

ERODE SENGUNTHAR ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to Anna University)

(Approved by AICTE, New Delhi, & Accredited by NAAC &
National Board of Accreditation (NBA), New Delhi.)

PERUNDURAI, ERODE 638 057

REGULATIONS FOR UG DEGREE PROGRAMME (For B.E. / B.Tech. Programme)



REGULATIONS - 2023

Choice Based Credit System (CBCS)

(For the students admitted during the
Academic year 2023 – 24 and onwards)


CONTROLLER OF EXAMINATIONS
Erode Sengunthar Engineering College,
(Autonomous)
Perundurai, Erode – 638 057.


PRINCIPAL
Erode Sengunthar Engineering College,
(Autonomous)
Perundurai, Erode – 638 057

ERODE SENGUNTHAR ENGINEERING COLLEGE

PERUNDURAI, ERODE 638 057

(An Autonomous Institution, Affiliated to Anna University)

REGULATIONS 2023

CHOICE BASED CREDIT SYSTEM

Common to all B.E. / B.Tech. Full-Time Programmes

(Applicable to the students admitted to B.E. / B.Tech. Programmes from the AY 2023-2024 onwards)

DEGREE OF BACHELOR OF ENGINEERING / BECHELOR OF TECHNOLOGY

This Regulation is applicable to the students admitted to B.E. / B.Tech. Programmes at Erode Sengunthar Engineering College, Erode from the Academic Year 2023-2024 onwards.

1. PRELIMINARY DEFINITIONS AND NOMENCLATURE

In these regulations, unless the context otherwise specifies:

- I. **“University”** means the affiliating ANNA UNIVERSITY, Chennai.
- II. **“College”** means Erode Sengunthar Engineering College.
- III. **“Programme”** means B.E. /B.Tech. Degree Programme.
- IV. **“Branch”** means specialization or discipline of B.E./B.Tech. Degree Programme, like Civil Engineering, Information Technology, etc.
- V. **“Course”** means a Theory or Practical subject that is normally studied in a semester like Engineering Mathematics, Engineering Mechanics, etc.
- VI. **“Credit”** means a numerical value allocated to each course to describe the Student’s workload required per week.
- VII. **“Grade”** means the letter grade assigned to each course based on the marks range specified
- VIII. **“Grade point”** means a numerical value (0 to 10) allocated based on the grade assigned to each course.
- IX. **“Principal”** means the authority of the Institution who is responsible for all academic activities for the implementation of relevant rules and regulations.
- X. **“Controller of Examinations”** means the Authority of the Institution who is responsible for all activities of the End Semester Examinations of all Departments and hereafter called CoE.
- XI. **“Head of the Department”** means Head of the Under Graduate Programme Concerned and hereafter called HoD.

2. ADMISSION

2.1. Candidates seeking admission to the first semester of the eight semesters B.E./B.Tech. Degree Programme:

Should have passed the Higher Secondary Examinations of (10+2) Curriculum (Academic Stream) prescribed by the Government of Tamil Nadu with Mathematics, Physics and Chemistry as three of the four subjects of study under Part-III or any examination of any other University or authority accepted by the Syndicate of Anna University as equivalent thereto.

(OR)

Should have passed the 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 Lateral entry admission to the third semester of B.E. / B.Tech., as per the rules fixed by Government of Tamil Nadu.

(OR)

(ii) The candidates who possess the Degree in Science (B.Sc.) (10+2+3 stream) with Mathematics as a subject at the B.Sc. Level are eligible to apply for Lateral entry admission to the third semester of B.E. / B.Tech.
Such candidates shall undergo two additional Engineering subject(s) in the third and fourth semesters.

2.3. The eligibility criteria shall be prescribed by Anna University, Chennai and Government of Tamil Nadu from time to time.

3. PROGRAMMES OFFERED

A student may be offered admission to any one of the branches of study approved by the Authorities. Details of the branches of study currently being offered by the Institution are listed below:

1. B.E. Bio Medical Engineering
2. B.E. Civil Engineering
3. B.E. Computer Science and Design
4. B.E. Computer Science and Engineering
5. B.E. Computer Science and Engineering (Artificial Intelligence)


CONTROLLER OF EXAMINATIONS

Erode Sengunthar Engineering College,
(Autonomous)

Perundurai, Erode - 638 057.


PRINCIPAL

Erode Sengunthar Engineering College,
(Autonomous)

Perundurai, Erode - 638 057.

and Machine Learning)

6. B.E. Computer Science and Engineering (Cyber Security)
7. B.E. Computer Science and Engineering (Internet of Things)
8. B.E. Electrical and Electronics Engineering
9. B.E. Electronics and Communication Engineering
10. B.E. Electronics and Instrumentation Engineering
11. B.E. Mechanical Engineering
12. B.E. Mechanical Engineering (Tamil Medium)
13. B.E. Robotics and Automation
14. B.Tech. Agricultural Engineering
15. B.Tech. Artificial Intelligence and Data Science
16. B.Tech. Bio Technology
17. B.Tech. Chemical Engineering
18. B.Tech. Information Technology

In addition to the regular four years B.E./B.Tech programme, the following are offered by the Institution:

- **B.E./B.Tech. Honors**

Students can earn, B.E/B.Tech degree with honors in the chosen discipline of engineering by opting for six additional courses across the list of professional electives/verticals offered by their parent department.

- **B.E./B.Tech. Honors (with specialization)**

Students can earn, B.E/B.Tech degree, honors (with specialization) in the chosen discipline of engineering by opting for six additional courses from one of the verticals offered by their parent department.

- **B.E./B.Tech. with minor Degree**

Students who are desirous of pursuing their special interest areas other than the chosen discipline of Engineering can earn, B.E/B.Tech. degree with minor engineering by opting for six additional courses from one of the verticals offered by a department other than their parent department.

4. STRUCTURE OF PROGRAMMES

4.1. Categorization of Courses

Every B.E. / B. Tech. Programme will have a curriculum with syllabi consisting of theory and practical courses that shall be categorized as follows:

- (i) **Humanities, Social Sciences and Management (HSM)** courses include Professional English, Communication skills etc.
- (ii) **Basic Sciences (BS)** courses include Mathematics, Physics, Chemistry, Biology, Environmental Science etc.

- (iii) **Engineering Sciences (ES)** courses include Engineering Practices, Engineering Graphics, Basics of Civil / Mechanical / Electrical / Electronics / Instrumentation, Computer Engineering, etc.
- (iv) **Professional Core (PC)** courses include the core courses relevant to the chosen specialization/branch.
- (v) **Professional Elective (PE)** courses include the elective courses relevant to the chosen specialization/ branch.
- (vi) **Open Elective (OE)** courses include the courses offered by a branch to other branches, from the list specified in the respective curriculum of the B.E. / B. Tech.
- (vii) **Employability Enhancement Courses (EEC)** include Project Work, Internship, Seminar, Professional Practices, Case Study and Industrial/Practical Training etc.
- (viii) **Mandatory Courses (MC)** include the courses such as Constitution of India, Environmental Science and Engineering etc.

4.2. Personality and Character Development

All students shall enroll, on admission, in any one of the personality and character development programmes NCC/NSS/NSO/YRC and undergo training / conduct activities for about 80 hours and attend a camp of about seven days. The training shall include classes on hygiene and health awareness and also training in first-aid. So, students shall conduct and participate actively in Science club/Literary Forum/Fine Arts activities for 80 hours and participate in at least ONE event.

National Cadet Corps (NCC) will have about 20 parades.

National Service Scheme (NSS) will have social service activities in and around the College / Institution.

National Sports Organization (NSO) will have Sports, Games, Drills and Physical exercises.

Youth Red Cross (YRC) will have activities related to social services in and around the College/Institution.

While the training activities will normally be during weekends, the camp will normally be during vacation period.

Science club shall organize activities of popularisation of science and scientific temper through activities related to astronomy, works of great scientists from India and abroad, observing National Science Day, etc.

Literary Club like 'Tamil Ilakkiya Mandram' shall be formed, which shall organise colourful literary events to propagate good humanist values, morals and ethics

reflected in the literature.

Fine Arts Club like music, painting and documentary films with social themes shall be encouraged.

Students who enroll and take active participation in anyone of the above activities for 80 hours and participate at least one event/programme will be given a certificate by the Head of the Institution and the copy of the same shall be forwarded to the Controller of Examinations for the purpose of record and scrutiny.

4.3. Number of courses per semester

Each semester in a curriculum shall normally have a blend of lecture courses not exceeding 7 Theory courses and Laboratory integrated theory courses and 4 Employability Enhancement Course(s) and Laboratory Courses. However, the total number of courses per semester shall not exceed 10. Each Course shall have credits assigned as per Clause 4.4.

4.4. Credit Assignment

Each course is assigned certain number of credits based on the following:

Contact period per week	Credits
1 Lecture Period	1
1 Tutorial Period	1
1 Laboratory Period (also for EE Courses like Seminar / Project Work /Case study /etc.)	0.5

4.5. Range of Credits

A range of credits from 160 to 170 for a student to be eligible to get the Under Graduate degree in engineering.

4.6. Industrial Training/ Internship

4.6.1. The students may undergo Industrial training for a period as specified in the Curriculum during the summer / winter vacation. In this case, the training has to be undergone continuously for a period of at least two weeks in an organization.

The students may undergo Internship at a Research organization / University/ Industry (after due approval from the Head of the Institution) for the period prescribed in the curriculum during the summer / winter vacation, in lieu of Industrial training. Attendance Certificate mentioning the period of Industrial Training / Internship and signed by the competent authority of the industry shall be submitted to the Head of the department. The attendance certificate shall be forwarded to the Principal / COE by the Head of the department for processing results.

4.6.2. If Industrial Training/ Internship is not prescribed in the curriculum, the student may undergo Industrial Training/ Internship optionally and the credits earned will be indicated in the Grade Sheet. If the student earns three credits in Industrial Training/ Internship, the student may drop one Professional Elective (only one professional elective can be dropped). In such cases, Industrial Training / Internship need to be undergone continuously from one organization or with a combination of one 2-weeks and one 4-weeks from one/two organizations. However, if the number of credits earned is 1 or 2, then these credits shall not be considered for classification of the degree. Students shall get permission from the Head of the Institution for taking Industrial Training/Internship and the Certificate of completion of Industrial Training / Internship shall be forwarded to the COE.

Duration of training/internship	Credits
2 Weeks*	1
4 Weeks	2
6 Weeks	3
*1 Week = 40 Internship Hours	

4.7. Industrial Visit

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

4.8. Value Added Courses

Value added courses shall be offered by the department with the prior approval from BOS and Academic Council. The credits earned through value added course shall be over and above the total credit requirement prescribed in the curriculum for the award of degree. Industry offered and skill development courses shall be considered under this category. These value added courses can also be undergone through online platform approved by the Board of Studies through Department Academic Advisory Committee (DAAC). The course(s) (if pursued through online mode) which is/are successfully completed by the student in a particular ODD/EVEN semester during the course of study is eligible for including in the grade sheet in the immediate next EVEN/ODD semester by registering it.

4.9. Online Courses

It is mandatory that all the students should register for an online course for every semester (from 2nd semester to 7th Semester), with the approval of Head of the department, in lieu of Professional core / Professional elective /Open elective courses. The Head of the Institution shall form a four-member committee with members as HoD, a faculty member from the Department of the student, HoD of any other branch of the Institution and an Industry Expert to suggest the suitable online courses and ensure that the student has not studied such courses and would

not repeat it again as Professional Core/Professional Elective/Open Elective courses. Suitable online courses shall be chosen from the SWAYAM/NPTEL platform.

Duration of Course	Credits
4 Weeks	1
8 Weeks	2
12 Weeks	3

4.10. Medium of Instruction

The medium of instruction is English for all courses, examinations, Seminar presentations and Project Work reports except for the programmes offered in Tamil Medium.

5. DURATION OF THE PROGRAMME

5.1. A student is ordinarily expected to complete the B.E./B.Tech. Programme in 8 semesters (for HSC students) and six semesters (for Lateral Entry students) but in any case not more than 14 Semesters for HSC (or equivalent) students and not more than 12 semesters for Lateral Entry students. The courses of study for the Lateral Entry Science Graduates shall be in accordance with the prescribed syllabi of the Full Time Four year B.E. / B.Tech. Degree Programme of the respective branches. The additional courses offered will be decided by the respective Chairman, Board of Studies.

5.2. Each semester shall normally consist of 75 working days or 540 periods of 50 minutes each. But for the purpose of calculation of attendance requirement for writing the end semester examinations (as per clause 8) by the students, following method shall be used.

$$\text{Percentage of Attendance} = \frac{\text{Total no. of periods attended in all the courses per semester}}{\{(\text{No. of periods / week as prescribed in the curriculum}) \times 15 \text{ taken together for all courses of the semester}\}} \times 100$$

The End Semester Examination will normally follow immediately after the last working day of the semester as per the academic schedule prescribed from time to time.

5.3. The total period for completion of the programme reckoned from the commencement of the first semester to which the student was admitted shall not exceed the maximum period specified in clause 5.1 irrespective of the period of break of study (vide clause 19) in order that he/she may be eligible for the award of the degree (vide clause 17).

6. COURSE REGISTRATION

6.1. Each student has to register for all courses to be undergone in the curriculum of a particular semester (with the facility to drop courses to a maximum of 6 credits (vide clause 6.2)). The courses dropped in earlier semesters can be registered in the subsequent semesters when offered.

The registration details of the student shall be approved by the Head of the Institution and forwarded to the Controller of Examinations. This registration is for undergoing the course as well as for writing the End Semester Examinations.

The courses that a student registers in a particular semester may include

- (i) Courses of the current semester.
- (ii) Courses dropped in the lower semesters and
- (iii) Courses advanced to Semester VI and VII from Semester VIII (as per clause 8).

The maximum number of credits that can be registered in a semester is 36. However, this does not include the number of Re-Appearance (RA) and Withdrawal (W) courses registered by the student for the appearance of Examination.

6.2. B.E. / B. Tech. (Hons) Specialisation in the same discipline, B.E. / B.Tech. (Hons) and B.E. / B. Tech. minor in other specialization

6.2.1. (i) B.E./B.Tech. Honours (specialisation in the same discipline):

The student

- Should have earned additionally a minimum of 18 credits from a vertical of the same programme.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 7.50.

(ii) B.E / B.Tech. Honours

The student

- should have earned additional courses (minimum of 18 credits) from more than one vertical of the same programme.
- Should have passed all the courses in the first attempt.
- Should have earned a minimum CGPA of 7.50.

(iii) B.E./B.Tech. (minor in other specialisation)

The student should have earned additionally a minimum of 18 credits in any one of the verticals of other B.E/B.Tech programmes

6.2.2. Students can earn maximum of 6 credits in online mode (SWAYAM platform), out of these 18 credits as approved by Board of Studies.

6.2.3. B.E./ B. Tech. (Hons) Specialisation in the same discipline, B.E / B.Tech. Honors and B.E./B.Tech. minor in other specialisation degree will be optional for students.

6.2.4. For the categories 6.2.1 (i) to 6.2.1(ii), the students will be permitted to register the courses 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.

6.2.5. For the category 6.2.1 (iii), the students will be permitted to register the courses from Semester V onwards provided the marks earned by the students until Semester III is CGPA 7.50 and above.

6.2.6. 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 grade sheet, however, they will not be considered for the calculation of CGPA.

6.2.7. 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 grade sheet, however, they will not be considered for calculation of CGPA.

6.3. Flexibility to Drop courses

6.3.1. 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.

6.3.2. From the second to final semesters, the student has the option of dropping the existing courses in a semester during registration. Total number of credits of such courses shall not exceed 6 per semester. The student is permitted to drop the course(s) within 30 days of the commencement of the academic schedule.

7. ADVANCEMENT OF COURSES

The students shall undergo the seventh semester courses other than the Project Work – Phase I, if any, in the fifth and sixth semesters, provided they do not have current arrears and have a CGPA of 7.50 and above at the end of Semester IV. The Head of Department, in consultation with the faculty handling

the said courses shall forward the proposal recommended by the Head of Institution to the Controller of Examinations for approval at least 4 weeks before the commencement of the fifth semester of the programme for approval.

8. ATTENDANCE REQUIREMENTS FOR COMPLETION OF THE SEMESTER

A student who has fulfilled the following conditions shall be deemed to have satisfied the requirements for completion of a semester.

8.1. Ideally every student is expected to attend all classes of all the courses and secure 100% attendance. However, in order to give provision for certain unavoidable reasons such as medical / participation in sports, the student is expected to attend at least 75% of the classes.

Therefore, he/she shall **secure not less than 75%** (after rounding off to the nearest integer) of overall attendance as calculated as per clause 5.3.

8.2. However, a student who secures overall attendance not less than 65% and less than 75% in the current semester due to medical reasons (prolonged hospitalization / accident / specific illness) / participation in sports events may be permitted to appear for the current semester examinations, subject to the condition that the student shall submit the medical certificate / sports participation certificate attested by the Head of the Department and the student shall apply for condonation with a prescribed condonation fee. In such cases, his / her conduct has to be certified "satisfactory" by the Class Advisor and the HOD. The same shall be forwarded to the Controller of Examinations.

8.3. Students who **secure less than 65% overall attendance** shall not be permitted to write the End Semester Examination and not permitted move to the next semester. They are required to repeat the incomplete semester in the next academic year, as per the norms prescribed.

9. CLASS ADVISOR

There shall be a class advisor for each class. The class advisor will be one among the course-instructors of the class. He / She will be appointed by the HOD of the department concerned. The class advisor is the ex-officio member and the Convener of the class committee. The responsibilities for the class advisor shall be:

- To act as the channel of communication between the HOD and the students of the respective class.
- To collect and maintain various statistical details of students.
- To help the chairperson of the class committee in planning and conduct of the class committee meetings.

- To monitor the academic performance of the students including attendance and to inform the class committee.
- To attend to the students' welfare activities like awards, medals, scholarships and industrial visits.
- Online Feedback from students shall be collected for every subject after every unit about the faculty for various parameters and the consolidated Feedback Information shall also be conveyed to the concerned faculty member through respective HoD to improve the Teaching Process and other activities of the Faculty members. In addition, at the end of the semester feedback shall be collected for academic and related activities.

10. CLASS COMMITTEE

10.1. Every class shall have a class committee consisting of teachers of the class concerned, student representatives and a chairperson, who is not teaching the class. The functions of the class committee include:

- Solving problems experienced by students in the class room and in the laboratories.
- Clarifying the regulations of the degree programme and the details of rules therein particularly
- Informing the student representatives about the academic schedule including the dates of assessments and the syllabus coverage for each assessment.
- Informing the student representatives, the details of Regulations regarding weightage used for each assessment. In the case of practical courses (laboratory / drawing / project work / seminar etc.) the breakup of marks for each experiment / exercise / module of work, should be clearly discussed in the class committee meeting and informed to the students.
- 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 slow-learners, if any, and requesting the teachers concerned to provide some additional help or guidance or coaching to such students.

10.2. The class committee for a class under a particular branch is normally constituted by the Head of the Department. However, if the students of different branches are mixed in a class (like the first semester which is generally common to all branches), the class committee is to be constituted by the Head of the Institution.

10.3. The class committee shall be constituted within the first week of each semester.

10.4. At least 4 student representatives (usually 2 boys and 2 girls) shall be included in the class committee, covering all the elective courses.

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

10.6. The Head of the Institution may participate in any class committee meeting of the institution.

10.7. The chairperson is required to prepare the minutes of every meeting, submit the same to the Head of the Institution within two days of the meeting and arrange to circulate it among the students and teachers concerned. 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.

10.8. The first meeting of the class committee shall be held within one week from the date of commencement of the semester, in order to inform the students about the nature and weightage of assessments within the framework of the Regulations. Two or three subsequent meetings may be held in a semester at suitable intervals.

The Class Committee Chairperson shall display the cumulative attendance particulars of each student on the Notice Board at the end of every such meeting to enable the students to know their attendance details to satisfy the clause 8 of this Regulation. During these meetings the student members representing the entire class, shall meaningfully interact and express the opinions and suggestions of the other students of the class in order to improve the effectiveness of the teaching-learning process.

11. COURSE COMMITTEE FOR COMMON COURSES

Each common theory course offered to more than one discipline or group, shall have a "Course Committee" comprising of all the teachers teaching the common course with one of them nominated as the 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 in order to arrive at a common scheme of evaluation for the test and shall ensure a uniform evaluation of the tests. Wherever feasible, the Course Committee may also prepare a common question paper for the internal assessment test(s).

12. SYSTEM OF EXAMINATION

12.1. Performance in each course of study shall be evaluated based on (i)

continuous internal assessment throughout the semester and (ii) End Semester examination at the end of the semester.

12.2. Each course, both theory and practical (including project work & viva voce examinations) shall be evaluated for a maximum of 100 marks.

12.2.1. For all theory courses, the continuous internal assessment will carry 40 marks while the End Semester Examination will carry 60 marks.

12.2.2. For all theory courses with laboratory component, the continuous internal assessment will carry 50 marks while the End Semester Examination will carry 50 marks.

12.2.3. For all laboratory courses, the continuous internal assessment will carry 60 marks while the End Semester Examination will carry 40 marks.

12.2.4. The continuous internal assessment for the project work will carry 40 marks while the End Semester Examination will carry 60 marks.

12.3. Industrial Training and Seminar shall carry 100 marks and shall be evaluated through internal assessment only.

12.4. The End Semester Examination for 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 and an internal examiner, followed by a viva-voce examination conducted separately for each student by a committee consisting of the external examiner, the supervisor of the project group and an internal examiner.

12.5. For the End Semester Examination of practical courses including Project Work, the internal and external examiners shall be appointed by the Controller of Examinations.

13. PROCEDURE FOR AWARDING MARKS FOR INTERNAL ASSESSMENT

For all theory, laboratory courses, theory courses with laboratory component and project work the continuous assessment shall be awarded as per the procedure given below:

13.1. Theory Courses

Two assessments each carrying 100 marks shall be conducted during the semester by the Department / College concerned. The total marks obtained in all

assessments put together out of 200, shall be proportionately reduced for 40 marks and rounded to the nearest integer (This also implies equal weightage to the two assessments).

Assessment I (100 Marks)		Assessment II (100 Marks)		Total
Individual Assignment / Case Study / Seminar / Mini Project	Written Test	Individual Assignment / Case Study / Seminar / Mini Project	Written Test	Internal Assessment
40	60	40	60	200*

*The weighted average shall be converted into 40 marks for internal Assessment.

Two internal assessments will be conducted as a part of continuous assessment. Each internal assessment is to be conducted for 100 marks and will have to be distributed in two parts viz., Individual Assignment/Case study/Seminar/Mini project and Test with each having a weightage of 40% and 60% respectively. The tests shall be in written mode. The total internal assessment marks of 200 shall be converted into a maximum of 40 marks and rounded to the nearest integer.

13.2. Laboratory Courses

The maximum marks for Internal Assessment shall be 60 marks in case of practical courses. Every practical exercise / experiment shall be evaluated based on conduct of experiment / exercise and records to be maintained. There shall be at least one test. The criteria for arriving at the Internal Assessment marks of 60 is as follows: 75 marks shall be awarded for successful completion of all the prescribed experiments done in the Laboratory and 25 marks for the test. The total mark shall be converted into a maximum of 60 marks and rounded to the nearest integer.

Internal Assessment (100 Marks)*	
Evaluation of Laboratory Observation, Record	Test
75	25

* Internal assessment marks shall be converted into 60 marks

13.3. Theory Courses with Laboratory Component

13.3.1. If there is a theory course with laboratory component, there shall be two assessments: the first assessment (maximum mark is 100) will be similar to

assessment of theory course and the second assessment (maximum mark is 100) will be similar to assessment of laboratory course respectively. The weightage of first assessment shall be 40 % and the second assessment be 60 %. The weighted average of these two assessments shall be converted into 50 marks and rounded to the nearest integer.

Assessment I (40% weightage) (Theory Component)		Assessment II (60% weightage) (Laboratory Component)		Total Internal Assessment
Individual Assignment /Case Study / Seminar / Mini Project	Written Test	Evaluation of Laboratory Observation, Record	Test	
40	60	75	25	200*

*The weighted average shall be converted into 50 marks for internal Assessment.

13.3.2. Weightage of Continuous Assessment and end semester examination marks will be 50% each. The distribution of marks for the theory and laboratory components in the Continuous Assessment and End Semester examination for different types of courses are provided in the table.

L	T	P	C	CONTINUOUS ASSESSMENT		END SEMESTER EXAMINATION
				ASSESSMENT 1	ASSESSMENT 2	
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 procedure for the conduct of Continuous Assessment for theory and laboratory components shall be as per the clause 10.1 and 10.2 respectively. The weighted average shall be converted into 50 marks for Continuous Assessment.

13.4. Project Work

Project work may be allotted to a single student or to a group of students not exceeding 4 per group.

13.4.1. Project Work shall be carried out under the supervision of a “qualified teacher” in the Department concerned. In this context “qualified teacher” means

the faculty member possessing (i) PG degree or (ii) Ph.D. degree.

13.4.2. The Project Work-II carried out in industry/academic/research institutions need not be a continuation of Project Work-I. In such cases, the Project Work-II shall be jointly supervised by a supervisor of the department and an expert as a joint supervisor from the organization and the student shall be instructed to meet the supervisor periodically and to attend the review committee meetings for evaluating the progress. The review meetings, if necessary, may also be arranged in online mode with prior approval from the Head of the Institution and suitable record of the meetings shall be maintained.

13.4.3. The Head of the Institutions shall constitute a review committee for Project Work for each programme. The review committee consists of supervisor, an expert from the Department and a project coordinator from the Department. If the project coordinator/expert member happens to be the supervisor, then an alternate member shall be nominated. In the case of Industrial Project, the review committee shall have the supervisor, the coordinator from industry and the project coordinator from the Department.

- There shall be three reviews during the semesters VII and VIII by the review committee. The student shall make presentation on the progress made by him / her before the committee. The total marks obtained in the three reviews shall be reduced for 40 marks and rounded to the nearest integer (as per the scheme given in 13.4.4).

13.4.4. The project report shall carry a maximum of 20 marks. The project report shall be submitted as per the approved guidelines as given by the Director, Centre for Academic Courses. Same marks shall be awarded to every student within the project group for the project report. The viva-voce examination shall carry 40 marks. Marks are awarded to each student of the project group is based on the individual performance in the viva- voce examination.

Review I	Review II	Review III	End Semester Examinations				
			Project Report		Viva-Voce Examination		
10	15	15	Internal	External	Internal	External	Supervisor
			10	10	10	20	10

13.4.5. The last date for submission of the project report is on the last working day

of the semester. If a student fails to submit the project report on or before the specified deadline or the student has submitted the project report but did not appear for the viva-voce examination, it will be considered as fail in the Project Work and the student shall re-register for the same in the subsequent semester.

13.5. Other Employability Enhancement Courses

13.5.1. The Seminar / Case Study / Mini Project course is to be considered as purely INTERNAL (with 100% internal marks only). Every student is expected to present a minimum of 2 seminars per semester before the evaluation committee and for each seminar, marks can be equally apportioned. The three member committee appointed by the Head of the Institution, consisting of the course coordinator and two experts from the Department, will evaluate the seminar and at the end of the semester, the marks shall be consolidated and taken as the final mark. The evaluation shall be based on the seminar paper (40%), presentation (40%) and response to the questions asked during presentation (20%).

13.5.2. The Industrial / Practical Training, Summer Project, Internship, shall carry 100 marks and shall be evaluated through internal assessment only. At the end of Industrial / Practical Training / Internship / Summer Project, the student shall submit an attendance certificate from the organization where he / she has undergone training and a brief report. The evaluation will be made based on this report and a viva-voce Examination, conducted internally by a three-member Departmental Committee constituted by the Head of the Institution consisting of the course coordinator and two experts from the Department. The certificates (issued by the organization) submitted by the students shall be attached to the mark list sent by the Head of the Institution to the Controller of Examinations.

13.5.3. For all the courses under Employability Enhancement Courses Category, except the Project Work, the evaluation shall be done with 100% internal marks and as per the procedure described in clause 13.5.1. / 13.5.2.

13.6. Assessment for Value Added Courses

The one / two credit course shall carry 100 marks and shall be evaluated through continuous assessments only. Two Assessments as per the clause 13.1 or 13.2 shall be conducted by the Department concerned. The total marks obtained in the assessments shall be reduced to 100 marks and rounded to the nearest integer. A committee consisting of the Head of the Department, staff handling the course and a senior faculty member nominated by the Head of the Institution shall do the evaluation process.

The list of students along with the marks and the grades earned shall be forwarded to the Controller of Examinations for appropriate action at least one

month before the commencement of End Semester Examinations. The grades earned by the students for Value Added Courses will be recorded in the Grade Sheet, however the same shall not be considered for the computation of CGPA.

13.7. Assessment for Online Courses

The online course of 3 credits can be considered instead of one elective course. These online courses shall be chosen from the SWAYAM / NPTEL platform, provided the offering organisation conducts regular examination and provides marks. The credits earned shall be transferred and the marks earned shall be converted into grades and transferred, provided the student has passed in the examination as per the norms of the offering organisation. The details regarding online courses taken up by the student and marks/credits earned shall be sent to the Controller of Examinations, Anna University in the subsequent semester(s) along with the details of the elective(s) to be dropped. Evaluation of online courses as per the grading norms is as given below.

Marks	Letter Grade	Grade Points*
90-100	O	10
75-89	A +	9
60-74	A	8
50-59	B +	7
40-49	B	6

13.8. RESEARCH PUBLICATIONS

The student can register for the Research Publication from third semester onwards with the approval of BOS concerned. A maximum of two students can form a team under the guidance of a faculty member and complete the publication in reputed journal. Grade for the publication will be awarded as mentioned in table. The students can register for credit transfer of the research publication between fifth and eighth semester. The research publication completed in ODD/EVEN semester during the course of study is eligible for including in the grade sheet in the immediate next EVEN/ODD semester by registering it.

Sl.No	Category of Journal	Grade	Credit
1	One Research Publication in SCI/SCI-Expanded Journal	O	3
2	One Research Publication in SCOPUS indexed Journal	A+	2
3	One Research Publication in UGC Care list Journal	A	1

13.9. Internal marks approved by the Head of the Institution shall be displayed by the respective HODs within 5 days from the last working day.

13.10. Attendance Record

Every teacher is required to maintain an 'ATTENDANCE AND ASSESSMENT RECORD', which consists of attendance marked in each lecture or practical or project work class, the test 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) for checking the syllabus coverage and the records of test marks and attendance. The Head of the Department will affix his/her signature and date after due verification. At the end of the semester, the record should be verified by the Head of the Institution and the Head of the Department will keep this document in safe custody (for five years).

14. REQUIREMENTS FOR APPEARING FOR END SEMESTER EXAMINATIONS

A student shall normally be permitted to appear for the End Semester Examinations for all the courses registered in the current semester (vide clause 6) if he/she has satisfied the semester completion requirements (as per clause 8). Further, examination registration by a student is mandatory for all the courses in the current semester and all arrear(s) course(s) for the End Semester examinations failing which, the student will not be permitted to move to the higher semester. A student who has already appeared for any course in a semester and passed the examination is not entitled to reappear in the same subject for improvement of grades.

15. PASSING REQUIREMENTS

15.1. A student who secures not less than 50% of total marks prescribed for the course [Internal Assessment + End semester Examinations] with a minimum of 45% of the marks prescribed for the End-semester 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).

15.2. 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) as per clause 15.1, 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.

15.3. If the course, in which the student has failed, is a Professional Elective or an Open Elective course, the student may be permitted to complete the same course. 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 candidate secures a pass. However, from the third attempt onwards if a candidate fails to obtain pass marks (IA + End Semester Examination) as per clause 15.1, then the candidate 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. If any other Professional Elective or Open Elective course is opted by the student, the previous registration is cancelled and henceforth it is to be considered as a new Professional Elective or Open Elective course. The student has to register and attend the classes, earn the continuous assessment marks, fulfil the attendance requirements (as per clause 8) and appear for the end semester examination.

15.4. If a student is absent during the viva - voce examination, it would be considered as fail. If a student fails to secure a pass in Project Work-I, the student shall register for the course again in the subsequent semester and can do Project Work-I and II together.

15.5. The passing requirement for the courses which are assessed only through purely internal assessments (EEC courses except Project Work and laboratory), is 50% of the internal assessment (continuous assessment) marks only.

15.6. A student can apply for Photocopy of the student's semester examination answer paper in a theory course and theory course with laboratory component within three days from the declaration of results, on payment of a prescribed fee along with prescribed application to the CoE through the Head of the Institution.

15.7. A student can apply for revaluation in a theory course and theory courses with laboratory component within three days from the issue of Photocopy of the answer paper, on payment of a prescribed fee along with prescribed application to the CoE through the Head of the Institution. Revaluation is not permitted for laboratory courses, laboratory courses with theory component and project work.

15.8. Challenging the revaluation is permitted for those students who have applied for photocopy of answer script. The copy of the answer script is to be valued by a competent authority and the valued script should be submitted to the office of the COE along with prescribed fee for challenging the revaluation within 2 working days after the declaration of the Re-valuation results.

16. AWARD OF LETTER GRADES

16.1. The award of letter grades will be decided based on relative grading Principle. The relative grading is applicable to ONLY those students have passed the examination as per the passing requirements enumerated above. For those students who have not passed the examination, Re-appearance (U) shall be awarded.

16.2. The award of letter grades will be decided using relative grading principle. 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. The performance of a student will 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
RA (Re-appearance)	0
SA (Shortage of Attendance)	0
W (Withdrawal)	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 (as per clause 8.3) and hence prevented from writing the end semester examinations. 'SA' will appear only in the result sheet.

"RA" denotes that the student has failed to pass in that course. "W" denotes withdrawal from the exam for the particular course. The grades RA 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 as per the Regulations. If the grade RA is given to Theory Courses/ Laboratory Courses it is not required to satisfy the attendance requirements (vide clause 8), but has to appear for the end

semester examination and fulfil the norms specified in clause 15 to earn a pass in the respective courses. If the grade RA is given to EEC course (except Project Work), which are evaluated only through internal assessment, the student shall register for the course again in the subsequent semester, fulfil the norms as specified in clause 15 to earn pass in the course. However, attendance requirement need not be satisfied.

16.3. For the Co-curricular activities such as National Cadet Corps (NCC)/ National Service Scheme (NSS) / NSO / YRC / Science club / Literary Club/ Fine Arts Club, a 'completed' remark will appear in the Grade Sheet on successful completion of the same. Every student shall put in a minimum of 75% attendance in the training and attend the camp or events of the clubs compulsorily. The training and camp or club events shall be completed during the first year of the programme. However, for valid reasons, the Head of the Institution may permit a student to complete this requirement in the subsequent years. Successful completion of any one of the above co-curricular activities is compulsory for the award of degree.

16.4. The grades O, A+, A, B+, B, C obtained for the one/two credit course (not the part of curriculum) shall figure in the Grade Sheet under the title 'Value Added Courses/Internship/Industrial training'. The courses for which the grades obtained are RA, SA will not figure in the Grade Sheet.

16.5. For the students who complete the Audit Course satisfying attendance requirement, the title of the Audit Course will be mentioned in the Grade Sheet. If the attendance requirement is not satisfied, it will not be shown in the Grade Sheet.

16.6. Grade Sheet

After results are declared, Grade Sheets will be issued to each student which will contain the following details:

- The college in which the student has studied.
- The list of courses registered during the semester and the grade scored.
- The Grade Point Average (GPA) for the semester and
- The Cumulative Grade Point Average (CGPA) of all courses enrolled from first semester onwards.

GPA for a semester is the ratio of the sum of the products of the number of credits acquired for courses and the corresponding points to the sum of the number of credits acquired for the courses in the semester. CGPA will be calculated in a similar manner, considering all the courses registered from first semester. RA

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 number of Credits assigned to the course,
 GP_i is the point corresponding to the grade obtained for each course and
 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.

17. ELIGIBILITY FOR THE AWARD OF THE DEGREE

17.1. A student shall be declared to be eligible for the award of the B.E. / B.Tech. Degree provided the student has

- Successfully gained the required number of total credits as specified in the curriculum corresponding to the student's programme within the stipulated time.
- Successfully completed the course requirements, appeared for the End - Semester examinations and passed all the subjects within the period as prescribed in clause 5.1.
- Successfully passed any additional courses whenever the student is readmitted under Regulations R-2023 from the earlier Regulations.
- Successfully completed the NCC / NSS / NSO / YRC / Science Club / Literature Club / Fine Arts Club requirements.
- No disciplinary action pending against the student.
- The Award of Degree must have been approved by the Syndicate of the University.

17.2. Classification of the Degree Awarded

17.2.1. First Class with Distinction

i. A student who satisfies the following conditions shall be declared to have passed the examination in First class with Distinction:

- Should have passed the examination in all the courses of all the eight semesters (6 semesters in the case of Lateral Entry) in the student's First Appearance within five years (4 years in the case of Lateral Entry). Withdrawal from examination (vide Clause 18) will not be considered as an appearance.
- Should have secured a CGPA of not less than 8.50.

- One-year authorized break of study (if availed of) is included in the five years (four years in the case of lateral entry) for award of First class with Distinction.
- Should NOT have been prevented from writing end semester examination due to lack of attendance in any semester.

ii. 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.

iii. B.E/B.Tech. (Honours)

- The student 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.

iv. 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.

17.2.2. FIRST CLASS

i. A student who satisfies the following conditions shall be declared to have passed the examination in First class:

- Should have passed the examination in all the courses of all eight semesters (6 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 **6.50**.

i. 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.

ii. 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.

iii. 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.

17.2.3. SECOND CLASS

All other students (not covered in clauses 17.2.1 and 17.2.2) who qualify for the award of the degree (vide Clause 17.1) shall be declared to have passed the examination in Second Class.

17.3. A student who is absent in end 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 17).

18. PROVISION FOR WITHDRAWAL FROM END-SEMESTER EXAMINATION

18.1. A student may, for valid reasons, (medically unfit / unexpected family situations / sports approved by the Chairman, Sports Board and the HOD) be granted permission to withdraw from appearing for the end semester examination in any course or courses in ANY ONE of the semester examinations during the entire duration of the degree programme. The application shall be sent to the COE through the Head of the Institutions with required documents.

18.2. Withdrawal application is valid if the student is otherwise eligible to write the examination (Clause 8) and if it is made within TEN days after the date of the examination(s) in that course or courses and recommended by the Head of the Institution and approved by the Controller of Examinations. For a student to withdraw from a course / courses, he/she should have registered for the course, fulfilled the attendance requirements (vide clause 8) and earned continuous assessment marks.

18.2.1. Notwithstanding the requirement of mandatory 10 days, applications for withdrawal for special cases under extraordinary conditions will be considered on the merit of the case.

18.3. In case of withdrawal from a course / courses, the courses will figure both in the Grade Sheet as well as in the Result Sheet. However, withdrawal shall not be considered as an appearance for the eligibility of a student for First Class with Distinction.

18.4. If a student withdraws from writing end semester examinations for a course or courses, he/she shall register for the same in the subsequent semester and write the end semester examination(s).

18.5. If a student applies for withdrawal from Project Work, he/she will be permitted for the withdrawal only after the submission of project report before the deadline. However, the student may appear for the viva voce examination within 30/60 days after the declaration of results for Project Work I and II respectively and the same shall not be considered as reappearance.

18.6. Withdrawal is permitted for the end semester examinations in the final semester, as per clause 17.2.1.

19. PROVISION FOR AUTHORISED BREAK OF STUDY

19.1. A student is permitted to go on authorised break of study for a maximum period of one year as a single spell.

19.2. 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 student may apply for additional break of study not exceeding another one year. If a student intends to temporarily discontinue the programme in the middle of the semester for valid reasons, and to re-join the programme in a subsequent year, permission may be granted based on the merits of the case provided he / she applies to the Director, Student Affairs in advance, but not later than the last date for registering for the end semester examination of the semester in question, through the Head of the Institution stating the reasons therefore and the probable date of re-joining the programme.

19.3. The student permitted to re-join the programme after break of study / prevention due to lack of attendance, shall be governed by the Curriculum and Regulations in force at the time of re-joining. The students re-joining in new Regulations shall register for additional courses, if any, as notified by the Centre for Academic Courses under change of Regulations. These courses may be from any of the semesters of the curriculum in force, so as to bridge the curriculum in force and the old curriculum. In such cases, the total number of credits to be earned by the student may be more than or equal to the total number of credits prescribed in the curriculum in force.

19.4. The authorized break of study is included in the duration specified for passing all the courses for the purpose of classification (vide Clause 17.2).

19.5. 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.

19.6. If any student is prevented for want of required attendance, the period of prevention shall not be considered as authorized 'Break of Study' (Clause 19.1).

19.7. If a student has not reported to the department for a period of two consecutive semesters without any intimation, the name of the student shall be deleted permanently from the college enrollment

19.8. During the break of study period, the student may optionally write the arrear examinations, if any.

19.9. No fee is applicable to students during the Break of Study period.

20. RANK OF A STUDENT

A candidate who qualifies for the degree by passing the examination in all courses of the entire Programme in first attempt within a period from the date of admission to the Programme can be given his/her position in the class as rank. The Rank is determined from 1st semester to VIIIth semester end semester examination CGPA. No Lateral entry students /Transferred students are eligible for rank. Students with history of arrears during the entire programme are not eligible for rank.

21. PROCEDURE FOR USING SCRIBE

If a candidate is physically handicapped (in case of accidents / ill health) at the time of examination, he / she may be permitted to use a scribe to write the examination. The compensatory (additional) time should be one hour for three hour duration of examination. The Scribe shall be a non-engineering student / graduate.

22. DISCIPLINE

22.1. Every student is required to observe disciplined and decorous behaviour both inside and outside the college and not to indulge in any activity which will tend to bring down the prestige of the College. The Head of the Institution shall constitute a disciplinary committee consisting of the Head of the Institution, Two Heads of Department of which one should be from the faculty of the student, to enquire and take suitable disciplinary action.

22.2. If a student indulges in malpractice in any of the End Semester / internal examination, he / she shall be liable for punitive action as prescribed by the college norms from time to time.

23. SPECIAL CASES

In the event of any clarification in the interpretation of the above rules and regulations, they shall be referred to the Academic Appeals Board. The Academic Appeals Board 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.

24. REVISION OF REGULATIONS, CURRICULUM AND SYLLABI

The College may revise, amend or change the Regulations, curriculum, syllabus and scheme of examinations through the Academic Council from time to time.