BE-ELECTRONICS AND COMMUNICATION ENGINEERING

CURRICULUM AND SYLLABI 2022
(Choice Based Credit System)

FACULTY OF ENGINEERING

Enable | Enlighten | Enrich
KARPAGAM
ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

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(Deemed University, Established Under Section3ofUGCAct1956)

Eachanari post, COIMBATORE 641021, INDIA

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(Deemed to be University Established under Section 3 of UGC Act 1956)

Eachanari, Coimbatore-641 021. INDIA

FACULTY OF ENGINEERING

DEGREE OF BACHELOR OF ENGINEERING / TECHNOLOGY
REGULAR PROGRAMME

REGULATIONS 2022

CHOICE BASED CREDIT SYSTEM

These regulations are effective from the academic year 2022 – 2023 and applicable to the candidates admitted to B. E. / B. Tech. during 2022 - 2023 and onwards.

1. ADMISSION

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

Should have passed the Higher Secondary Examination (10+2) prescribed by the State Government / Central Government with Mathematics/ Physics/ Chemistry/ Computer Science/ Electronics/ Information Technology/ Biology/ Informatics Practices/ Biotechnology/ Technical Vocational subject/ Agriculture/ Engineering Graphics/ Business Studies/ Entrepreneurship. (Any of the above three subjects) or any similar Examination of any other institution/ University or authority accepted by the Karpagam Academy of Higher Education as equivalent thereto).

Should obtained at least 45% marks (40% marks in case of candidates belonging to reserved category) in the above subjects taken together.

(OR)

Passed min. 3 years Diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category) subject to vacancies in the First Year, in case the vacancies at lateral entry are exhausted. (The Universities will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgroundsto achieve desired learning outcomes of the programme)

1.2 Lateral Entry Admission

Candidates who possess Diploma in Engineering / Technology (10+3 or 10+2+2) awarded by the Directorate of Technical Education with passed minimum THREE years / TWO years (Lateral Entry) Diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category) in ANY branch of Engineering and Technology are eligible to apply for admission to the third semester of B. E./B. Tech.. Such candidates shall undergo two additional engineering subjects in the 3rd and 4th semester as prescribed by the University.

OR

Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks (40% marks in case of candidates belonging to reserved category) and passed 10+2 examinationwith Mathematics as a subject.

OR

Passed D.Voc. Stream in the same or allied sector.
(The Universities will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to achieve desired learning outcomes of the programme)

Eligibility criteria for admission in the third semester is given in the table below.

S. No.	Programme	Eligibility criteria
1.	B.E Bio Medical Engineering	Passed Minimum THREE years / TWO years (Lateral Entry) Diploma examination with at least 45% marks (40% marks incase of candidates belonging to reserved category) in ANY branch of Engineering and Technology. **OR** Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45%marks (40% marks in case of candidates belonging to reservedcategory) and passed 10+2 examination with Mathematics as a subject. **OR** Passed D.Voc. Stream in the same or allied sector. (The Universities will offer suitable bridge courses such as Mathematics, Physics, Engineering drawing, etc., for the students coming from diverse backgrounds to achieve desired learning outcomes of the programme)
2	B. E. Civil Engineering	
3.	B. E. Computer Science and Design	
4.	B. E. Computer Science and Engineering	
5.	B. E. Electrical and Electronics Engineering	
6.	B. E. Electronics and Communications Engineering	
7.	B. E. Mechanical Engineering	
8.	B. Tech. Artificial Intelligence and Data Science	
9.	B. Tech Bio - Technology	
10.	B. Tech Food Technology	

1.3 Migration from other University

Candidates who have completed their first to sixth semesters of B. E./B. Tech. study in any University are eligible to apply for admission to their next semester of B. E./B. Tech. in the branch corresponding to their branch of study. The student will be exempted from appearing for Examination of the equivalent courses passed in the earlier programme and will have to appear for courses which he/she has not done during the period of his/her earlier programme. Along with the request letter and mark sheets, he/she has to submit a copy of syllabus of the programme duly attested by the Registrar,Competent authority,he/she has undergone. Equivalence Certificate shallbe provided by the “Students’ Affairs Committee” of Karpagam Academy of Higher Education

.Students' Affairs Committee comprises all the Heads of the Departments and Dean of the Faculty of Engineering and a nominee of the Registrar.

2 . PROGRAMMES OFFERED

A candidate may undergo a programme in any one of the branches of study approved by the University as given below.

List of B. E. and B. Tech. Degree Programmes

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. Electrical and Electronics Engineering
6. B. E. Electronics and Communications Engineering
7. B. E. Mechanical Engineering
8. B.Tech. Artificial Intelligence and Data Science
9. B. Tech. Bio-Technology
10. B. Tech Food Technology

3. MODE OF STUDY

3.1 Full-Time:

In this mode of study, the candidates are required to attend classes regularly on the specified working days of the University.

3.2 Conversion from full time mode of study to part time is not permitted.

3.3 Change from one programme to another is not permitted.

4. STRUCTURE OF PROGRAMMES

4.1 Every programme will have a curriculum with syllabus consisting of theory and practical courses such as:

(i) General core courses comprising Mathematics, Basic Sciences, Engineering Sciences and Humanities.

(ii) Core courses of Engineering/Technology.

(iii) Elective courses for specialization in related fields.

(iv) Workshop practice, computer practice, engineering graphics,laboratory work, in-plant training, seminar presentation, project work, industrial visits, camps, etc.

Every student is encouraged to participate in at least any one of the following programmes

- NSS / Sports/Physical exercise/NCC/YRC/Red Ribbon club/Environment club and Energy club
- Other Co-Curricular and Extra Curricular activities

(v) Choice Based Credit System

CBCS is introduced for students admitted in the academic year 2017-18. As per AICTE guidelines, CBCS is an approach in which students opt for courses of their choice. CBCS provides greater flexibility with multiple courses and enable students to undergo additional courses. CBCS is applicable to Full Time Undergraduate & Post Graduate Programmes of study. It provides a choice for students to select from the prescribed courses (Professional soft core, Professional Hard core, Professional Electives, Open Electives, Value added courses, Humanity Sciences, Basic sciences & Engineering sciences). A course designated as hard core for a particular programme of study must invariably be completed by the student to receive the degree in the programme. The Hardcore courses cannot be substituted by another courses. Students can exercise their choice among a set of Soft core courses from the list of Soft core courses specified for each Programme of study. The student should meet the criteria for prerequisites to become eligible to register for that course. The student should request for the course for every semester within the first week of semester. Maximum no of students to be registered in each course shall depend on availability of physical facilities, classroom availability and lab capacity. Registration of already requested courses by students in previous semester is not allowed.

4.2 Each course is normally assigned certain number of credits.

No. of credits per lecture period per week	1
No. of credits per tutorial period per week	1
No. of credits for 3 periods of laboratory course per week	2
No. of credits for 3 periods of project work per week	2
No. of credits for 2 periods of Value added course per week	1
No. of credits for 3 weeks of in-plant training during semester vacations	1

4.3 In every semester, the curriculum shall normally have a blend of theory courses not exceeding6and practical courses not exceeding 3. However, the total number of courses per semester shall not exceed 8.

4.4 The prescribed credits required for the award of the degree shall be within the limits specifiedbelow.

PROGRAMME	PRESCRIBED CREDIT RANGE
B. E./B. Tech.	160– 165

4.5 The medium of instruction for all Courses, Examinations, Seminar presentations and Project/Thesis reports is English.

4.6 Value Added Course

Besides core courses and elective courses, value added course is introduced. The blend of different courses is so designed that the student would be trained not only in his / her relevant professional field but also as a socially conscious human being.

4.7 Evaluation in the courses comprises two parts, one is the Continuous Internal Assessment (CIA) and the other one is the End Semester Examination (ESE). Evaluation in few courses may be by Internal Assessment only.

5. DURATION OF THE PROGRAMME

5.1 The prescribed duration of the programme shall be

Programme	Min. No. of semesters	Max. No. of semesters
B. E./B. Tech. (H. Sc. Candidates)	8	14
B. E./B. Tech. (Lateral Entry Candidates)	6	12

5.2 Each semester shall normally consist of 90 working days or 540 hours.

5.3 Additional classes for improvement, conduct of model test, etc., over and above the specified periods shall be arranged, if required. But for the purpose of calculation of attendance requirement for eligibility to appear for the end semester Examinations (as per Clause 11) by the students, 540 hours conducted within the specified academic schedule alone shall be taken into account and the overall percentage of attendance shall be calculated accordingly.

6. REQUIREMENTS FOR COMPLETION OF THE SEMESTER

6.1 Ideally every student is expected to attend all classes and secure 100% attendance. However, in order to allow for certain unavoidable circumstances, the student is expected to attend at least 75% of the classes and the conduct of the candidate has been satisfactory during the course.

6.2 A candidate who has secured attendance between 65% and 74% (both included), due to medical reasons (Hospitalization / Accident / Specific Illness) or due to participation in University / District / State / National / International level sports or due to participation in Seminar / Conference / Workshop / Training Programme / Voluntary Service / Extension activities or similar programmes with prior permission from the Registrar shall be given exemption from prescribed attendance requirements and shall be permitted to appear for the Examination on the recommendation of the Head of the Department concerned and Dean to condone the lack of attendance. The Head of the Department has to verify and certify the genuineness of the case before recommending to the Dean. However, the candidate has to pay prescribed condonation fees.

6.3 Candidates who are not recommended for condonation and those who have less than 65% attendance will not be permitted to proceed to the next semester and have to redo the course. However, they are permitted to write the arrear Examinations, if any.

7. CLASS ADVISOR

To help the students in planning their courses of study and for general advice on the academic programme, the Head of the Department will attach a certain number of students to a teacher of the Department who shall function as Class Advisor for those students throughout their period of study. Such Class Advisors shall advise the students and monitor the courses undergone by the students, check the attendance and progress of the students and counsel them periodically. If necessary, the Class Advisor may display the cumulative attendance particulars in the Department notice board and also discuss with or inform the Parents/Guardian about the progress of the students. Each student shall be provided with course plan for each course at the beginning of each semester.

8. CLASS COMMITTEE

8.1. Every class shall have a class committee consisting of teachers of the class concerned, Maximum of six student representatives [boys and girls] and the concerned Head of the Department. It is like the 'Quality Circle' with the overall goal of improving the teaching-learning process. The functions of the class committee include

- Clarifying the regulations of the degree programme and the details of rules therein particularly Clause 4 and 5 which should be displayed on Department Notice-Board.
- Informing the student representatives the details of Regulations regarding weight age 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.
- Solving problems experienced by students in the class room and in the laboratories.
- Informing the student representatives the academic schedule, including the dates of assessments 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 academic support.

8.2 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 Dean.

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

8.4 The Chairperson of the Class Committee may convene the meeting of the class committee.

8.5 The Dean may participate in any Class Committee of the Faculty.

8.6 The Chairperson is required to prepare the minutes of every meeting, submit the same to Dean through the HOD 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 Registrar by the HOD through Dean.

8.7 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 subsequent meetings may be held in a semester at suitable intervals. During these meetings the student members representing the entire class, shall meaningfully interact and express their opinions and suggestions of the other students of the class in order to improve the effectiveness of the teaching-learning process.

9. COURSE COMMITTEE FOR COMMON COURSES

Each common theory course offered to more than one discipline or group, shall have a "Course Committee" comprising all the teachers handling the common course with one of them nominated as Course Coordinator. The nomination of the Course Coordinator shall be made by the Dean depending upon whether all the teachers teaching the common course belong to a single department or to several departments. The 'Course Committee' shall meet to arrive at a common scheme of evaluation for the test and shall ensure a uniform evaluation of the tests. Where ever feasible, the Course Committee may also prepare a common question paper for the Internal Assessment test(s).

10. PROCEDURE FOR AWARDING MARKS FOR INTERNAL ASSESSMENT

10.1 Every teacher is required to maintain an 'ATTENDANCE AND ASSESSMENT RECORD' (Log book) which consists of attendance marked in each theory or practical or project work class, the test marks and the record of class work (topic covered), separately for each course.

10.2 Continuous Internal Assessment (CIA): The performance of students in each subject will be continuously assessed by the respective teachers as per the guidelines given below:

THEORY COURSES:

S. No.	CATEGORY	MAXIMUM MARKS
1.	Assignment	5
2.	Seminar *	5
3.	Attendance	5
4.	Test – I	8
5.	Test – II	8
6.	Test – III	9
Continuous Internal Assessment : TOTAL		40

*Evaluation shall be made by a committee.

PATTERN OF TEST QUESTION PAPER (Test I & II)

INSTRUCTION	REMARKS
Maximum Marks	60
Duration	2 Hours
Part- A	1 to 9 Two Mark Questions, uniformly covering the two units of the syllabus. All the 9 Questions are to be answered. (**9 x 2 =18Marks)**.
Part- B	Question 10 to 12 will be of either or type, covering two units of the syllabus. Each Question may have subdivision. (**3 x 14 =42 Marks)**.

PATTERN OF TEST QUESTION PAPER (Test III)

INSTRUCTION	REMARKS
Maximum Marks	100
Duration	3 Hours
Part - A	Part A will be online Examination. 20 Objective type Questions, Covering all the 5 units. **(20 x 1= 20 Marks) (Online Examination).**
Part- B	21 to 25 Two Mark Questions, uniformly covering the Five units of the syllabus. All the 5 Questions are to be answered. (**5 x 2= 10Marks)**.
Part- C	Question 26 to 30 will be of either or type, covering Five units of the syllabus. Each Question may have subdivision. **(5 x 14=70 Marks).**

PRACTICAL COURSES:

S. No	CATEGORY	MAXIMUM MARKS
1.	Attendance	5
2.	Observation work	5
3.	Record work	5
4.	Model Examination	15
5.	Viva – Voce [Comprehensive]	10
Continuous Internal Assessment: TOTAL		40

Every practical exercise / experiment shall be evaluated based on the conduct of exercise/ experiment and records maintained.

INTEGRATED THEORY AND PRACTICAL COURSES

The Continuous Internal Assessment for Integrated Theory Course is awarded for 40 Marks with marksplit up similar to regular theory course.

The external evaluation of integrated practical component from End Semester Examination by internal mode is awarded for 50 Marks and later scaled down to 15 Marks and similarly the external evaluation for integrated theory from End Semester Examination is awarded for 100 Marks and later scaled down to 45 Marks. Hence the external assessment for Integrated theory and practical components contribute to 60 Marks.

10.3 ATTENDANCE

Attendance carries a maximum of 5 marks and the distribution is as under:

S. No.	Attendance %	Marks
1	91 and above	5.0
2	81-90	4.0
3	76-80	3.0

10.4 PROJECT WORK/ INTERNSHIPS

Final year project work will be always in-house. However, as a special case, if a student is able to get a project from a government organization or private or public sector company, the student may be permitted to do his/her project work in reputed institution/research organization/industry. Hence final year students may have commencement of eighth semester classes for 30 days in fast track mode and complete their final semester and are made eligible for undergoing Internships in Industry and also interested students are permitted for doing projects in Industries.

10.5 CERTIFICATION COURSES

Students have to undergo a minimum of one value added course beyond curriculum as a certified course per semester for duration not less than 30 hours**.**

11. REQUIREMENTS FOR APPEARING FOR END SEMESTER EXAMINATION (ESE)

A candidate shall normally be permitted to appear for the ESE of any semester commencing from I semester if he/she has satisfied the semester completion requirements (Subject to Clause 5) and has registered for Examination in all courses of the semester. Registration is mandatory for Semester Examinations as well as arrear Examinations failing which the candidate will not be permitted to attend the next semester. A candidate already appeared for a subject in a semester and passed the Examination is not entitled to reappear in the same subject of the semester for improvement of grade.

12. END SEMESTER EXAMINATION

ESE will be held at the end of each semester for each subject, for 100 marks, later scaled down to 60 marks.

PATTERN OF ESE QUESTION PAPER

INSTRUCTION	REMARKS
Maximum Marks	100
Duration	3 Hours
Part - A	Part A will be online Examination. 20 Objective type Questions. Covering all the 5 units. **20*1= 20 Marks (Online Examination)**
Part- B	21 to 25 Two Mark Questions, uniformly covering the Five units of the syllabus. All the 5 Questions are to be answered. (**5 *2= 10Marks)**.
Part- C	Question 26 to 30 will be of either or type, covering Five units of the syllabus. Each Question may have subdivision. **(5*14=70 Marks)**

13. PASSING REQUIREMENTS

13.1 Passing minimum: The passing minimum for CIA is 20 (i.e. out of 40 marks). The passing minimum for ESE is 30 (i.e. out of 60 marks). The overall passing minimum for theory/laboratory course is 50 (Sum of his/her score in CIA and ESE) out of 100 marks.

13.1.1 The passing minimum for value added course is 50 marks out of 100marks. There will be two tests, the first covering 50% of syllabus for 50 marks and the other for 50 marks.

13.2 If the candidate fails to secure a pass in a particular course ESE, itis mandatory that candidate shall register and reappear for the Examination in that course during the subsequent semester when Examination is conducted in that course. Further the candidate should continue to register and reappear for the Examination till a pass is secured in such supplementary Examination within the stipulated maximum duration of the programme (Clause 5.1).

The CIA marks obtained by the candidate in his/her first or subsequent appearance where he/she secures a pass shall be retained by the office of the Controller of Examinations and considered valid for all remaining attempts till the candidate secures a pass in his/her ESE.

13.3 If the candidate fails to secure a pass in a particular course in CIA, it is mandatory that candidate shall register and reappear for the CIA in that course during the subsequent semester when CIAis conducted in that course by the faculty member assigned for that particular course during that semester by the concerned HOD. Further, the candidate should continue to register and reappear for the CIA till a pass is secured in such subsequent Examination within the stipulated maximum duration of the programme (Clause 5.1).

13.3.1 If a candidate fails to secure a pass in value added course, he/she has to appear for the tests whencourse is conducted subsequently.

13.4 ONLINE COURSE(MOOC) COORDINATOR

To help students in planning their online courses and for general advice on online courses, the HOD shall nominate a MOOC coordinator for the online courses. The Online course MOOC coordinator

shall identify the courses which students can select for their programme from the available online courses offered by the different agencies periodically and inform the same to the students. Further, the coordinator shall advice the students regarding the online courses and monitor their course.

13.4.1 Student Shall study at least one online course from Swayam/NPTEL in anyone of the first seven semesters for which examination shall be conducted at the end of the course by the respective organization body. The student can register to the course which are approved by the department. The student shall produce a pass certificate from the respective body before the end of the seventh semester.

14. AWARD OF LETTER GRADES

14.1 All assessments of a course will be done on absolute mark basis. However, for the purpose of reporting the performance of a candidate letter grades, each carrying certain number of points will be awarded as per the range of total marks (out of 100) obtained by the candidate in each subject as detailed below:

Letter grade	Marks Range	Grade Point	Description
O	91 - 100	10	OUTSTANDING
A+	81- 90	9	EXCELLENT
A	71-80	8	VERY GOOD
B+	66- 70	7	GOOD
B	61 – 65	6	ABOVE AVERAGE
C	55 - 60	5	AVERAGE
D	50 - 54	4	PASS
RA	<50	-	REAPPEARANCE
AB		0	ABSENT

14.2 GRADE SHEET

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

i. The list of courses enrolled during the semester and the grade scored,
ii. The Grade Point Average (**GPA**) for the semester and
iii. The Cumulative Grade Point Average (**CGPA**) of all courses enrolled from first semester onwards.

GPA is the ratio of the sum of the products of the number of Credits (**C**) of courses enrolled and the Grade Points (**GP**) corresponding to the grades scored in those courses, taken for all the courses to the sum of the number of credits of all the courses in the semester.

$$GPA = \frac{\text{Sum of } [C*GP]}{\text{Sum of } C}$$

CGPA will be calculated in a similar manner, considering all the courses enrolled from First semester. **RA** grade and value added course will be excluded for calculating **GPA** and **CGPA**.

14.3 REVALUATION

Revaluation and Re-totaling is allowed on representation. A candidate can apply for revaluation of his/her semester Examination answer paper 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 and Dean. A candidate can apply for revaluation of answer scripts for not exceeding 5 subjects at a time. The Controller of Examinations will arrange for the revaluation and the results will be intimated to the candidate through the Head of the Department and Dean. Revaluation is not permitted for Supplementary Examinations, Practical Examinations, Technical Seminars, In-plant Training and Project Work.

14.4 TRANSPARENCY AND GRIEVANCE COMMITTEE

A student may get the Photostat copy of the answer script on payment of prescribed fee, if he/she wishes. The students can represent the grievance, if any, to the Grievance Committee, which consists of Dean of the Faculty, (if Dean is HOD, the Dean of another Faculty nominated by the University), HOD of the Department concerned, the faculty of the course and Dean from other discipline nominated by the University and the COE. If the Committee feels that the grievance is genuine, the script may be sent for external valuation; the marks awarded by the External Examiner will be final. The student has to pay prescribed fee for the same.

15. ELIGIBILITY FOR AWARD OF DEGREE

A student shall be declared to be eligible for award of Degree if he/she has

- Successfully gained the required number of total credits as specified in the curriculum corresponding to his/her programme within the stipulated time.
- No disciplinary action is pending against him/her.

The award of the degree must be approved by the Board of Management of Karpagam University.

16. CLASSIFICATION OF THE DEGREE AWARDED

16.1 A candidate who qualifies for the award of the Degree (vide Clause 15) having passed the Examination in all the courses in his/her first appearance within the specified minimum number of semesters (vide Clause 5.1) securing a CGPA of not less than **8** shall be declared to have passedthe Examination in First Class with Distinction.

16.2 A regular candidate or a lateral entrant is eligible to register for BE(Honors), B. Tech (Honors). If, he / she has passed all the courses in the first appearance and

holds / maintains a CGPA of 7.5 at VI Semester. He / she has to take an additional 20 credits by studying online courses through Swayam/NPTEL. Such a candidate is eligible for the award of BE (Honor), B.Tech(Honor). However, is he / she fails in securing 20 additional credits but maintains CGPA of 7.5 and above is not eligible for Honors degree but eligible for First class with Distinction.

16.3 A candidate who qualifies for the award of the Degree (vide Clause 15) having passed the Examination in all the courses within the specified minimum number of semesters (vide Clause 5.1) plus one year (two semesters), securing CGPA of not less than **6.5**shall be declared to have passed the Examination in First Class.

16.3 All other candidates (not covered in Clauses 17.1 and 17.2) who qualify for the award of the degree (vide Clause 15) shall be declared to have passed the Examination in Second Class.

17. PROVISION FOR WITHDRAWAL FROM END-SEMESTER EXAMINATION

17.1 A candidate may for valid reasons and on prior application, 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. .

17.2 Such withdrawal shall be permitted only once during the entire duration of the degree programme. Withdrawal application shall be valid only if the candidate is otherwise eligible to write the Examination

.**17.3** Withdrawal application is valid only if it is made within 10 days prior to the commencement of the Examination in that course or courses and recommended by the Head of the Department, Dean and approved by the Registrar.

17.3.1 Notwithstanding the requirement of mandatory TEN days' notice, applications for withdrawal forspecial cases under extraordinary conditions may be considered on the merit of the case.

17.4 Withdrawal shall not be construed as an appearance for the eligibility of a candidate for First Class with Distinction. This provision is not applicable to those who seek withdrawal during III semester.

17.5 Withdrawal from the ESE is NOT applicable to arrear Examinations.

17.6 The candidate shall reappear for the withdrawn courses during the Examination conducted in the subsequent semester.

18. PROVISION FOR AUTHORISED BREAK OF STUDY

18.1 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 forbreak 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 Registrar, through the Head of the Department and Dean stating reasons thereof and the probable date of rejoining the programme.

18.2 The total number of semesters for completion of the programme from the commencement of the first semester to which the candidate was admitted shall not exceed the maximum no. of semesters specified in Clause 5.1 irrespective of the period of break of study (vide Clause 18) in order that he/shemay be eligible for the award of the degree (vide Clause 15). The candidate thus permitted to rejoin the programme at the commencement of the semester after the break shall be governed by the curriculum and regulations in force at the time of rejoining. Such candidates may have to do additionalcourses as per the curriculum and regulations in force at that period of time.

18.3 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 (vide Clause17). However, additional break of study granted will be counted for the purpose of classification.

18.4 The total period for completion of the programme reckoned from, the commencement of the firstsemester 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 (vide Clause 18.3) in order that he/she maybe eligible for the award of the degree.

18.5 If any student is detained for want of requisite attendance, progress and good conduct, the periodspent in that semester shall not be considered as permitted 'Withdrawal' or 'Break of Study' (Clause18and 18 respectively).

19. SUPPLEMENTARY ESE: After the publication of VIII semester results, if a student has **ONE** arrear in any theory course of the entire programme, he/she will be permitted to apply within 15 days of the publication of results, and appear for supplementary Examination.

20. INDUSTRIAL VISIT

Every student is required to undergo one industrial visit for every semester, starting from the third semester of the programme.

21. DISCIPLINE

Every student is required to observe discipline and decorous behavior both inside and outside the University and not to indulge in any activity which will tend to bring down the prestige of the University. The erring student will be referred to the Disciplinary Committee constituted by the University, to enquire into acts of indiscipline and recommend to the University about the disciplinaryaction to be taken.

If a student indulges in malpractice in any of the ESE/CIA, he/she shall be liable for punitiveaction as prescribed by the University from time to time.

22. REVISION OF REGULATION AND CURRICULUM

The University may from time to time revise, amend or change the Regulations, Scheme of Examinations and syllabi, if found necessary on the recommendations of Board of Studies, AcademicCouncil and Board of Management of Karpagam University.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOs):

1. To impart skill based training to apply engineering practices to design, implement model and analyze real time problems and interpret the result.
2. To impart students with strong fundamental knowledge in the field of Electronics and Communication Engineering to meet the emerging industrial needs and to promote Research
3. To build and lead cross-functional teams upholding the professional responsibilities & ethical values.

PROGRAMME OUTCOMES (POs)

a) Apply knowledge of mathematics, basic sciences, engineering fundamentals and specialization to solve engineering problems

b) Identify , design, formulate analyze & interpret data

c) Design an integrated system with due considerations to public health, safely, societal and environment

d) Investigate , formulate and solve industrial engineering problems

e) Acquire skills to use modern engineering tools and software to solve complex engineering problems

f) Apply societal and cultural issues in professional engineering practice.

g) Understand the impact of engineering solutions in global and societal context

h) Function as a member of multidisciplinary team

i) Communicate effectively both orally and in writing

j) Recognize the need for ability to engage in lifelong learning

k) Understand the project management and finance

l) Acquire knowledge to design, develop, predict and model an electronic system and also to implement communication protocols

PROGRAMME SPECIFIC OUTCOMES(PSOs)

m) Be acquainted with the continuous learning in the field of Embedded systems, VLSI design, Communication and Signal Processing and hold expertise in the modern tools for quenching the techno-thirsty society.

n) Incorporate the socio-responsible electronics and communication engineer with leadership, teamwork skills and exhibit a commitment to the lifelong learning

SEMESTER I											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BECC101	English	2,3	e,f,g, i	2	0	2	3	40	60	100	1
22BECC102	Mathematics -I	1,3	a,e,g, j,k	3	1	0	4	40	60	100	3
22BECC141	Engineering Physics	1,3	a,b,d, e,g,j, k,l	3	1	2	5	40	60	100	5
22BECC142	Engineering Chemistry	2	a,b,j	3	0	4	5	40	60	100	8
22BEEC143	Python Programming (Theory & Lab)	1,3	a,b,d, e,g,j	2	0	2	5	40	60	100	11
22BEEC144	Basic Electrical and Electronics Engineering	1,2	a,b,d. h,j	3	1	2	5	40	60	100	14
TOTAL				16	3	12	27	240	360	600	
SEMESTER II											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BECC201	Communicative English	2,3	e,f,g, i	2	0	2	3	40	60	100	16
22BECC202	Mathematics - II	1,3	a,e,g, j,k	3	1	0	4	40	60	100	18
22BECC203	Semiconductor	1,3	a,b,d,	3	0	0	3	40	60	100	

	Physics		e,g,j,k,l								21
22BECC204	Environmental Studies	1,2,5	b,c,e,j	3	0	0	3	40	60	100	23
22BEEC205	Electronic Devices	1,2	a,d,j,l	3	0	0	3	40	60	100	26
22BEEC211	Workshop Practices	1,2	a,b,e,j	0	0	4	2	40	60	100	28
22BEEC212	Electronic Devices Laboratory	1,2	a,d,e,l	0	0	2	1	40	60	100	30
22BEEC251	Essence of Indian Knowledge Tradition	3	f	1	0	0	0	100	-	100	31
TOTAL				**15**	**1**	**8**	**19**	**380**	**420**	**800**	

SEMESTER III											
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**			**Page:No**
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**	
								40	**60**	**100**	
22BEEC301	Mathematics - III (Linear Algebra and Partial Differential Equations)	1,3	a,e,g,j,k	3	1	0	4	40	60	100	32
22BEEC302	Signals and Systems	1,2	a,b,c,d,l	3	1	0	3	40	60	100	34
22BEEC303	Electromagnetic Theory	1,2	a,d,g,l	3	1	0	4	40	60	100	36
22BEEC304	Network Theory	1,2	a,b,c,d,j,l	3	1	0	3	40	60	100	38
22BEEC305	Digital System Design	1,2	a,b,c,d,e,l	3	0	3	3	40	60	100	40

22BEEC311	Digital System Design Laboratory	1,2	a,b,c,d,e,l	0	0	2	1	40	60	100	42
22BEEC341	Datastructure & Algorithms (Theory + Lab)	1,2	a,b,c,d,e,l	3	0	2	5	40	60	100	41
22BEEC351	Constitution of India	3	f	1	0	0	0	100	-	100	46
TOTAL				**19**	**4**	**5**	**23**	**380**	**420**	**800**	

SEMESTER IV											
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**			**Page:No**
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**	
								40	**60**	**100**	
22BEEC401	Mathematics - IV (Probability and Random Process)	1,3	a,e,g,j,k	4	0	0	4	40	60	100	48
22BEEC402	Analog Integrated Circuits	1,2	a,b,c,g,l	3	1	0	3	40	60	100	50
22BEEC403	Analog and Digital Communication	1,2	a,b,c,d,g,l,m	3	1	0	3	40	60	100	52
22BEEC404	Microprocessor & Microcontroller	1,2	a,b,c,d,g,l	3	1	0	3	40	60	100	54
22BEEC405	Control Systems	1,2	a,b,c,d,h,l	3	1	0	4	40	60	100	56
22BEEC411	Analog Circuits Laboratory	1,2	a,b,c,e,g,l	0	0	2	1	40	60	100	58
22BEEC412	Analog and Digital Communicatio	1,2	a,b,c,d,g,l,m	0	0	2	1	40	60	100	59

	n Laboratory										
22BEEC413	Microprocessor & Microcontroller Laboratory	1,2	a,b,c,d,g,l	0	0	2	1	40	60	100	60
22BEEC491	Mini Project	1,2,3	a,b,c,d,e,g,h,j,l	0	0	4	1	100	-	100	61
TOTAL				**16**	**4**	**10**	**21**	**420**	**480**	**900**	

SEMESTER V											
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**			**Page:No**
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**	
								40	**60**	**100**	
22BEEC501	Antennas and Wave Propagation	1,2	a,b,c,d,l,m	3	1	0	4	40	60	100	62
22BEEC502	Internet of things	1,2	a,b,c,d,e,hl	3	0	0	3	40	60	100	64
22BEEC503	Digital Signal Processing	1,2	a,b,c,d,j,l,m	3	1	0	4	40	60	100	66
22BEEC504	Measurements and Instrumentation	1,2	a,d,j,l	3	0	0	3	40	60	100	68
22BEEC505	Long term Evolution (LTE) and 5G Communication	1,2	a,b,c,d,j,l	3	0	0	3	40	60	100	70
22BEEC5E**	Professional Elective-I	1,2	a,b,c,d,f,l	3	0	0	3	40	60	100	71
22BEEC511	Digital Signal Processing Laboratory	1,2	a,b,c,d,e,j,l,m	0	0	2	1	40	60	100	72

22BEEC512	Antenna Laboratory	1,2	a,b,c,d,e,l,m	0	0	2	1	40	60	100	73
TOTAL				**18**	**2**	**4**	**22**	**520**	**480**	**1000**	

SEMESTER VI											
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**			**Page:No**
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**	
								40	**60**	**100**	
22BEEC601	Very Large Scale Integrated (VLSI)design	1,2	a,b,c,d,e,g,h,j,l,m	3	0	0	3	40	60	100	74
22BEEC602	Embedded System (Theory + Lab)	1,2	a,b,c,d,e,g,h,j,l,m	3	0	2	4	40	60	100	76
22BEEC603	Microwave Engineering	1,2	a,b,c,d,g,l	3	0	0	3	40	60	100	79
22BEEC6E**	Professional Elective-II	1,2	a,b,c,d,g,h,l	3	0	0	3	40	60	100	80
22BECSOE**/ 22BEEEOE**/ 22BEBMEOE**	Open Elective-I	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100	80
22BEEC611	VLSI design Laboratory	1,2	a,b,c,d,e,g,h,j,l,m	0	0	2	1	40	60	100	81
22BEEC612	Microwave Engineering Laboratory	1,2	a,b,c,d,g,l	0	0	2	1	40	60	100	82
22BEEC613	Internship	1,2,3	d,f,g,l	0	0	0	2	100	-	100	83
TOTAL				**15**	**0**	**6**	**21**	**380**	**420**	**800**	

SEMESTER VII											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BEEC701	Satellite Communication	1,2	a,b,c,d,h,l,m	3	0	0	3	40	60	100	84
22BEEC702	Artificial Intelligence (AI)	1,2	a,b,c,d,f,h,j,l	3	0	0	3	40	60	100	86
22BEEC703	Digital Image Processing	1,2	a,b,c,d,l	3	0	0	3	40	60	100	88
22BEEC7E**	Professional Elective-III	1,2	a,b,c,j,l,m	3	0	0	3	40	60	100	89
22BECSOE**/ 22BEEEOE**/ 22BEBMEOE**	Open Elective-II	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100	89
22BEEC711	Digital image processing Laboratory	1,2	a,b,c,d,e,l	0	0	2	1	40	60	100	90
22BEEC741	Technical Seminar	3	a,i,h,f,g	0	0	2	0	100	-	100	91
22BEEC791	Project Work-Phase I	1,2	a,b,c,d,e,g,h,j,l	0	0	8	4	100	-	100	91
TOTAL				15	0	12	20	440	360	800	

SEMESTER VIII											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BEEC801	Professional Ethics	3	f,g	3	0	0	3	40	60	100	92
22BEEC8E**	Professional Elective-IV	1,2	a,b,c,d, e,g,h,j,l, m	3	0	0	3	40	60	100	93
22BEEC8E**	Professional Elective-V	1,2	a,b,c,d, e,g,h,j,l, m	3	0	0	3	40	60	100	93
22BEEC891	Project Work-Phase-II &Viva-Voce	1,2	a,b,c,d, e,g,h,j,l	0	0	16	8	120	180	300	94
TOTAL				**9**	**0**	**16**	**17**	**240**	**360**	**600**	

PROFESSIONAL ELECTIVE LIST

SEMESTER V-ELECTIVE I

SEMESTER V											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BEEC5E01	Sensors and Transducers	1,2	a,b,c,d,f,l	3	0	0	3	40	60	100	95
22BEEC5E02	Biomedical Electronics	1,2	a,b,c,h,l,m	3	0	0	3	40	60	100	97
22BEEC5E03	Fiber optic communication	1,2	a,b,c,d,f,l	3	0	0	3	40	60	100	99
22BEEC5E04	RADAR communication	1,2	a,b,c,d,h,l,m	3	0	0	3	40	60	100	101
TOTAL				12	0	0	12	160	240	400	

SEMESTER VI -ELECTIVE II

SEMESTER VI											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BEEC6E01	Multimedia Compression Techniques	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100	103
22BEEC6E02	Pattern Recognition	1,2	a,b,c,d,h,	3	0	0	3	40	60	100	105
22BEEC6E03	Nano Electronics	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100	107
22BEEC6E04	Micro Electronic Mechanical System (MEMS)	1,2	a,c,d,g,h,m	3	0	0	3	40	60	100	109
TOTAL				12	0	0	12	160	240	400	

SEMESTER VII - ELECTIVES III

SEMESTER VII											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BEEC7E01	Application Specific Integrated Circuit (ASIC) Design	1,2	a,b,c,j,l,m	3	0	0	3	40	60	100	111
22BEEC7E02	Wireless Sensor Networks	1,2	a,b,c,d	3	0	0	3	40	60	100	113
22BEEC7E03	Speech and Audio Processing	1,2	a,b,c,h,j,l,m	3	0	0	3	40	60	100	115
22BEEC7E04	Big Data Analytics	1,2,3	a,b,c,d,e,f,g,h,k,n	3	0	0	3	40	60	100	117
TOTAL				**12**	**0**	**0**	**12**	**160**	**240**	**400**	

SEMESTER VIII - ELECTIVE IV,V

SEMESTER VIII											
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
22BEEC8E01	Computer Architecture	1,2	a,b,c,j,l,m	3	0	0	3	40	60	100	119
22BEEC8E02	Advanced Embedded Systems	1,2	a,b,c,d,e,g,h,j,l,m	3	0	0	3	40	60	100	120
22BEEC8E03	Smart Antennas	1,2	a,b,c,d,l,m	3	0	0	3	40	60	100	122
22BEEC8E04	Computer Networks	1,2	a,b,c,d,e	3	0	0	3	40	60	100	124

22BEEC8E05	Natural Language Processing (NLP)	1,2	b,h,	3	0	0	3	40	60	100	126
22BEEC8E06	Robotics and Automation	1,2	a,b,c,g, h,l	3	0	0	3	40	60	100	128
22BEEC8E07	Micro and Smart System Technology	1,2	a,c,d,g, h,m	3	0	0	3	40	60	100	130
22BEEC8E08	Cryptography and Network Security	1,2	a,b,c,h	3	0	0	3	40	60	100	132
TOTAL				**24**	**0**	**0**	**24**	**320**	**480**	**800**	

OPEN ELECTIVE LIST

SEMESTER VI &VII

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
Biomedical Engineering											
22BEBMEOE01	Human Anatomy And Physiology	1,3	a,d,e,l, m	3	0	0	3	40	60	100	134
22BEBMEOE02	Artificial organs and Implants	1,3	c,l	3	0	0	3	40	60	100	136
Computer Science and Engineering											
22BECSOE01	Internet Programming	1,3	a,b,c,d, e	3	0	0	3	40	60	100	139
22BECSOE02	Machine Learning	1,3	a,b,c,d, e,j	3	0	0	3	40	60	100	140
22BECSOE03	Block Chain Technologies			3	0	0	3	40	60	100	142
Computer Science And Design											
22BECDOE01	Introduction to 3D Modelling			3	0	0	3	40	60	100	144

	and Animation										
22BECDOE02	Digital Photography			3	0	0	3	40	60	100	146
22BECDOE03	Mobile Application Development			3	0	0	3	40	60	100	148
Artificial Intelligence and Data Science											
22BTADOE01	Fundamentals of Artificial Intelligence			3	0	0	3	40	60	100	150
22BTADOE02	Fundamentals of Data Science			3	0	0	3	40	60	100	152
22BTADOE03	Internet Programming			3	0	0	3	40	60	100	154
22BTADOE04	Robotics and Automation			3	0	0	3	40	60	100	156
Electrical and Electronics Engineering											
22BEEEOE01	Electric Hybrid Vehicles	1,3	a,b,c,d,e,l	3	0	0	3	40	60	100	158
22BEEEOE02	Renewable Energy Resources	1,3	a,d,f,g,k	3	0	0	3	40	60	100	160

COURSES OFFERED TO OTHER DEPARTMENTS

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks			Page:No
		PEO	PO	L	T	P		CIA	ESE	Total	
								40	60	100	
Electronics and Communication Engineering											
22BEECOE01	Neural Networks and its Applications	1,2,3	a,b,c,d,e,j,l,m	3	0	0	3	40	60	100	162
22BEECOE02	Principles of Modern Communication System	1,2,3	a,b,c,d,e,j,l,m	3	0	0	3	40	60	100	164

Total number of credits: 169

Total Marks : 6100

Color code	Total Count
Employability	64
Skill Development	26
Entrepreneurship	3