



KUMARAGURU
college of technology
character is life

Criteria I : Curricular Aspects

1.1 Curriculum Design and Development:

Kumaraguru College of Technology (KCT) envisions to nurture knowledge, skills, and attitude and values of the aspiring youth to enable them to become global citizens and towards that process, the institution has evolved a flexible integrated academic curriculum. KCT introduced Outcome Based Education (OBE) in 2014 and Choice Based Credit System (CBCS) in 2015, which emphasized on honing the skills and knowledge of the graduates.

CURRICULUM COMPONENTS:

The curriculum is designed to provide a strong academic foundation and integration of courses. The range of courses in undergraduate curriculum include:

- **Basic Science Courses (BS):** The courses like Mathematics, Physics and Chemistry are included in basic science.
- **Engineering Science Courses (ES):** Foundational courses like Engineering practices, Engineering Graphics, Basics of Civil / Electrical / Electronics / Mechanical and Computer science, Engineering Clinics are included in this category.
- **Humanities and Social Science Courses (HS):** Technical English, Environmental Science, Foreign Languages, Professional ethics and Human Values, Communication Skills and Management Courses are included in this category,
- **Professional Core (PC):** Courses that provide depth in the programme domain, aligned with current local and global market needs. The domains have been organized in two to three streams which will lead to specialization in the professional elective streams.
- **Professional Elective (PE):** Pre-defined groupings organized in discrete domains/streams, so that a student can choose one such domain in which he/she


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wishes to gain in-depth understanding, knowledge and skill.

- **Open Electives (OE) :** KCT has a robust and broad open elective system called FCLF (Flexible and Comprehensive Learning Framework). Cross-disciplinary courses are offered by every department in engineering to students of other departments. Students will have the opportunity to choose any open elective course from different departments and apply their knowledge to acquire jobs in that field of course. These courses are offered by both internal as well as identified external experts.
- **Project work:** Project Work is carried out in two phases, Phase I and II, are multifaceted assignment that serves as a culminating academic and intellectual experience for students, typically during their final year. The main idea standing behind any type of capstone project is encouraging students to apply their knowledge, skills and critical thinking because of the nature of complexity that it covers all the knowledge, which students have gained during the whole time of studying.
- **Internship/Seminars:** The students may undergo training or internship at Industry/ Research organization / University after due approval from the concerned authorities.
- **Other courses:** Mandatory credit / non-credit courses.

Credit distribution:

Category	Credit range	
Humanities and Social sciences (HS)	8-10%	
Basic Sciences (BS)	15%	
Engineering Sciences (ES)	25-27%	
Professional Core (PC) and Cluster Courses	31-35 %	} 45-51% in total
Professional Electives (PE)	4-6%	
Project Work (PW)	10 %	
Open Electives (OE)	2%	

Each semester, curriculum shall normally have a blend of lecture courses and laboratory courses . The students can register for Professional Elective/Open Elective courses

in any semester, starting from the third semester, provided the pre-requisite conditions for the respective courses are met. UG/PG Programmes have a curriculum consisting of theory, practical, project and embedded courses.

Typical curriculum structure for M.E. / M.Tech. Degree programmes are designed over and above the AICTE and University guidelines. The courses consist of a few Foundational courses (including mathematics courses), Professional core and elective courses (relevant to branch of study), and Employment enhancement courses (Project work, Internship, Research methodology, product development etc.). The course outcomes (CO's) are designed to align with the Programme Outcomes (PO's) and Programme Educational Objectives (PEO's) of the programme.

Curriculum Design:

1. **Programme Assessment Committee (PAC)**, designs the draft curriculum based on PEOs, POs, PSOs and the feedback collected from the stakeholders, and submits to the Department Advisory Board (DAB).

The Composition of PAC:

- a. Convener-HoD
 - b. Programme Coordinators/BoS Coordinator
 - c. Faculty Coordinators
 - d. Module Coordinators
 - e. Student Member
2. **Department Advisory Board (DAB)** analyses and reviews the draft curriculum and adds inputs, if required and recommend the same to Board of Studies (BoS).

The Composition of DAB:

- a. Chair person, Department Advisory Board
- b. Convener- HoD
- c. Programme Coordinator
- d. Member from Academic Institution of Repute
- e. Member from Industry
- f. Alumni Member
- g. Expert Member from other Department

- h. Programme Module coordinators
- i. Students
- j. Member of DOA
- k. Department Faculty coordinators of Infra and student's affairs.

3. **Board of Studies (BoS)** evaluates the proposed curriculum in compliance with POs, PSOs and other relevant guidelines.

The composition of BoS:

- a. Head of the Department (Chairman)
- b. The entire faculty of each specialization
- c. Two experts in the subject from outside the college to be nominated by the Academic Council.
- d. One representative from industry/corporate sector/allied area relating to placement.
- e. One post graduate meritorious alumnus to be nominated by the Principal.
The chairman, Board of Studies, may with the approval of the principal of the college: co-opt
 - a) Experts from outside the college whenever special courses of studies are to be formulated.
 - b) Other members of staff of the same Department.

4. Final curriculum is approved by the Academic Council.

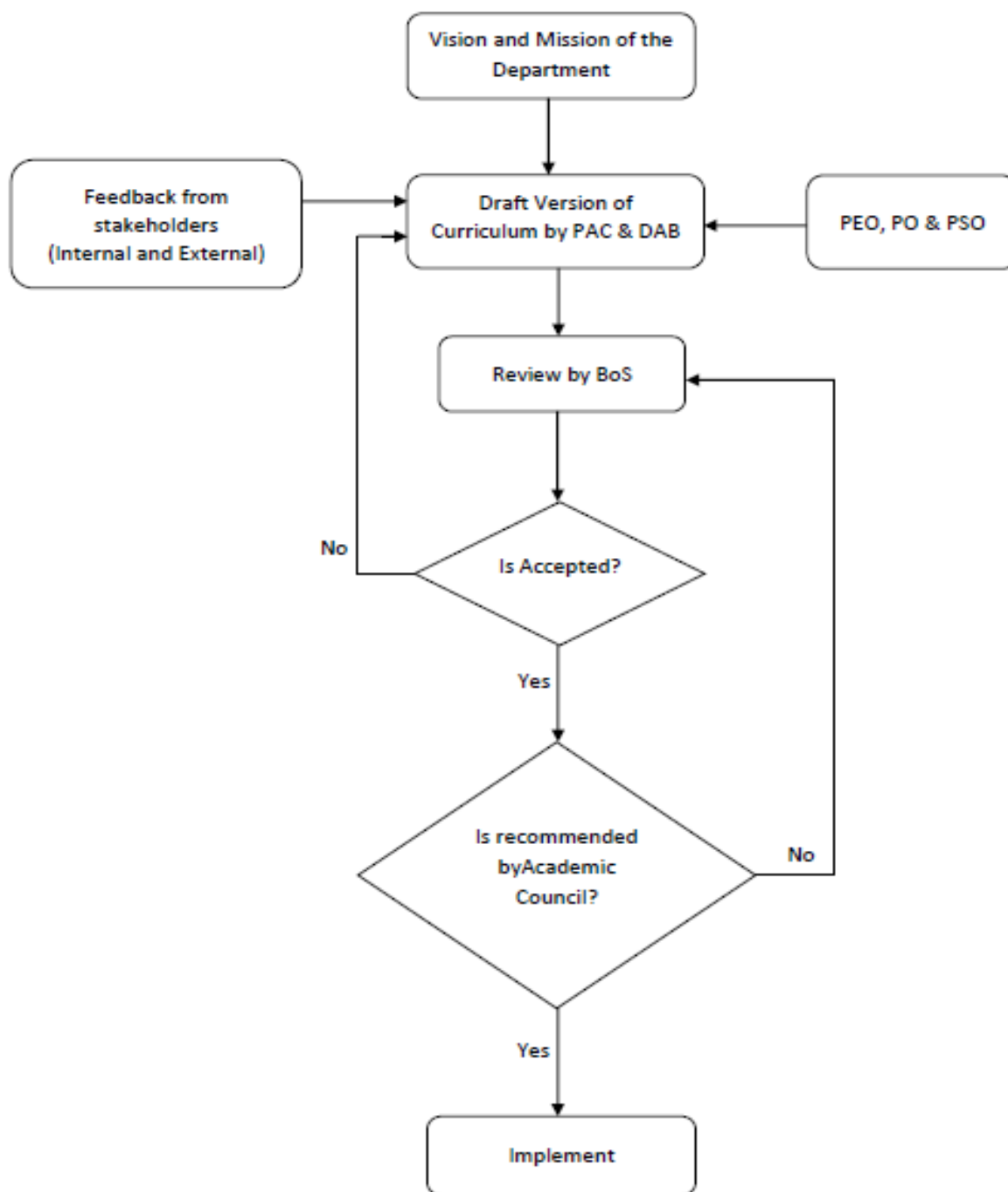


Fig 1.1 Curriculum Design and Development Process

Design and development of curriculum and syllabi is carried out, in alignment with the Vision and Mission of the department, Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs). Also, the Programme Specific Criteria (PSC) and societal needs in relevance to the regional and national

developmental requirements are considered as inputs for designing the curriculum and syllabi.

Course Outcomes (COs) for each course under different modules are articulated in consultation with module coordinators and stake holders. Also, the correlation of COs with POs and PSOs are established for all the identified courses with prerequisites. The course outcomes (CO's) are designed to align with the Programme Outcomes (PO's) and Programme Educational Objectives (PEO's) of the respective programmes.

The prepared curriculum and syllabi are presented to the Board of Studies (BoS). BoS recommends the proposed curriculum and syllabi to the Academic Council for its consideration and approval. The POs/PSOs are evaluated for attainment every year and it is analysed by the Programme Assessment Committee (PAC) and Department Advisory Board (DAB). The feedback from stakeholders and the gaps in the attainment are used for further modification / revisions in the curriculum and syllabi.

Sample UG/PG curriculum:

B.E ELECTRONICS AND COMMUNICATION ENGINEERING

Semester I										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18ENI1201	Fundamentals of Communication -I	Embedded - Theory & Lab	HS	2	0	2	0	3	-
2	U18MAI1201	Linear Algebra and Calculus	Embedded - Theory & Lab	BS	3	0	2	0	4	-
3	U18CHI1201	Engineering Chemistry	Embedded - Theory & Lab	BS	3	0	2	0	4	-
4	U18EEI1202	Electrical Machines and Drives	Embedded - Theory & Lab	ES	3	0	2	0	4	-
5	U18CSI1202	Problem Solving and Programming using C	Embedded - Theory & Lab	ES	2	0	2	0	3	-
7	U18INI1600	Engineering Clinic I	Practical & Project	ES	0	0	4	2	3	-
Total Credits									21	
Total Contact Hours/week									29	

Semester II										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18ENI2201	Fundamentals of Communication-II	Embedded - Theory & Lab	HS	2	0	2	0	3	U18ENI1201
2	U18MAI2201	Advanced Calculus and Laplace Transform	Embedded - Theory & Lab	BS	3	0	2	0	4	-
3	U18PHI2201	Engineering Physics	Embedded - Theory & Lab	BS	3	0	2	0	4	-
4	U18MEI2201	Engineering Graphics	Embedded - Theory & Lab	BS	2	0	2	0	3	-
5	U18CSI2201	Python Programming	Embedded - Theory & Lab	ES	2	0	2	0	3	-
6	U18INI2600	Engineering Clinic II	Practical & Project	ES	0	0	4	2	3	U18INI1600
Total Credits									20	
Total Contact Hours/week									28	
Semester III										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18ECT3101	Signals and Systems	Theory	BS	3	1	0	0	4	-
2	U18ECI3202	Electron Devices and Circuits	Embedded - Theory & Lab	PC	3	0	2	0	4	-
3	U18ECI3203	Digital System Design	Embedded - Theory & Lab	PC	3	0	2	0	4	-
4	U18ECT3004	Electro Magnetic Fields	Theory	PC	3	0	0	0	3	-
5	U18ECT3105	Network theory	Theory	PC	3	1	0	0	4	-
6	U18INI3600	Engineering Clinic III	Practical & Project	ES	0	0	4	2	3	U18INI2600
Total Credits									22	
Total Contact Hours/week									27	
Semester IV										Pre-requisite
S.No	Course code	Course Title	Course Mode	CT	L	T	P	J	C	
1	U18ECI4201	Digital Signal Processing	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECT3101

2	U18ECI4202	Analog Electronics and Integrated Circuits	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECI3202
3	U18MAT4103	Probability and Random Processes	Theory	BS	3	1	0	0	4	-
4	U18ECT4104	Transmission Lines and Waveguides	Theory	PC	3	1	0	0	4	U18ECT3004
5	U18INI4600	Engineering Clinic IV	Practical & Project	ES	0	0	4	2	3	U18INI3600
6	U18.....	Open Elective I	Theory	OE	3	0	0	0	3	-
Total Credits									22	
Total Contact Hours/week									25	

Semester V

S.No.	Course Code	Course Title	Course Mode	CT	L	T	P	J	C	Prerequisite
1	U18ECI5201	Communication Engineering- I	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECT3101
2	U18ECI5202	Computer Architecture and Microprocessors	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECI3203
3	U18ECI5203	Communication Networks	Embedded - Theory & Lab	PC	3	0	2	0	4	-
4	U18ECT5004	Control Systems	Theory	PC	3	0	0	0	3	-
5	U18ECT5005	Antennas and wave propagation	Theory	PC	3	0	0	0	3	U18ECT4104
6	U18INI5600	Engineering Clinic V	Practical & Project	ES	0	0	4	2	3	U18INI4600
Total Credits									21	
Total Contact Hours/week									27	

Semester VI

S.No.	Course Code	Course Title	Course Mode	CT	L	T	P	J	C	Prerequisite
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1	U18ECI6201	Communication Engineering- II	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECI5201
2	U18ECI6202	Microcontrollers	Embedded - Theory & Lab	PC	2	0	2	0	3	U18ECI5202
3	U18ECI6203	VLSI and HDL Programming	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECI3203
4	U18.....	Open Elective II	Theory	OE	3	0	0	0	3	-
5	U18ECE...	Professional Elective I	Theory	PE	3	0	0	0	3	-
6	U18ECE...	Professional Elective II	Theory	PE	3	0	0	0	3	-

Total Credits

20

Total Contact Hours/week

23

Semester VII

S.No.	Course Code	Course Title	Course Mode	CT	L	T	P	J	C	Prerequisite
1	U18ESP7701	Project Phase I	Project only Course	PW	0	0	0	6	3	-
2	U18ECT7002	Wireless Communication	Theory	PC	3	0	0	0	3	U18ECI6201
3	U18ECI7203	Optical Communication	Embedded - Theory & Lab	PC	3	0	2	0	4	-
4	U18ECI7204	RF and Microwave Engineering	Embedded - Theory & Lab	PC	3	0	2	0	4	U18ECT4103
5	U18ECE...	Professional Elective III	Theory	PE	3	0	0	0	3	-
6	U18ECE...	Professional Elective IV	Theory	PE	3	0	0	0	3	-

7	U18INT7000	Professional Communication & Analytical Reasoning	Theory	HS	3	0	0	0	3	-
Total Credits									20	
Total Contact Hours/week									23	
Semester VIII										
S.No.	Course Code	Course Title	Course Mode	CT	L	T	P	J	C	Prerequisite
1	U18ESP8701	Project Phase II	Project only Course	PW	0	0	0	24	12	-
Total Credits									12	
Total Contact Hours/week									24	

List of Mandatory Courses

S.No	Course Code	Course Title	Course Mode	Course Type	Semester
1	U18VEP1501	Personal Values	Practical	HS	1
2	U18VEP2502	Inter Personal values	Practical	HS	2
3	U18VEP3503	Family Values	Practical	HS	3
4	U18CHT3000	Environmental Science and Engineering	Theory	MC	3
5	U18INT4000	Constitution of India	Theory	MC	4
6	U18VEP4504	Professional Values	Practical	HS	4
7	U18VEP5505	Social Values	Practical	HS	5
8	U18VEP6506	National Values	Practical	HS	6
9	U18VEP7507	Global Values	Practical	HS	7

Curriculum Structure for PG programmes:

M.E. STRUCTURAL ENGINEERING

Semester I									Pre-requisite
S.No	Course code	Course Title	Course Mode	L	T	P	J	C	
1	P18MAI1201	Applied Numerical Methods for Structural Engineering	Embedded	3	0	2	0	4	-----
2	P18SET1001	Advanced Solid Mechanics	Theory	3	0	0	0	3	-----
3	P18SEI1202	Design of Advanced Concrete Structures	Embedded	3	0	2	0	4	-----
4	P18SEI1203	Advanced Concrete Technology	Embedded	3	0	2	0	4	-----
5	P18_	Professional Elective I	Theory	3	0	0	0	3	-----
Total Credits								18	
Total Contact Hours/week								21	
Semester II									Pre-requisite
S.No	Course code	Course Title	Course Mode	L	T	P	J	C	
1	P18SET2001	Finite Element Method	Theory	3	0	0	0	3	-----
2	P18SEI2202	Structural Dynamics	Embedded	3	0	2	0	4	-----
3	P18SET2003	Advanced Design of Steel Structures	Theory	3	0	0	0	3	-----
4	P18_	Professional Elective II	Theory	3	0	0	0	3	-----
5	P18SEP2504	Design Studio	Laboratory	0	0	4	0	2	-----
Total Credits								15	
Total Contact Hours/week								18	

Semester III									Pre-requisite
S.No	Course code	Course Title	Course Mode	L	T	P	J	C	
1	P18_	Professional Elective III	Theory	3	0	0	0	3	-----
2	P18_	Professional Elective IV	Theory	3	0	0	0	3	-----
3	P18SEP3701	In-plant Training*	Project	0	0	0	0	1	-----
4	P18SEP3702	Project Phase I / Industry Project	Project	0	0	0	24	12	-----
* At the end of second semester for 2 weeks									-----
Total Credits								19	
Total Contact Hours/week								30	

Semester IV									Pre-requisite
S.No	Course code	Course Title	Course Mode	L	T	P	J	C	
1	P18SEP4701	Project Phase II / Industry Project	Project	0	0	0	36	18	-----
Total Credits								18	
Total Contact Hours/Week								36	

List of Mandatory Audit Courses									Semester Offered
S.No	Course code	Course Title	Course Mode	L	T	P	J	C	
1	P18SEA0001	Disaster Management	Audit	3	0	0	0	0	2

List of Electives									Pre-requisite
S.No	Course code	Course Title	Course Mode	L	T	P	J	C	
1	P18INT0001	Statistics & Research Methodology	Theory	3	0	0	0	3	-----

2	P18SEE0001	Design of Bridges	Theory	3	0	0	0	3	-----
3	P18SEE0002	Design of Pre-Stressed Concrete Elements	Theory	3	0	0	0	3	P18SEI1202
4	P18SEE0003	Earthquake Resistant Design of Structures	Theory	3	0	0	0	3	P18SEI2202
5	P18SEE0004	Smart Materials for Construction	Theory	3	0	0	0	3	-----
6	P18SEE0005	Structural Health Monitoring	Theory	3	0	0	0	3	-----
7	P18SEE0006	Experimental Methods and Model Analysis	Theory	3	0	0	0	3	-----
8	P18SEE0007	Design of Plates, Shells and Spatial Structures	Theory	3	0	0	0	3	-----
9	P18SEE0008	Design of Structures for Dynamic Loads	Theory	3	0	0	0	3	P18SEI2202
