population and identify the problem. Further, they have to provide a solution to the problems identified at the end of period of study to consider the same as 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 three credits. The Student needs to obtain certification to become eligible for writing end semester examination to be conducted by the Institution under autonomous status. In case of credits earned through on line mode from a university with approval of Head of the Department and Dean Academic, the credit may be transferred with the due approval procedures from the **Performance Analysis Committee**.

4.6.2 The student shall study Transdisciplinary courses 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 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. If more number of such one credit courses are offered by any department, three elective courses of 1 credit shall replace a 3 credit elective course **as given below**.

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

#### 4.8 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 made in this regard.

#### 4.9 Medium of Instruction

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



## 5.0 DURATION OF THE PROGRAMMES

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

TABLE – 6

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 the purpose of 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 / Tutor (**vide clause 8**) 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.

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**.

- 6.4** If the theory course in which the student has failed / has been prevented from writing end semester examination due to lack of attendance is a programme elective course or an open elective, then the student may register for the same or any other professional elective or open elective course respectively in the subsequent semesters.
- 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 2<sup>nd</sup> 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 in order 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. Total number of credits of such courses cannot exceed 6. However, the student shall register for a minimum of 16 credits and a **maximum of 30 credits in a semester**.
- 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 a **Project work**.
- 6.10.5** A student can earn maximum of 2 one credit courses per semester.

**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**

## **8.0 FACULTY ADVISER (TUTOR)**

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 Tutor for them throughout their period of study. Tutors shall advise the students in registering of courses, monitor their attendance and progress and counsel them periodically. If necessary, the tutor 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 tutor. About 20 students will be assigned to each tutor 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 tutor 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 tutor 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 problems experienced by students in the classroom and in 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 Tutor(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 at least twice in a semester:
- The first meeting, a week after the first test results.
  - The second meeting, a week after the third test results.
- 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 to 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 Each course, both theory / integrated and practical including project work shall be evaluated for a maximum of 100 marks. For all theory / integrated and practical courses including the project work, the continuous internal assessment shall carry 40% and 50% marks respectively while the End Semester Examinations shall carry 60% and 50% marks respectively. **i.e.** Each course shall be evaluated for a maximum of 100 marks as detailed in **Table-7**.

**TABLE – 7**

S. No.	Category of Course	Continuous Assessment	End Semester Examinations
1.	Theory / Integrated Courses	40 marks	60 Marks
2.	Laboratory Courses	50 Marks	50 Marks
3.	Project work	50 Marks	50 Marks

- 11.3 The End Semester Examination (Theory / Integrated & Practical) of 3 hours duration shall ordinarily be conducted between November and January during the odd semesters and between April and June during the even semesters. The end semester question pattern shall mention Blooms Taxonomy levels and pattern type. Further, in line with Course outcomes (COs), the end semester question pattern can be of different types as detailed in **Table-8** and it shall be mentioned in the curriculum itself.

**TABLE – 8**

Question pattern	1 mark	2 marks	4 marks	10 marks	12 marks	16 marks	20 marks	Total
A	--	--	--	--	--	--	1 Qn Compulsory & 4 Qns (either or type)	100
B	--	10	--	--	--	1 Qn Compulsory & 4 Qns (either or type)	--	100
C	10	--	10 out of 12	1 Qn Compulsory & 4 Qns (either or type)	--	--	--	100
D	10	10	5 out of 6	1 Qn Compulsory & 4 Qns (either or type)	--	--	--	100
E	--	10	5 out of 6	--	1 Qn Compulsory & 4 Qns (either or type)	--	--	100
F	--	--	--	--	--	--	5 out of 8	100
G	--	5	--	2 Qns (either or type)	--	--	--	30

**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 a course is conducted by an industrial expert, 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. Further, the end semester question pattern shall be **G type** as detailed in **Table – 8**.

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

The End Semester Examination for the integrated courses shall be evaluated only based on the theory component. The practical component shall be evaluated as one of the continuous assessments based on the weightage assigned to the practical component in the course outcome.

**11.5** The End Semester Examination for the 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 enquiry committee and the punishment will be given by the committee 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 genuinity, 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 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 INTERNAL 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 (COs) ranging from 3 to 8. For each course, the continuous assessment shall be carried out based on the attainment of all COs by the students (either absolute or relative basis). The evaluation of each CO attainment by the student shall be carried out by the faculty based on the predefined assessment procedure approved by the domain expert and Head of the department. Continuous assessment shall be evaluated based on the attainment of all COs by the student assigning appropriate weightage to each CO and the total attainment by the student shall be reduced to 40 marks for theory / integrated courses and 50 marks for 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, Seminar, Open book test etc as per the discretion of the course instructor / course co-ordinator to evaluate the attainment of Course Outcomes by the student. The guidelines for the evaluation of continuous assessment marks in theory / integrated courses shall be implemented as given in **Table-9**.

**TABLE – 9**

CO	Test		Too1 1		Tool 2		Course End survey		Attainment		Total Attainment for CO Marks
	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	
1.											
2.											
:											
N.											
<b>TOTAL ATTAINMENT OF ALL COS</b>											

Wtg. – weightage;

Tools: Assignment / Open book test / Quiz / Seminar/etc.

## 12.2 Practical Courses

Continuous assessment for practical course shall be evaluated through CO attainment of the student by assessing the student performance during the laboratory class, student's records maintained, model examination and oral examination. The appropriate weightages shall be given to each assessment tool based on the importance of the tool being used to assess actual attainment of COs. Broad guidelines for the evaluation of COs is given in **Table – 10**.

**TABLE – 10**

CO	Experiment work		Model Exam		Rubrics for oral		Attainment		Total Attainment for CO
	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks	Wtg.	Marks
1.									
2.									
:									
N.									
TOTAL ATTAINMENT OF ALL COS									

Wtg. – weightage

## 12.3 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 presentation on the progress made to a three member review committee. The project Guide will be one of the members of the review committee.

**12.3.1** The continuous assessment for the project shall be evaluated through CO attainment of the student by assessing presentation made by the students in the review meetings. For assessing the CO attainment, the review committee shall frame the 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 – 11**

Internal (50 Marks)			External (50 Marks)			
Review I	Review II	Review III	Project Report (25)	Viva-voce (25)		
			External	Internal	External	Guide
15	15	20	25	10	10	5

**12.3.2** 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.



**12.3.3** 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 common internal examiner and the external examiner shall be appointed by the Controller of Examinations for evaluation from the panel of examiners submitted by the Head of the Department concerned **with the approval of the Board of Studies.**

**12.3.4** 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.

#### **12.4 Open Elective Courses (Trans Disciplinary / Inter Disciplinary Elective)**

The student shall undergo one Open Elective Course (Trans disciplinary elective) from the courses given in **curriculum** through self study mode / online in any semester during 5<sup>th</sup> – 8<sup>th</sup> semesters in addition to the other electives. The continuous assessments and End Semester Examination will be conducted as per the procedure stipulated for theory courses.

12.4.1 Students shall undergo online courses (which are provided with Certificate) with the approval of Department & Dean (Academic) subject to a maximum of 3 credits. This online course of 3 credits/ three one credit courses can be considered instead of one elective course (Inter disciplinary / Programme Core Elective). The departmental committee constituted by the Principal consisting of HOD and two senior faculties will take a decision on the evaluation methodology for the online courses. The committee can decide whether to evaluate the online course through continuous assessment and End semester Examination or only by End semester Examination.

#### **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 in the form of a written test or viva voce or online exam as decided by the class committee.

#### **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 seminar on a research paper/patent in their specialization. A three member committee appointed by **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 presentation (20%).

## 12.7 Internship / Industrial Training / Mini Project

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 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 committee constituted by the controller with the approval of Principal as per the procedure formulated for the evaluation of project.
- All such projects will be considered as Internship.
- The best solution will be rewarded suitably.

## 12.8 One Credit Courses

The one credit course shall carry 100 marks (40% of continuous assessment & 60% 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 continuous assessment shall be evaluated through CO attainment of the student for that course as detailed for the theory courses. The end semester examination shall be conducted for 1 hour duration for 30 marks.

## 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. This 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

- i. A student shall be deemed to have passed a theory course, if the total marks secured by him/her (CA+ESE put together) is at least  $(\mu - 1.8 \sigma)$  or 50%, whichever is lower, where  $\mu$  is the average mark of the students registered for the course and  $\sigma$  is the corresponding standard deviation. However, the student has to secure a minimum of 60% of  $\mu$  in the End Semester Examination (ESE).
- ii. A student is deemed to have passed a Laboratory Course, Industrial Training, In-plant Training, Internship, Mini Project and Project Work, if the total mark secured by him/her is at least 50%. However, the student has to secure a minimum of 50% in the End semester Examination.
- iii. A student is deemed to have passed a laboratory course consisting of two parts (Part A & Part B), if he/she secures 50% of marks in each part in the End Semester Examination.
- iv. 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 immediate preceding regular examination.
- v. If a student appears in a course as arrear examination which is being conducted as a regular examination for other 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.
- vi. A student, who is absent for the end semester examination or withdraws from final examination or secures a letter grade RA in any course, has to register for arrear examinations for all such courses at the next available opportunity and complete them. Grades for the arrear examinations will be decided based on the original grade ranges of the class to which he/she belongs.
- vii. 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) as per **clause 14.1**, then the candidate shall be declared to have passed the examination if he/she secures at least  $(\mu - 1.8 \sigma)$  or 50 marks whichever is less in the end semester examination.

#### 15.0 AWARD OF LETTER GRADES

- 15.1** All assessments of a course will be done on 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 course **if the class strength is greater than or equal to 30**. However, if the class strength is less than 30, then the grading system shown in **Table-13** 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 ( $\mu$ ) and Standard Deviation ( $\sigma$ ) of the distribution of marks as detailed in **Table-12**.

**TABLE – 12**

Range of Marks in % (CA+ESE)	Letter Grade	Relative Grade Point
$M \geq [(\mu + 1.65\sigma)]$	O	10
$\mu + 1.65\sigma > M \geq \mu + 0.85\sigma$	A <sup>+</sup>	9
$\mu + 0.85\sigma > M \geq \mu$	A	8
$\mu > M \geq \mu - 0.9\sigma$	B <sup>+</sup>	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

RA - Reappearance in a Course

Where,

- M – Marks secured (CA+ESE)

- $\mu = \frac{1}{n} \sum_{j=1}^n M_j$  and

$$\sigma = \sqrt{\frac{\sum_{j=1}^n (M_j - \mu)^2}{n}}$$

$M_i$  - total mark secured (CA+ESE) by the 'i'<sup>th</sup> student in the course

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

- The letter grade and grade point for all the courses other than theory / integrated courses including Elective courses (having strength less than 30) Laboratory courses, Industrial Training, Internship, In Plant Training, One credit courses, Mini Project and Project work 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 – 13

Range of Marks in %	Letter Grade	Relative Grade Point
$M > (X - k)$	O	10
$(X - k) \geq M > (X - 2k)$	A <sup>+</sup>	9
$(X - 2k) \geq M > (X - 3k)$	A	8
$(X - 3k) \geq M > (X - 4k)$	B <sup>+</sup>	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<sup>+</sup>, A, B<sup>+</sup> and B).

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

- 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.

## 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 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 in a similar manner, considering all the courses enrolled from 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 number of all Courses successfully cleared during the particular semester in the case of GPA and during all the semesters in the case of CGPA

## 16.0 REVALUATION AND REVIEW

### 16.1 Revaluation

A candidate can apply for revaluation of his/her semester examination answer script in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Head of the Department.

A candidate can apply for Revaluation of answer scripts for not exceeding 5 courses at a time either directly or by getting Xerox copy of the answer scripts.

The revaluation results will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses, seminars, practical training and for project work.

### 16.2 Review

Candidates not satisfied with Revaluation can apply for Review of his/her examination answer paper in a theory course, within the prescribed date on payment of a prescribed fee through proper application to Controller of Examination through the Head of the Institution.

Candidates applying for Revaluation are alone eligible to apply for Review.

### 16.3 Transparency in Evaluation

Before the publication of End Semester results, the students are allowed to verify the answer scripts of certain subjects which are randomly selected by the Performance Analysis Committee. Consequently, the application for revaluation of the answer scripts for those subjects are not permitted.

## 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 **162 to 176 credits (120 to 134 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 – 2015.
- iv. Successfully undergone Two Non-CGPA courses.
- 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 Appearance within five years (four years in the case of lateral entry) which includes authorized break of study of one year. Withdrawal from examination (vide **clause 19.0**) will not be considered as an appearance.
- 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

### **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 award of First Class.
- Should have secured a CGPA of not less than **7.00**.

**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 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 prior to 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 extraordinary situation the candidate may apply for additional break of study not exceeding another one year by paying prescribed fee for 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, additional break of study granted will be counted for the purpose of classification.
- 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 in order 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 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

SI. No.	Name of the Programme	Minimum Total Credits*
1.	B.E. Mechanical Engineering	171
2.	B.E. Electronics and Communication Engineering	173
3.	B.E. Computer Science and Engineering	169
4.	B.E. Electrical and Electronics Engineering	173
5.	B.E. Electronics and Instrumentation Engineering	171
6.	B.E. Civil Engineering	176
7.	B.Tech. Information Technology	168

- \* Minimum Total Credits to be earned by the student admitted to the particular UG Programme to become eligible for the award of Degree under **Clause 4.0** of Regulations 2015 (UG).

**ANNEXURE – II**

**NCG11**

**SPORTS**

**CREDIT: 1**

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 EMPOWERMENT**

**CREDIT: 1**

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
6.	In case of failure	-

**NCG13**

**NATIONAL CADET CORPS (NCC)**

**CREDIT: 1**

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
6.	In case of failure	-

**NCG14**

**NATIONAL SERVICE SCHEME (NSS)**

**CREDIT: 1**

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
6.	In case of failure	-

**NCG15**

**YRC**

**CREDIT: 1**

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
6.	In case of failure	-

**NCG21**

**CO / EXTRA-CURRICULAR ACTIVITIES**

**CREDIT: 1**

1.	Pre – requisites / Eligibility Conditions	-
2.	Detail of Course Content / Syllabus	Activities as decided by the respective club convener / coordinator
3.	Duration of the Course	Minimum requirements as specified by the club convener / Coordinator
4.	Assessment Procedure	
5.	Criteria for allocation of credit	Active participation certificate with good conduct in Fine arts / Rotract / Junior JAYCEE / RRC / Youth welfare Association / Quiz / Science / Mathematics / Literary Associates / IAS academy and all other approved clubs.
6.	In case of failure	-

**NCG22**

**ENGLISH PROFICIENCY CERTIFICATION**

**CREDIT: 1**

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**

**SOFT SKILLS**

**CREDIT: 1**

1.	Pre – requisites / Eligibility Conditions	Completion of 2 <sup>nd</sup> semester
2.	Detail of Course Content / Syllabus	As prescribed by Placement Cell
3.	Duration of the Course	-
4.	Assessment Procedure	-
5.	Criteria for allocation of credit	Successful completion of Soft skill Training with minimum 20 contact hours
6.	In case of failure	-

**NCG24**

**FOREIGN / VERNACULAR LANGUAGES**

**CREDIT: 1**

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**

**CREDIT: 1**

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**

**CREDIT: 1**

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
6.	In case of failure	-

**NCG28 CRITICAL AND CREATIVE THINKING**

**CREDIT: 1**

1.	Pre – requisites / Eligibility Conditions	Prior permission from the HOD is must
2.	Detail of Course Content / Syllabus	Refer <b>Annexure IV</b>
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
6.	In case of failure	---

### ANNEXURE – III

#### INDUSTRIAL TRAINING

**CREDIT: 1**

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	One to two weeks
4.	Assessment Procedure	<ol style="list-style-type: none"> <li>1. Student has to submit a report.</li> <li>2. Evaluation Committee will be constituted by the respective department HOD to assess the report based on the following criteria's. <ul style="list-style-type: none"> <li>• Evaluation of report given by the student (40%)</li> <li>• Student's presentation (40%)</li> <li>• Oral Examination (20%)</li> </ul> </li> </ol>
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.
6.	In case of failure	-

#### INTERNSHIP

**CREDIT: 1**

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	One to two weeks
4.	Assessment Procedure	<ol style="list-style-type: none"> <li>1. Student has to submit a report for Internship</li> <li>2. Evaluation Committee will be constituted by the respective department HOD to assess the report based on the following criteria's. <ul style="list-style-type: none"> <li>• Internship Report (40%)</li> <li>• Student's presentation (40%)</li> <li>• Oral Examination (20%)</li> </ul> </li> </ol>
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.
6.	In case of failure	-

## **ANNEXURE - IV**

### **CRITICAL & CREATIVE THINKING**

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