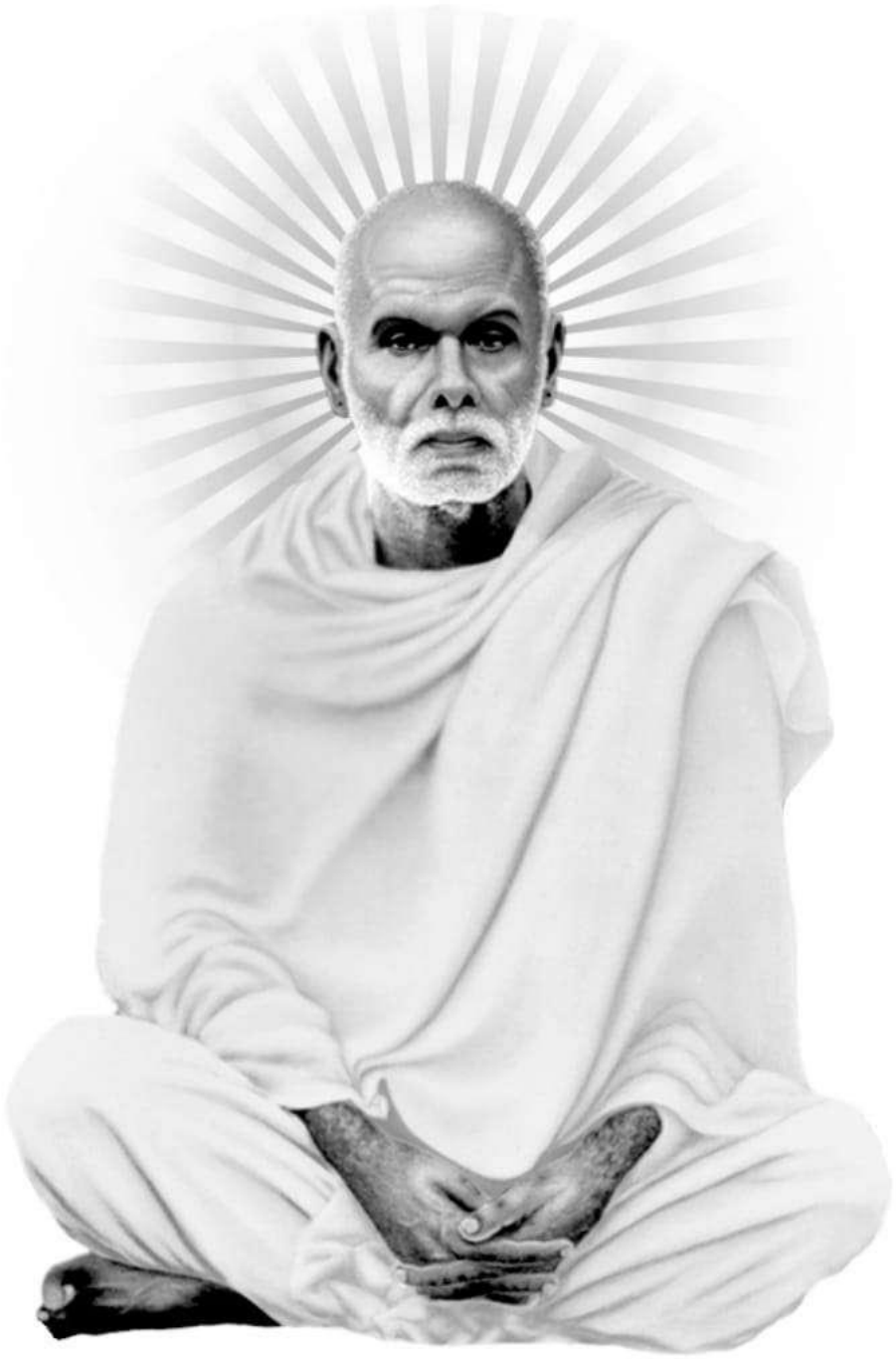
MAHAGURU
INSTITUTE OF TECHNOLOGY

HAND BOOK
2020 - 2021

Managed by Sree Gurudeva Charitable & Educational Trust
Pallickal P.O., Mavelikara, Alappuzha Dist. 690503, Kerala

Tel : 0479 - 2331696, 2331391, 2331392 Fax : 0479 - 2331304, Mob : 9447919000
Email : office@mahagurutech.ac.in, http://www.mahagurutech.ac.in/



SREE NARAYANA GURU

The Inspiring Sage

" Organize & Be Strengthened ; Literate & Be Enlightened "

THE MANAGEMENT

Sri Gokulam Gopalan
Chairman

Sri Subash Vasu
General Secretary

Sri V. Sadasivan
Asst. Secretary

Sri S. Baburaj
Treasurer

COLLEGE PRAYER

ദൈവമേ കാത്തുകൊൾകങ്ങ് നീയല്ലൊ മായയും മായാ-
കൈവിടാതിങ്ങ് ഞങ്ങളെ വിയും മായാവിനോദനും
നാവികൻ നീ ഭവാബ്ദിക്കൊ- നീയല്ലൊ മായയെനീക്കി
രാവിവൻ തോണി നിൻപദം സായൂജ്യം നൽകുമാര്യനും

ഒന്നൊന്നായെണ്ണിയെണ്ണിത്തൊ- നീ സത്യം ജ്ഞാനമാനന്ദം
ട്ടെണ്ണും പൊരുളൊടുങ്ങിയാൽ നീതന്നേ വർത്തമാനവും
നിന്നിടും ദൃക്കുപോലുള്ളം ഭൂതവും ഭാവിയും വേറ-
നിന്നിലസ്പന്ദമാകണം ല്ലോതും മൊഴിയുമോർക്കിൽ നീ

അന്നവസ്ത്രാദി മുട്ടാതെ അകവും പുറവും തിങ്ങും
തന്നുരക്ഷിച്ചു ഞങ്ങളെ മഹിമാവാർന്ന നിൻ പദം
ധന്യരാക്കുന്ന നീയൊന്നു- പുകഴ്ത്തുന്നു ഞങ്ങളങ്ങ്
തന്നെഞങ്ങൾക്കു തമ്പുരാൻ ഭഗവാനേ, ജയിക്കുക.

ആഴിയും തിരയും കാറ്റു- ജയിക്കുക മഹാദേവാ,
മാഴവും പോലെ ഞങ്ങളും ദീനാവനപരായണാ
മായയും നിൻ മഹിമയും ജയിക്കുക ചിദാനന്ദാ
നീയുമെന്നുള്ളിലാകണം ദയാസിന്ധോ, ജയിക്കുക

നീയല്ലോ സൃഷ്ടിയും സ്രഷ്ടാ ആഴമേറും നിന്മഹസ്സാ-
വായതും സൃഷ്ടിജാലവും മാഴിയിൽ ഞങ്ങളാകവേ
നീയല്ലൊ ദൈവമേ, സൃഷ്ടി- ആഴണം വാഴണം നിത്യം
ക്കുള്ള സാമഗ്രിയായതും വാഴണം വാഴണം സുഖം

STUDENT PROFILE

Name :_____

Register/Roll No. :_____

Programme & Branch :_____

Semester :_____

Batch (yr) :_____

Day Scholar/Hosteler : Day scholar Hostler

Present Address :_____

_____

_____

_____

Phone No. :_____

E mail ID :_____

Name & Address of :_____

Local Guardian _____

_____

_____

Phone No. :_____

E - Mail ID :_____

Emergency Contact Ph: No.:_____

Blood Group :_____

Bus Route Opted & :_____

Boarding Point :_____

Vision

To become a globally recognized centre of excellence for Science, Technology & Engineering education, committed to Quality teaching, Learning and Research which will promote Leadership, Job creation, Social commitment and Service to nation building.

Mission

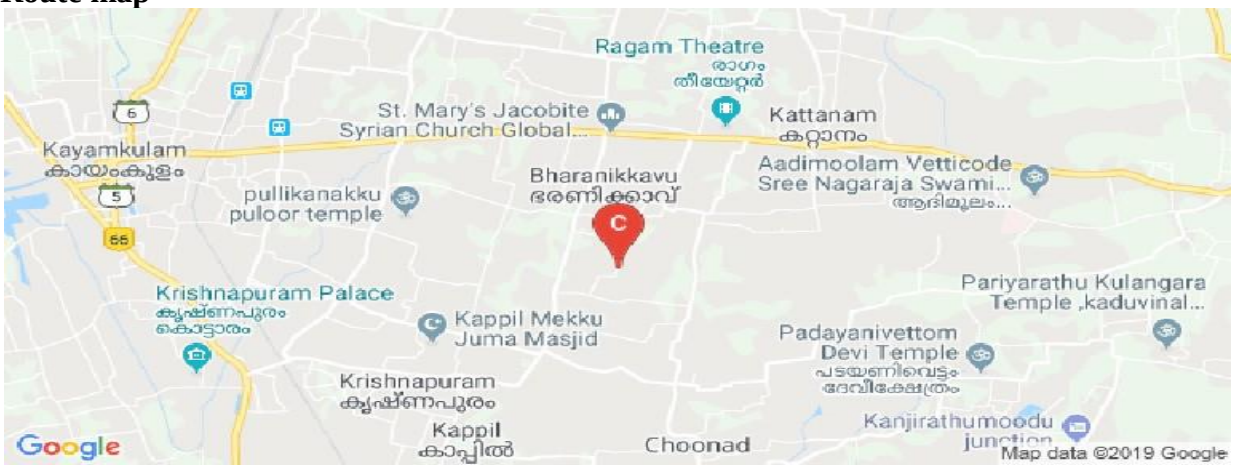
- To create and disseminate knowledge in recent technologies and drive economic development.
- To provide world-class environment for faculty and students to prepare them for addressing the engineering challenges and opportunities.
- Aims to transform the learners into efficient engineers and facilitate socially responsive research, innovation and entrepreneurship.

1. Introduction

Mahaguru Institute of Technology is a new generation engineering college promoted by Sree Gurudeva Charitable & Educational Trust. The Trust comprises a group of entrepreneurs and philanthropists committed to social development through education of global standards. The college has been approved by AICTE, affiliated to A P J Abdul Kalam Technological University, and recognized by the Government of Kerala. The commitment of the college for the academics and discipline has made this institution one of the best in this region. The motto of the college is**:**

Discipline, Dedication and Determination.

Route map



2. Managing Trustees

Chairman	**:**	Sri Gokulam Gopalan
General Secretary	**:**	Sri Subhash Vasu
Treasurer	:	Sri S Baburaj
Assistant Secretary	:	Sri V Sadasivan

Academic Advisory Members

Sri G Jayachandra Raj (Economist and Astrologer)

Dr Achuthsankar S Nair, M Tech, M Phil, PhD

3. Programmes

The college offers the following programmes, with sanctioned intake as shown below:

(a) UG Programme – B.Tech

Civil Engineering
Computer Science and Engineering
Electronics and Communication Engineering
Mechanical Engineering
Mechanical Engineering (Production)
Electrical and Electronics Engineering

(b) PG Programme–M.Tech

Structural Engineering and Construction Management (CE)
Signal Processing (ECE)
Machine Design (ME)

4. Infrastructure

The college is situated in a spacious campus and has excellent infrastructure to conduct all the experiments and demo recommended in the syllabus. The college has the latest computer and internet facilities to cater to the experimental and project needs of the departments.

The salient features of the institution are:

1 Serene campus

2 Hostel for boys and girls with modern amenities

3 Committed and experienced faculty

4	Campus-wide Wi-Fi
5	Smart class rooms
6	Fee waiver and merit cum scholarships
7	ICT enabled learning
8	Industry incubation programme
9	Group advisory and faculty mentor scheme
10	Parent Teacher Association
11	Cultural and sports cell
12	National Service Scheme
13	IEEE Chapter
14	Placement Cell
15	Academic Enrichment and Remedial Programme
16	Twinning with International Academics
17	Integrated value education
18	Entrepreneur development cell
19	Value addition to courses for industry – research readiness

5. Faculty and Staff

The Principal

Dr. Manju J completed her PhD in Renewable Energy Sources from Anna University, Chennai and had her graduation in Electrical & Electronics Engineering. She started her career as an Assistant Professor in Narayanaguru College of Engineering, Manjalumoodu in the year 2004. She has published 8 papers in International Journals and presented more than 20 papers in National/International conferences. She has 16 years of experience out of which 15 years in teaching and 1 year in industry. She guided various UG and PG projects. Her areas of interest are Nanomaterials, Dye sensitized Solar cells and Renewable Energy. She had undertaken sponsored research projects of DST and STP. She is a Research Guide of Anna University, Chennai. She is also a Ph. D Evaluation Committee member of Bharath University, Chennai

Dean (Academics)

Dr E Arun

Prof. (Dr.) E Arun has 30 years of teaching and research experience. As a research supervisor in Computer Science & Engineering, he has contributed substantially in research advancement by supervising research scholars. He has published research articles in reputed Scopus and SCI indexed National and International Journals. He has successfully completed Major Research Projects funded by AICTE. He was the UG and PG board of studies of various Universities. He served as the convener of many International Conferences. He has been a consultant to many automotive industries in the area of Artificial Intelligence. He has organized several FDPs, National and International Conferences/Workshops sponsored by AICTE, CSIR and various industries. He is a Member of Advisory Committee of core industries to provide consultancy activities including Technical Lecture, workshops, consultancy and R&D project guidance.

Dr B Sasi, M Sc, M Phil, PhD

Dr B Sasi has a teaching experience of over 29 years in the field of physics. He completed his post graduation in Physics in the year 1983 from the University of Bhopal and his M Phil from University of Kerala in the year 2000.He did his PhD in Optoelectronics from the University of Kerala in the year 2008. He started his service in teaching field as a lecturer ofPhysics from Devaswom Board College, Thalayolapparambu in the year 1983 and retired in the year 2014. He then joined as Associate Professor of Physics in the Department of Applied Science, Rajadhani Institute of Engineering and Technology, Attingal. He has published five papers in International Journals and participated in seven national seminars. Presently he is a member of the Board of studies in Optoelectronics, under the Faculty of Applied Science & Technology, University of Kerala.

Placement cell

Campus Placement cell of MIT has commenced its operation from the year 2010. Initiating a series of campus recruitments, the cell is making arrangements with Multi National Companies for placement of students in the areas of information technology, electronics and communication services, civil and mechanical engineering. The mission and endeavor of this cell is to enhance and facilitate the process of gainful employment for its divergent and distributive learner population for entry level jobs as well as mid career level employment opportunities, matching and commensurate with their personnel and academic profiles. In the present day business scenario, companies demand job - ready candidates for employment at the shortest possible time period. The unit takes right steps in identifying the demands of the current industry and prepares the student towards this need. Adequate emphasis is given for soft skill development complementing the regular academic programs.

The qualified students are expected to be equipped with employable skills suitable for respective sectors. Taking into account this scenario, the cell has aligned its strategies to enhance the Employability Quotient of the students

by imparting knowledge and training after their skills mapping and bridging the gaps through appropriate guidance. Aptitude tests and group discussions are conducted at regular intervals to enable the students to improve their performance in competitive examinations. This unit is headed by Placement Director who is assisted by student representatives from all departments.

Counseling Cell

The counseling cell of MIT is headed by Sister Leona (Counselor). It helps our students to deal with emotions and live in peace, freedom and harmony with oneself. Strong emotions like aggressive anger, extreme sadness and fear may cause problems in person's life especially the family and society. Counseling helps the students to become aware and accept their emotions in a positive way and deal with it in a constructive mode.

Medical Care

We provide our students with medical assistance in case of emergency injury or health problems. We are associated with Saravana Nursing Home, Manjadithara for health care services for our students. Dr.P.T. Muthulingam the chief medicine professional who helps and gives medicinal aids to our students as in when required.

Debate and Literary Club

Literary club helps to promote and develop the literary skills of students. The various programmes conducted under this club helps in developing the communication and language of students thus helping them to build up their confidence and presentation skills. This also improves their writing skills and helps in sharpening their vocational skills.

Arts and Cultural Club

The arts and cultural club aims at reckoning the artistic skills of our students. It gives an exposure and platform to excel and exhibit their creative skills. Various

cultural programmes are conducted in the college under this club that includes different art forms.

Edison's Club

Edison's club is essentially a group of students in each department supervised and supported by their club advisors. It aims to create and raising the scientific and practical efficiency in order to help students to achieve their academic goals, and to overcome technical problems. Also, it supports student projects that can be presented to different exhibitions inside and outside of college.

Sports Club

Our sports club has come up with the purpose of playing diverse sports. Many outdoor games like volleyball, cricket, football, badminton, kabadi etc keep the students fit and has become basic for regular physical activity. Not only this, our club also offers many indoor games like chess, carom, table tennis etc.

Yoga Club

The main Motto of Yoga club is to make individuals physically and mentally fit to take up their day to day work with ease and confidence. Through Yoga club, yoga training is provided with a regular periodic practice schedule and guidelines for smooth conduct and also see that these practices give benefits to the students. Yoga can help your brain work better and keep your mind focused.

Film and Photography

Film and Photography is essential for students in each department, which aims at improving the photographic skills and to incorporate it with the technical aspects. It helps to lay down the plans for the setup of equipments, steps and procedures to be followed.

NSS

The Motto of NSS "Not Me But You", reflects the essence of democratic living and upholds the need for self-less service. NSS helps the student's development

& appreciation to other person's point of view and also show consideration towards other living beings. The philosophy of the NSS is a good doctrine in this motto, which underlines on the belief that the welfare of an individual is ultimately dependent on the welfare of the society as a whole and therefore, the NSS volunteers shall strive for the well-being of the society.

NCC (Permission Expected)

NCC aims at developing discipline, character, brotherhood, the spirit of adventure and ideals of selfless service amongst young citizens. Not only these, it also aims to enlighten leadership qualities among the youth who will serve the Nation regardless of which career they choose. It also motivates the young to choose a career in armed forces.

Department of Civil Engineering

On completion of the programme students will have:

1. Become competent and engaged engineering professionals, applying their technical and managerial skills in the planning, design, construction, operation or maintenance of the built environment and global infrastructure, and utilizing their skills to analyze and design systems, specify project methods and materials, perform cost estimates and analyses, and manage technical activities in support of civil engineering projects.
2. Initiated an active program of life-long learning, including studies leading to professional licensure or an advanced degree in engineering that provides for continued development of their technical abilities and management skills, and attainment of professional expertise.
3. Developed their communication skills in oral, written, visual and graphic modes when working as team members or leaders, so they can actively participate in their communities and their profession.
4. Established an understanding of professionalism, ethics, quality performance, public policy, safety, and sustainability that allows them to

be professional leaders and contributors to society when solving engineering problems and producing civil engineering solutions.

5. Understood the possibilities of having entrepreneurial skills and innovative ideas.

6. Become capable to do projects based on subject knowledge as well as on the lines of research.

Name	***Designation***	***Area of Specialization***
Prof. Priya Grace IttiEipe	HOD	Structural Engg
Ms Suji P	Asst Professor	Structural Engg
Ms Athira Raj	Asst Professor	Geo Informatics
Ms Najma Ananthakumar	Asst Professor	Computer Aided Structural Engg
Ms Lekshmy	Asst Professor	Construction Engg & Management
Mr Ajay	Asst Professor	Construction Engg & Management
Ms Rajalakshmi U	Asst Professor	Structural Engg
Ms Reshma S	Asst Professor	Structural Engg
Ms Neeraja Chandrashekhar	Asst Professor	Transportation Engg
Ms Nisha R	Tradesman	

Department of Mechanical Engineering

1. Apply their mechanical engineering education to address the full range of technical and societal problems with creativity, imagination, confidence and responsibility.
2. Serve as ambassadors for engineering by exhibiting the highest ethical and professional standards, and by communicating the importance and excitement of this dynamic field.
3. Retain the intellectual curiosity that motivates lifelong learning and allows for a flexible response to the rapidly evolving challenges of the 21st century.
4. Ability to identify, formulate and solve mechanical engineering problems based on data interpretation, design, experiment and analysis of results.
5. Develop awareness of the ethical, professional and environmental implications of work in a global and societal context.

Name	***Designation***	***Area of Specialization***
Mr Arun Kumar G	HOD	Thermal Engg
Mr John P George	Asst Professor	Mechanical Engg
Mr Rantheesh J	Asst Professor	Manufacturing Engg
Mr Sumanlal M S	Asst Professor	Manufacturing & Automation
Mr Vinod Vijayan	Asst Professor	Thermal Engineering
Mr Athul M V	Asst Professor	Automotive Engineering
Mr Arundev M G	Asst Professor	Machine Design
Mr Rahul O	Tradesman	
Mr Vamanan K	Tradesman	
Mr Arun Kumar M	Tradesman	

Department of Mechanical (Production) Engineering

1. Production Engineering Programme instills sound engineering knowledge and problem solving skills among the students.
2. Production Engineering Programme imparts knowledge to students in the latest technological topics on Production Engineering and to provide them with opportunities in taking up advanced topics in the field of study.
3. Production Engineering Programme moulds students into good engineering professionals who can find roles in industry.
4. Production Engineering Programme orients students towards developing socially relevant products and services
5. Graduates become product and process design professionals for sustainable manufacturing.

Name	***Designation***	***Area of Specialization***
Mr Yadhu Krishnan	Asst Professor	Thermal Engg
Mr Sangeeth S	Asst Professor	Machine Design
Ms Arya P Mohan	Asst Professor	Propulsion Engg

Department of Computer Science & Engineering

1. To provide students with a strong foundation knowledge and to engage them in lifelong learning and self-education.
2. To enable students to acquire skills to communicate effectively and encourage team work.
3. To prepare graduates who will be successful professionals in industry, government, academia, research.
4. To develop an ability to analyze the requirements of the software, understand the technical specifications, design and provide solutions for a product designs.

5. To prepare the students for a successful career and work with values & social concern.
6. To inculcate a passion towards higher education, research and lifelong learning in the field of Computer Science and Engineering.

Name	***Designation***	***Area of Specialization***
Ms Suma S G	HOD	Computer Science and Engg
Ms Amitha R	Asst Professor	Computer Science and Engg
Mr Sukesh Babu V S	Asst Professor	Computer Science and Engg
Mr Dhanunath R	Asst Professor	Computer Science and Engg
Ms Vivitha Vijay	Asst Professor	Computer Science and Engg
Ms Neethu Krishna	Asst Professor	Computer Science and Engg
Ms Chithra S Ravi	Asst Professor	Computer Science and Engg
Ms Devika P	Asst Professor	Machine Learning
Ms Chippy T	Asst Professor	Computer Science and Engg
Ms Hema H	Asst Professor	Software Engineering
Ms Sreelekshmi B	Asst Professor	Computer & Informational Science
Mr Binu S Krishnan	System Admin	Network & Security
Ms Sreevidya S	Lab Assistant	

Mr Vishnu Lab Assistant

Department of Electronics and Comm Engineering

1. To provide students with the fundamental and advanced knowledge of concepts in Electronics and Communication.
2. To provide students with the skill of designing, analyzing and developing electronic systems and equipments.
3. To enable the students to apply their knowledge in industry, academic or research to develop creative and innovative products.
4. To provide students with the ability to work as a team, to communicate effectively, to have professional ethics and to understand their responsibilities in the society.

Name	***Designation***	***Area of Specialization***
Mr Ratheesh Kumar S	HOD	Applied Electronics
Mr AnupVasavan	Asst Professor	Electronics & Comm Engg
Mr Prajeesh R	Asst Professor	VLSI Design
Ms Sony Sethukumar	Asst Professor	Communication Systems
Ms Ponnambili S	Asst Professor	Applied Electronics
Ms Malu U	Asst Professor	VLSI Design
Ms Samitha T	Asst Professor	Signal Processing
Ms Remya K	Asst Professor	Wireless Technology
Ms Arathi Babu	Asst Professor	Power Electronics & Drives
Ms Soubhagya Sasikumar	Asst Professor	VLSI & Embedded

		Systems
Ms Chinchu S	Asst Professor	Signal Processing
Mr SathyaBabu	Tradesman	

Department of Electrical and Electronics Engineering

1. To prepare under graduate students to excel in technical profession/ industry and/or higher education by providing a strong foundation in mathematics, science and engineering.
2. To provide students with high moral and ethical values, life-long learning attitude and societal responsibilities.
3. To train students to investigate complex engineering problems using modern techniques and propose effective solutions.
4. To inculcate in students professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context.
5. To provide student with an academic environment aware of excellence, leadership, written ethical codes and guidelines, and the life-long learning needed for a successful professional career.

Name	***Designation***	***Area of Specialization***
Mr Rahul P Raj	HOD	Power Systems
Ms Karthika V S	Asst Professor	Power & Energy
Ms Aryamol Sudhakaran	Asst Professor	Power and Energy
Ms Seethu Vijayan	Asst Professor	Power Systems
Ms Gayathri Devi G	Asst Profssor	Power Electronics & Drives
Mr Arjun Mohanlal	Asst Profssor	Power Electronics & Drives

Mr Amjith S	Asst Professor	Electrical Machines
Mr Rajan R	Technician	
Mr Dayanithi	Technician	

Humanities

Name	***Designation***	***Area of Specialization***
Ms Geetha	Professor	Economics

Engineering Physics

Name	***Designation***	***Area of Specialization***
Dr B Sasi	Professor	Opto Electronics
Ms Sreeti Gangadharan	Asst Professor	Physics

Engineering Chemistry

Name	***Designation***	***Area of Specialization***
Dr Shalini Sasi	Asst Professor	Organic Chemistry
Ms Renju R	Asst Professor	Chemistry

Engineering Mathematics

Name	***Designation***	***Area of Specialization***
Ms Lijimole S	Asst professor	Stochastic Process
Ms Sangeetha S	Asst professor	Mathematics
Ms Ambilimol V P	Asst professor	Mathematics
Mr Ambady V K	Asst professor	Mathematics

Library

Name	***Designation***	***Qualification***
Ms Smija Raju	Assistant Librarian	MA, M L I Sc
Ms Beena P	Library Assistant	
Ms Sheeja Santhosh	Library Assistant	

Administration/ Accounts

Name	***Designation***	***Qualification***
Mr Suresh Kumar	Assistant Administrative Officer	BA, Economics
Ms Deepa K S	Chief Accountant	M Com, B Ed
Ms Sreelatha P R	Accountant	M Com
Ms Anpu Ashok	Office Assistant	M Com
Mr Rejith R	Supervisor	B Com
Mr Sivanandan	Store Manager	
Ms Priya C	Store Assistant	
Mr Bhargavan	Store Assistant	
Ms Bindhu T G	Store Assistant	
Mr K R C Pillai	Warden Mens hostel	
Ms Rema D	Warden Ladies hostel	
Mr Rajendran	Electrician	

Mr Vineeth V	Electrician
Ms Laila Soman	LGS

6. Academic Days

The college shall function for 5 days a week, Monday to Friday.The college hours are from 8.30 am to 4.30 pm with lunch break from 12.45 pm to 1.30 pm. Office hours are from 9 am to 5 pm with lunch break from 1.30 pm to 2 pm.

7. Finishing School

Language lab & finishing school are unique programmes of the college to equip students for the best jobs in the industry. It aims to enrich students with necessary technical and soft skills that will give them an edge over others. The programme will help students to acquire international certification viz, CCNA, MCSE, MCCP, CAD, VLSI etc, along with regular studies. This will give value additional to the courses. Communication skills as well as life skills training have assumed great importance in modern personal, academic and professional life. The college has taken steps to improve such skills and provide training in soft skills, aptitude tests, reasoning abilities etc.

8. Hostels and Mess

Hostel facilities are available for both boys and girls. The hostels are established in the campus itself. A hygienic, state of art mess is also available in the campus. Purified drinking water is supplied at different points in the campus.

9. Transportation

The college has a fleet of buses making daily trips to the following major towns in and around Alappuzha, Kollam and Pathanamthitta Districts. Four AC buses ply to Kollam, Adoor, Changanacherry & Kanichukulangara.

Alappuzha	Kollam	Adoor
Thottappally	Chavara	Pathanapuram
Haripad	Sasthamkotta	Pathanamthitta
Thrikkunnappuzha	Bharanikkavu	Chengannoor
Mavelikara	Kottarakkara	Changanassery
Kochiyude Jetty		

The students are advised to be at the bus stop 10 minutes before the departure time of the bus. They are also required to maintain discipline and decorum inside the buses. Any change in the bus timings or routes will be notified accordingly. The day scholars, who would like to come regularly to college in their own vehicles, must register their vehicles with the administrative office within the first week of commencement of classes in the semester/year. In order to register themselves for a slot in the parking space, the students must bring the documents such as ID card, vehicle registration certificate and driving license.

10. Student Advisors

A counseling system for students is put in place in the college. A student advisor will look after the interests of 15 to 20 students and will guide them. All student advisors report to the concerned department HODs who are the chief advisors. The students can meet their advisor daily between 1.15 pm and 1.30 pm to discuss their problems and get immediate result. The student advisor will collect all details of student under his/her charge. He/she shall keep records of students profile, attendance, class performance and other details of students under his/her charge. The student advisor will in effect, function as the first guardian of the student in the college. All academic issues of the students will be considered by the Principal only on the recommendations of the student advisor.

The student advisors will send specific recommendations relating to all student matters to the HODs, who may refer the matter to the Principal, if required. A formal meeting of the students and the student advisors will be held once in a month, where all the relevant issues will be discussed and recorded. The student advisors will report such proceedings to the HODs through a formal meeting, who will in turn report the matter to the Principal.

11. Fee Waiver Scheme

Tuition fee waiver scheme has been introduced in the college and covers a total of 24 students. Six students from every branch will be selected each year on the basis of merit cum means in the pattern prescribed for the same.

12. Co-curricular and Extra-Curricular Activities

The college provides co-curricular and extra-curricular activities in addition to the normal academic activities. Considerable importance is given to sports activities. In addition to normal

lectures, special lectures and guest lectures are also periodically arranged to expose the students to recent developments in identified areas of science and technology. Also, workshops and conferences are arranged to demonstrate state-of-the-art-technologies. Sports facilities are also provided to the students.

13. National Service Scheme

National Service Scheme Unit with an enrolment of 100 students is functioning in the college. The college encourages students' participation in social activities and rural development programmes through this scheme. The activities of NSS have been divided into two.

a. Regular scheme in which the students render their service to the community such as general awareness programme and improvement of sanitation in the neighborhood. Students have to serve 120 hrs per annum in these activities.

b. Special camp programme for 10 days in which the students focus on water shed management, waste land development, environmental friendly activities and rural development programs.

14. Industry Incubation Programme

Industry incubation programme is a novel and unique concept being introduced in the college, with the motto "Earn While You Learn". It envisages involving students having motivation to take part in sponsored projects within the campus. This scheme will provide students with real time on the job experience that will make them readily acceptable to industry. Further, the programme enables the students to earn money as they study.

15. Attendance & Leave Rules

The students are expected to attend all classes regularly without fail. They have to be punctual. Attendance will be recorded in every class. Application for leave in the prescribed format should be given in the case of any absence from classes. The University regulations with respect to attendance requirements must be strictly met with to be eligible to register for the examination. Notwithstanding the University norms, the students should endeavor to get 100 % attendance. Prior permission is to be obtained from competent authority whenever leave is availed. The class advisors are authorized to sanction one day leave per month. The students must apply through class advisor for leave on medical grounds or for leave beyond one day. Any medical leave taken under emergency must be regularized by an application along with a medical certificate after returning from leave.

16. Anti-Ragging Cell

It is widely recognized that ragging is a menace and social evil. Ragging is treated as criminal offence. All efforts shall be taken to prevent any incident of ragging or such evils in the college. Students and their parents have to enter into a joint undertaking not to get involved in such incidents of social evil or crime. Provisions enshrined in various Anti Ragging Acts, including the Kerala Prohibition of Ragging Act (1998) will be strictly enforced in the college. Those found guilty of ragging are liable to be expelled from college and shall be proceeded against legally attracting punishment like fine and/or imprisonment. An Anti Ragging Cell, consisting of the following members, has been constituted for preventing ragging in the college:

Dr Manju J, Principal	Chairman
Prof K S Sasi, HOD First year	Member
Prof Suma S G, HOD CSE	Member
SHO, Pallickal	Member
Media Representative	Member
Member, Bharanikkavu Panchayat	Member
Student Nominee	Member
PTA Nominee	Member

The students or parents can inform the Principal or any faculty member of the Anti-Ragging Cell any incidents of ragging.

17. Uniform

All the students have to conform to the dress code stipulated by the college form time to time.

Boys: - Half sleeved, cuff buttoned shirt should be neatly inserted in trousers on which black waist- belt to be worn, Black leather shoes alone are permitted. Chappals and casual dress like jeans, baggy pants, T-shirts etc. are strictly prohibited. Hair should be properly trimmed and no student will be allowed to grow beard. Bangles, bracelets and studs should be avoided.

Girls: - Half sleeve- shirt which is not inserted, sleeveless overcoat, slack trousers and black shoes are prescribed. Hair should properly be locked. In the labs and workshop prescribed overcoats must be worn.

18. Code of Conduct

All the students must strictly adhere to the Rules & Regulations and code of conduct enforced by the college from time to time. In general, the students should conduct themselves with dignity and decorum and observe the following rules:

1. The students should be in proper dress code & should carry Identity Card while in the campus at all times and ID card should be produced when asked for by the college authorities.
2. The students should not loiter in the corridors or wander in the campus unnecessarily during academic hours.
3. The students should maintain personal cleanliness within the campus and keep the campus environment clean.
4. Use of mobile phones is strictly prohibited inside the campus. In the event of violation of this rule, the phone will be confiscated and a fine will be imposed.
5. The students should approach their student advisors for any need or grievance. All applications to the principal should be routed through the student advisor.
6. The students are prohibited from physically harming, threatening or abusing anyone in the campus.
7. The students should not trespass into unauthorized zones.
8. The students should not damage or disfigure the college property in any way. The college will take steps to recover appropriate compensation from the students individually or collectively in the event of damage caused to the college properties.
9. Possession and use of weapons by the students are strictly prohibited, and would invite actions under the provisions of the laws of the land.
10. Possession, use and distribution of drugs, alcohol, tobacco products etc are banned in the campus and treated illegal. This is liable for severe punishment.
11. The students are expected to obey teachers and be respectful towards them at all times. Misbehavior towards teachers / staff will be considered as act of indiscipline and will invite disciplinary action.
12. It is mandatory for all students to comply with the code of conduct.
13. Any other matter not covered by the above points will be decided by the Principal (in consultation with the Management) and his decision will be final.

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B Tech Degree Course

REGULATIONS 2019

This may be called the A. P. J. Abdul Kalam Technological University Academic Regulations for B. Tech, 2019. These are subject to the provisions of the APJ Abdul Kalam Technological University Act, 2015, the statutes and ordinances if any issued in the subject from time to time. It is the express understanding that these regulations are subject to the approval of the concerned statutory bodies of the University. These regulations shall be applicable for students admitted from 2019 onward.

1. Preamble

R1.1 The University has the right to modify the regulations from time to time.

R1.2 In all matters related to the regulations, the decision of the University and its interpretation given by the BOG shall be final and binding.

2. Admission

R2.1 Admission policy, eligibility for admission and admission procedure shall be decided by the University or the competent statutory authority for admissions from time to time.

R2.2 If at any time after admission, it is found that a candidate has not fulfilled any of the requirements stipulated by the University or the statutory body concerned, the Vice Chancellor may revoke the admission of the candidate and report the matter to the BOG.

R2.3 No student shall be permitted, under any circumstances, to change the branch/stream to which he/she is admitted by the competent authority for admission.

R2.4 A student admitted to a particular institute shall continue studying in that institute till the completion of the course, unless he/she is permitted an inter college transfer as per R9.1 to 9.12.

3. Structure of B.Tech. Program.

R3.1 The duration of the B.Tech. Program shall be 4 years (8 semesters)

R3.2 The maximum duration shall be six academic years spanning 12 semesters.

R3.3 Every academic year shall have two semesters "1st July to 31st December (Odd semester)" and "1st January to 30th June (Even semester)". Each semester shall have minimum of 72 working days. The vacation of the faculty and staff shall be as per the Government orders from time to time.

R3.4 Every branch of the B.Tech Program shall have a curriculum and syllabi for the courses approved by the Academic Council. Syllabus for any course shall be normally modified / updated once in four years. However, innovative elective courses can be included as and when required, on the recommendations of the respective Board of Studies and subject to the approval of the Academic Council. All revisions shall be based only on the recommendations of the Board of Studies concerned.

R3.5 The academic programs of the University follow the credit system. The general pattern is as below:

1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 to 2 Hours Practical(P) per week	1 credit
3 to 4 Hours Practical(P) per week	2 credit

The workload of a faculty member shall be the actual number of hours engaged by the faculty member.

R3.6 The curriculum of any branch of the B.Tech. Program shall have a total of 160 academic credits and 2 additional pass/fail credits.

R3.8 No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum.
Credit per semester shall not be less than 15 or greater than 25 and cumulative credits shall not be less than 162.

R3.9 The medium of instruction shall be English. All examinations, project/seminar reports and presentations shall be in English.

4. Academic Monitoring and Student Support.

R4.1 Advisory System: There shall be one Senior Faculty Advisor (SFA) for a class and a faculty advisor (FA) each for 25 to 35 students in the class. The Principal shall assign a regular faculty member with minimum five years of experience as the Senior Faculty Advisor (SFA) in discussion with the Head of Department concerned.

R4.2 The documents regarding all academic and non academic matters of students under an advisory group shall be kept under the custody of Faculty Advisor/Senior Faculty Advisor.

R4.3 All requests/applications from a student or parent to higher offices are to be forwarded/recommended by his/her Faculty Advisor/Senior Faculty Advisor. Students and parents shall first approach their Faculty Advisor/ Senior Faculty Advisor for all kinds of advices, clarifications and permissions on academic matters. It is the official responsibility of the institution to provide the required guidance, clarifications and advices to the students and parents strictly based on the prevailing academic regulations.

R4.4 The SFA shall arrange separate or combined meetings with advisors; course faculty, Parents and students as and when required and discuss the academic progress of students under their advisory group. The Senior Faculty Advisor/ Faculty Advisor shall also offer guidance and help to solve the issues on academic and non-academic matters including personal issues of the students in their advisory group. Advisory meetings shall preferably be convened:

1. Immediately after the commencement of the semester.
2. Immediately after announcing the marks of first internal evaluation test.

The internal marks, activity points earned during the semester and eligibility of attendance shall be uploaded in the University portal only after displaying the same in the department notice board at least for two working days. This is for the information and feed back of the students. Any concerns raised by the students regarding attendance and internal marks and activity points shall be looked into in the combined meetings of advisors, course faculty and the students concerned. The principal/ HoD shall ensure the

proper redressal of the concerns raised by the students regarding internal assessment and attendance. The FA/SFA shall be the custodian of the minutes and action taken reports of the advisory meetings.

R4.5 The SFA shall get the minutes and action taken reports of advisory meetings approved by the Head of Department and the Principal. It shall be the duty of the HoD and the Principal to produce it before the University as and when required.

R4.6 The FA/SFA shall keep a hard copy of the consolidated statement of attendance, activity points and internal marks of the students in their advisory group. It shall be kept with the HoD without fail for all sorts of inspections.

R4.7 Regular communication with the parents of students in respect of progress in academic matters and other general issues shall be the responsibility of the Senior Faculty Advisor/ Faculty Advisor.

R4.8 The Principal shall inform/forward all regulations, guide lines, communications, announcements etc issued by the University regarding student academic and other matters to the HoDs/ Senior Faculty Advisors for information and timely action.

R4.9 It shall be the official responsibility of the Principal to arrange necessary orientation programmes to the HoDs, SFAs and SAs regarding student counseling, the prevailing University norms, regulations, guidelines and procedures on all academic and other University related matters.

5. Academic Auditing of affiliated institutions.

R5.1 There shall be academic auditing in each affiliated college at stipulated intervals. The academic auditing shall be conducted jointly by an Internal Quality Assurance Cell (IQAC) within the college and external academic auditor(s) appointed by the University. The Internal Quality Assurance Cell (IQAC) in each college shall oversee and monitor all the academic activities including all internal evaluations and examinations. This cell shall prepare academic audit statements in the formats prescribed by the University for each semester at regular intervals. These reports shall be presented to the external academic auditor(s), who shall use it as reference for independent auditing. The external auditor(s) shall submit the final audit report to the University in the prescribed format.

Academic auditing shall cover:-

a) Course delivery and adherence to the course plan, syllabus coverage, quality of question papers used for internal examinations, internal evaluation, maintenance of laboratory experimental set ups and equipments, practical assignments, mini projects and conduct of practical classes and their evaluation.
b) Co-curricular and Extra-curricular activities available for students, the monitoring mechanism of activity points to be earned by the students.
c) Academic functioning of the college encompassing students, faculty and college administration covering punctuality, attendance, discipline, academic, environment, learning ecosystem, academic accountability, academic achievements and benchmarking.

d) The audit shall also cover the quality criteria prescribed by NBA/NAAC.

6. Assessment

R6.1 There shall be End Semester Examinations (ESE) in every semester for all courses as prescribed under the respective curriculum, except the Lab/ workshops courses for 1 & 2 semesters. The End Semester Examinations shall be conducted by the University. Semester classes shall be completed at least ten days before the commencement of the End Semester Examination.

R6.2 The End Semester Examinations (ESE) shall be held twice in a year – May/June session (for even semesters) and November/December session (for odd semesters). However, the End Semester Examinations of the VII and VIII Semesters shall be conducted in both the sessions.

R6.3 Candidates in each semester shall be evaluated both by Continuous Internal Evaluation (CIE) and End Semester Examinations (ESE). The ratio of Continuous Internal Evaluation (CIE) to End Semester Examinations (ESE) shall be as below :

1. Theory Courses : 1 : 2
2. Laboratory Courses : 1 : 1
3. Project : CIE only
4. Seminar : CIE only

R6.4 Continuous Internal Evaluation (CIE)): The Continuous Internal Evaluation shall be on the basis of the day-to-day work, periodic tests (minimum two in a semester) and assignments (minimum two). The faculty member (s) concerned shall carry out the Continuous Internal Evaluation (CIE) for the course allotted to him/her. The CIE marks for individual subjects shall be computed by giving weightage to the following parameters unless otherwise specified in the curriculum.

The CIE marks for the attendance (20%) for each theory, practical and drawing shall be awarded in full, only if the candidate has secured 90% attendance or above in the subject. If a student has attendance for a subject below 90%, reduction in the marks for the attendance shall be made proportionally. The CIE marks obtained by the student for all subjects in a semester are to be published at least 5 days before the commencement of the University examinations. Duty leave shall be accounted for awarding the internal marks for attendance.

R6.5 Students, who have completed a course but could not write the end semester examination, shall be awarded "I' Grade, provided they meet other eligibility criteria (R6.6). They shall register (exam registration) and appear for the end semester examination at the next

opportunity and earn the credits without having to register (course registration) for the course again.

R6.6 The main eligibility criteria for registering to the End Semester Examination are attendance in the course and no pending disciplinary action. The minimum attendance for appearing for the End Semester Examination is 75% in each course. Students who do not meet these eligibility criteria are awarded an FE grade.

R6.7 The students with FE grade shall register for the courses during the normal semesters in which the courses are offered. However, for the seventh and eighth semester FE grade students can register for the courses in the next immediate chance, if offered by their institute.

R6.8 A student who does not register for all the courses listed in the curriculum for a semester shall not be eligible to enroll for the next higher semester.

R6.9 The maximum number of credits a student can register (course registration) for, in a semester is limited to 08 credits in excess of the total mandatory credits allotted in the curriculum for that semester.

R6.10 A student will be eligible for the award of B. Tech. Degree of the University on satisfying the following requirements:

1. Fulfilled all the curriculum requirements within the stipulated duration of the course.
2. Earned the required minimum credits as specified in the curriculum for the branch of study (R3.6 and R3.7).
3. No pending disciplinary action.

R6.11 Students registered for a course have to attend the course regularly and undergo the Continuous Internal Evaluation (CIE) and appear for the End Semester Examinations (ESE). Credits for the course are deemed to be earned only on getting at least a pass grade 'P' or better in the composite evaluation.

R6.12 Pass minimum for a course shall be 40% for the End Semester Examination and 50% of CIE and ESA put together. Letter grade 'F' will be awarded to the student for a course if either his/her mark for the End Semester Examination (ESE) is below 40 % or the overall mark [Continuous Internal Evaluation (CIE) + End Semester Examination (ESE)] is below 50 %.

R6.13 Students who received F grade in an End Semester Examination shall have to appear for the End Semester Examination at the next opportunity and earn the credits. They shall not be permitted to register for the course again.

R6.14 Continuous Internal Evaluation mark percentage shall not exceed 30% over the End Semester Examination mark %. CIE marks awarded to a student shall be normalised accordingly. For example if the end semester mark % is 40, then the maximum eligible CIE mark % is 40+30 = 70 %.)

R6.15 Grading is based on the overall % marks obtained by the student in a course, as given in 6.16. The grade card shall only give the grades against the courses the student has

registered. Semester grade card shall give the grade for each registered course, Semester Grade Point Average (SGPA) for the semester as well as Cumulative Grade Point Average (CGPA).

R6.16

Grade and Grade Points

Grades	Grade Point (GP)	% of Total Marks obtained in the course
S	10	90% and above
A+	9.0	85% and above but less than 90%
A	8.5	80% and above but less than 85%
B+	8.0	75% and above but less than 80%
B	7.5	70% and above but less than 75%
C +	7.0	65% and above but less than 70%
C	6.5	60% and above but less than 65%
D	6.0	55% and above but less than 60%
P (Pass)	5.5	50% and above but less than 55%
F (Fail)	0	Below 50% (CIE + ESE) or Below 40 % for ESE
FE	0	Failed due to lack of eligibility criteria (R6.6)
I	0	Could not appear for the end semester examination but fulfills the eligibility criteria.

Classification of	First Class with Distinction	CGPA 8.0 and above
B. Tech Degree.	First Class	CGPA 6.5 and above

Equivalent percentage mark shall be = 10 * CGPA – 2.5

R6.17

Minimum Cumulative Credit Requirements for Registering to Higher Semesters

Semester	Allotted Credits	Cumulative Credits	Minimum Cumulative Credits required for B. Tech	Minimum Cumulative Credits required for B. Tech Lateral Enrty.
First	17	17	Not Applicable	Not Applicable
Second	21	38	Not Insisted	Not Insisted
Third	22	60	Not Insisted	Not Insisted
Fourth	22	82	Not Insisted	Not Insisted
Fifth	23	105	21 Credits from S1& S2	Not Insisted
Sixth	24	129	Not Insisted	Not Insisted
Seventh	15	144	47 Credits from S1 to S4	09 Credits from S3 to S4
Eight	16	160	Not Insisted	Not Insisted

R6.18 There is no provision for improving the grade. However, the student is permitted to check the answer books of the End Semester Examination after the results are declared, on payment of the prescribed fee. Any discrepancy in evaluation could be brought to the notice of the Controller of Examination, who shall initiate appropriate action as per the University Examination Manual.

R.6.19 The students can apply for revaluation of the answer books of the end semester examination after the results are declared. The final mark awarded will be the better of

the two marks. If the difference in marks obtained in revaluation and the original valuation is more than 15% of the maximum marks, it shall be sent for third valuation. The final mark shall then be the average of the closer of the two marks obtained in the three valuations to the advantage of the student or the mark obtained in the original valuation whichever is higher. The Controller of Examination shall examine such cases and conduct proper enquiry to see whether any of the examiners is responsible for negligent valuation of answer script and initiate suitable action as per the University Examination Manual.

R6.20 Grade cards shall be made available in the student login for the registered courses, in every semester. On earning the required credits for the degree, the University will issue the final consolidated grade sheet for the B. Tech program including CGPA.

R6.21 Calculation of SGPA/CGPA

Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) are calculated as follows.

SGPA = $\Sigma(Ci \times GPi)/\Sigma Ci$, where 'Ci' is the credit assigned for a course and 'GPi' is the grade point for that course. Summation is done for all courses specified in the curriculum of that semester. The failed and incomplete courses shall also be considered in the calculation.

CGPA = $\Sigma(Ci \times GPi)/\Sigma Ci$, where 'Ci' is the credit assigned for a course and 'GPi' is the grade point for that course. Summation is done for all courses specified in thecurriculum up to that semester for which the 'CGPA' is needed. Here the failed courses shall also be accounted.

CGPA for the B. Tech programme is arrived at by considering all course credits that are needed for the degree and their respective grade points.

For students admitted under lateral entry scheme, credits for the first and second semester courses shall not be accounted for the calculation of CGPA.

Equivalent percentage mark shall be = 10 * CGPA – 2.5

Any act of violation of University directions, indiscipline, misbehavior, or unfair practice in examinations from the part of students, faculty members, staff, institution, R6.22 management or any other source shall be viewed very seriously. It is the legal responsibility of the principal and the college management to see that the examinations are conducted strictly as per the directions of the University and as specified in the examination Manual. Malpractices in examinations observed or reported by an official employed by the University, faculty member, invigilator or anybody shall be immediately reported to the Principal. The principal shall in turn conduct a preliminary enquiry giving the student concerned a chance to explain his/her case. The Principal shall then forward the case with his/her preliminary enquiry report and remarks to the Controller of Examinations along with all related documents and evidences within two working days. The Controller of examination shall decide the course of action on theissue as per the prescribed norms

in the University Examination Manual.A student shall earn 2 credits by actively involving in co – curricular and extra – R6.23 curricular activities as per the guidelines issued by the University from time to time. On getting minimum 100 activity points the student passes the course and earns the two credits which shall not be counted for the calculation of CGPA but mandatory for the award of the Degree. For the students admitted under lateral entry scheme the 2 credits shall be considered to be earned on getting 75 activity points. The students are required to keep a file containing documentary proofs of activities done by him/her attested bythe Senior Faculty Advisor/ Faculty Advisor.

7. Break of Study

A student is permitted to avail break of study:

R7.1i) In case of accident or serious illness needing prolonged hospitalization and rest.

ii) In case the student has a bright idea and would like to initiate a start-up venture or develop a product.

iii) In case of any personal reasons that need a break in study.

iv) For internship leading to employment.

For break of study due to illness, student shall submit all necessary medical reports together with the recommendation of the doctor treating him giving definite reasons for break of study and its duration. Before joining back, the student should submit the fitness certificate from the doctor who treated him.

Students who want to initiate a start-up venture or a product development,have to submit a project report, clearly indicating the purpose, action plan, technical details, funding details and future plans to the college Principal. The Principal shall evaluate the proposal by constituting an expert team consisting of a technocrat and a bank executive and take an appropriate decision based on the team's recommendation. The break of study for the start up shall be permitted only after the 4^{th} semester for a maximum duration of two semesters. This is however permitted only on successfully completing the courses listed out in the first two semesters.Students who require a break in study due to personal reasons shall convince the Principal on the genuine need for it by giving authentic evidence for the same. Students who require break in study for 'internship leading to employment' shall produce the offer letter obtained from the employer concerned. The principal shall verify the authenticity of the offer and submit his recommendation to the University sufficiently in advance for approval. Only campus placed students with an annual compensation more than 6 lakhs are eligible to avail this facility.In the semester system followed by the University, break of study for an academic year is the preferred option than break of study for a semester.

The student can avail the break of study only with the prior approval of the University. The Principal shall upload the request of the student with all relevant documents to the University portal for the approval with his/her recommendations.Students shall have to rejoin on the first working day of the same semester on which he/she had started availing the break of study.

8.Attendance

R8.1 Students are expected to attain 100% attendance for all courses. However, under unavoidable circumstances they are permitted to avail leave. Total leave of absence shall not exceed 25% of the academic contact hours for a course and 75% attendance is mandatory for registering to the end semester examination.

On medical ground the college Principal can relax the minimum attendance requirement to 60%, to write the end semester examination. This is permitted for one or more courses registered in the semester. Principal shall keep all records which led to his decision on attendance, for verification by the Academic Auditors/ University officials. This provision is applicable only to any two semesters during the entire program period.

In case of prolonged illness, break of study is permitted as per R7.1.

R8.2 The Principals are authorized to grant attendance relaxation (duty leave) to the students in officially sponsored national level competitions/championships/ tournaments when called upon to do so, up to a maximum of 10%. Such students should produce the participation certificate countersigned by the University Sports Coordinator/ the Director of Physical Education in the case of sports activities and the Senior Faculty Advisor in the case of other extracurricular activities: within ten days of the event. The participation certificate thus produced shall be forwarded to the Principal with the due recommendation of the respective Head of the Department. Under any circumstances, the principal shall not consider the certificate if the overall attendance of the candidate is less than 60%. Late applications received shall not be considered on any account. The student shall get official prior permission from the University for representing the University.

8.3 The Principals are authorized to grant attendance relaxation (duty leave) to the students for organizing extra/ co-curricular activities, up to a maximum of 05%. Such students should produce the required documents countersigned by the University Sports Coordinator/ the Director of Physical Education in the case of sports activities and the Senior Faculty Advisor in the case of other extra/ co-curricular activities: within ten days of the events. The documents thus produced shall be forwarded to the Principal with the due recommendation of the respective Head of the Department. Under any circumstances, the principal shall not consider the documents, if the overall attendance of the candidate is less than 60%. Late applications received shall not be considered on any account.

9.Inter College Transfer

R9.1 Inter college transfer shall be applicable only for regular B. Tech students.

R9.2 The transfer shall be permitted just before the commencement of third semester.

R9.3 The transfer shall be with effect from the first working day of the third semester.

R9.4 The transfer shall be only within the sanctioned strength of the receiving college.

R9.5 The following Category of students shall not be eligible for inter college transfer

1. Govt. of India Nominee.
2. Management Quota in Aided colleges.

3. Management Quota in private Self Financing Colleges
4. Students admitted under NRI/PIO quota.
5. Lateral Entry students.
6. Students admitted under TFW Scheme.
7. Students admitted in any supernumerary seats.
8. Any other category which are ineligible as per the conditions for admission prescribed by Govt. of Kerala/Govt. of India.

1. Between Govt/ Govt. Aided Colleges.
2. Between Self – Financing Colleges. (Including Govt. Controlled SFC).

R9.7 Notification inviting application for inter college transfer shall be issued by the University just before the commencement of the third semester.

R9.8 The candidate should fulfill the academic eligibility requirement for promotion to the third semester.

R9.9 If the number of applicants is more than the vacant seats available, the transfer may be based on the Kerala Engineering Entrance Rank.

R9.10 The students shall opt only one college for inter college transfer.

R9.11 The selected candidates shall remit a fee of Rs 3000/- (No fee for SC/ST students) within the stipulated date to the University. However, this rule is not applicable to the students transferred to other institutes under "Shift College" University order.

R9.12 The College transfer once approved by the receiving college will be final and binding on the applicant. No student will be permitted, under any circumstances, to refuse the change of college once offered.

10.Migration from other Universities

R10.1 Migration to the University from other Universities shall be permitted only if the parent University and the APJ Abdul Kalam Technological University enters into a bipartite agreement/ MoU for this purpose. However, this condition is not applicable to the students in any of the Engineering colleges/ institutions, which, before the commencement of KTU Act remained affiliated to Universities except Deemed to be Universities in the State of Kerala.

R10.2 The student shall be permitted to migrate only if he/she fulfills the University eligibility criteria for admission to the course applied for migration.

R10.3 The migration shall be permitted only up to the fifth semester of the B. Tech program and half the duration of the program in the case of other programs.

R10.4 The admission shall be offered on migration basis through lateral transfer of credits.

Lateral credit transfer shall be as recommended by the concerned Board of Studies.

R10.5 The students shall be allowed to migrate to the University subject to satisfying the rules and regulations of the University as regards to, maximum number of backlogs, grade points, minimum credit requirement for promotion to higher semesters, etc.

R10.6 The student shall be offered admission in any of the affiliated colleges/institutions of the University subject to availability of seats. The student shall produce no objection certificate from the concerned college/institute in this regard.

R10.7 The students offered admission shall have to take transitory courses/ additional courses of the previous semesters to satisfy the program requirement as recommended by the concerned board of studies.

R10.8 The students offered admission shall pay the migration fees and the University fees as prescribed by the University. The application processing fee (University fee) shall be Rs 5000/- (Rupees five thousand only) and the migration fees shall be Rs 20000/-(Rupees twenty thousand only). The migration fee is charged for the meeting expenses of the concerned Board of studies to decide on the student suitability for migration and to recommend the transitory courses/ additional courses to be done by the student to fulfill the academic requirement of the University. The processing fee shall be paid along with the application, and the migration fee shall be paid to the University at the time of offering admission. The fee once paid shall not be refunded under any circumstances. The students in any of the Engineering colleges / institutions, which, before the commencement of KTU Act remained affiliated to Universities except Deemed to be Universities in the State of Kerala, are exempted from paying the processing fee and the migration fee.

R10.9 The migrated students shall follow the rules and regulations of the University.

R10.10 The students offered admission shall produce a migration certificate from the parent University at the time of admission.

R10.11 The student offered admission shall produce a character certificate from the parent institute/University at the time of admission.

R10.12 Regulations, Scheme and Syllabus of the respective specialization attested by the Registrar of the parent University or equivalent authority shall be submitted to the University along with the application seeking migration to the University.

R10.13 Attested copies of all certificates and mark lists from 10^{th} onwards shall be submitted along with the application for migration (Original certificates and mark lists shall be produced as and when required by the University).

R10.14 Assessment of the student suitability for migration in terms of programs, backlogs, grade points, credit requirements, etc shall be done by the concerned Board of Studies.

R10.15 Assessment of the transitory courses/ additional courses to be done by the student as per the academic requirement of the University shall be as recommended by the concerned Board of Studies.

11. Minor in Engineering.

R11.1 All B. Tech students shall be eligible to register for Minor in Engineering.

R11.2 The Minor in Engineering registration shall be along with the registration of the 3^{rd} semester.

R11.3 If a student fails in any course of the minor, he/she shall not be eligible to continue the B.Tech Minor. However, the additional credits and grades thus far earned by the student shall be included in the grade card but shall not be considered in calculating the CGPA.

R11.4 The student shall earn additional 20 credits to be eligible for the award of B. Tech Degree with Minor.

R11.5 Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses, during the specified period. The total number of contact hours for these three

courses shall be 126 Hrs (42Hrs/course). The duration of a course shall be minimum 14 weeks. The remaining 8 credits could be acquired through two MOOCs recommended by the Board of studies and approved by the Academic Council.

R11.6 Curriculum and the syllabus of the three courses shall be approved by the Board of studies and the Academic Council.

R11.7 The assessment of the courses other than MOOCs and earning of credits shall be as per R6.1 to R6.23. The assessment and certification of the MOOCs shall be as per the prescribed norms of the MOOCs. The candidate shall produce the certification issued by the MOOCs conducting agency in proof of credit attainment.

R11.8 Under graduate Degree with minor shall be issued by the University to the students who fulfill all the academic eligibility requirements for the B. Tech program and Minor in Engineering.

12. B. Tech (Honours)

R12.1 All B. Tech students are eligible to register B.Tech (Honours). However, their mandatory CGPA at the end of eighth semester shall be 8.5 or higher to be eligible for the award of B. Tech (Honours).

R12.2 The B. Tech (Honours) registration shall be along with the registration of the 4^{th} semester.

R12.3 If a student fails in any course including the course chosen for B. Tech (Honours), he/she shall not be eligible to continue the B.Tech(Honours). However, the additional credits thus far earned by the student shall be included in the grade card but shall not be considered in calculating the CGPA.

R12.4 The student shall earn additional 20 credits to be eligible for the award of B. Tech (Honours) Degree.

R12.5 Out of the 20 Credits, 12 credits shall be earned by undergoing minimum three specified B. Tech (Honours) Elective courses of the respective stream. Credits for the B. Tech (Honours) Elective courses are deemed to be earned only on getting at least a grade 'C' or better in the composite evaluation. A student shall not be permitted to select the normal elective courses of the respective B. Tech programs for attaining the credit requirements of B. Tech (Honours). The remaining 8 credits could be acquired through two MOOCs of the respective streams recommended by the Board of studies and approved by the Academic Council.

R12.6 The assessment and certification of the MOOCs shall be as per the prescribed norms of the MOOCs. The candidate shall produce the certification issued by the MOOCs conducting agency in proof of credit attainment.

R12.7 The institutions offering B. Tech Honours programs shall not charge any additional fee from the students.

R12.8 B. Tech (Honours) Degree shall be issued by the University to the students who fulfill all the academic eligibility requirements for the B. Tech and B. Tech (Honours) programs.

13. Grace Marks for Sports /Arts Competitions.

R13.1 Only bona-fide, regular candidates are eligible for the award of Grace Marks.

R13.2 The criterion for the award of Grace Marks is representing the University in officially sponsored national level competitions/championships/ tournaments when called upon to do so. The student shall get official prior permission from the University for representing the University.

R13.3 The maximum grace marks that can be awarded to a candidate in a particular semester for all activities put together shall be 5% of the aggregate maximum End Semester Examination marks of all theory courses for which the University conducts End Semester Examinations.

R13.4 The maximum grace marks that can be awarded to a student for a theory course in a particular semester for all activities put together shall not exceed 10% of the maximum aggregate marks of End Semester Examination of the course.

R13.5 The Grace Marks shall not be awarded to a student for Practical/ Lab/ Viva Voce/ internal assessment/ Seminar etc even though she/he fails for the same.

R13.6 Eligible Grace Marks shall be distributed equally on all theory papers/courses of an examination. However, re – distribution of Grace Marks shall be allowed only in the case of those courses of an examination for which the candidate has passed. Re-distribution is possible from passed courses to failed courses only. Re-distribution of Grace Marks is not permissible from failed courses to other courses for a pass.

R13.7 The Grace Marks shall be awarded for all theory papers/courses/subjects in a semester.

R13.8 Re- distribution shall be done only for enabling a candidate to obtain the minimum marks required for a pass.

R13.09 Grace Marks shall not be re – distributed from one semester to another semester.

R13.10 If the candidate does not secure the minimum marks required for a pass even after effecting re- distribution, eligible moderation fixed by the respective board if any, shall be awarded to that candidate in addition to the Grace Marks for a pass.

R13.11 Eligible Grace Marks shall be awarded for the regular examination of the performing semester only. Grace Marks shall not be awarded for supplementary examinations.

R13.12 The performing semester shall be considered from 1st July to 31st December (Odd semester) and 1st January to 30th June (Even Semester).

R13.13 Grace Marks shall be awarded on the basis of performance in the respective semester.

R13.14 The request for Grace Marks shall be submitted to the Controller of Examinations through the principal along with all relevant documents, within the time limit prescribed by the University. The request for Grace Marks received after the time limit shall not be entertained on any account.

R13.15 Only a single highest achievement during the period of a semester shall be considered for awarding the grace marks.

14.Grace Marks for Persons With Disability (PWD)

R14.1 A person with disability means a person suffering from not less than 40% of any disability as certified by the District Medical Board. To be eligible for the grace marks, the certificate of disability specifying the percentage of disability shall be produced before the Principal at the time of admission.

R14.2 The Grace Marks that can be awarded for PWD candidates shall be 25% of the marks scored by the candidate in each course at the time of finalization of the results.

R14.3 Transfer of marks from one paper to another shall not be permitted. Fractions of marks if any, while computing the Grace Marks shall be rounded off to the next higher integer.

R14.4 PWD candidates who are eligible for Grace Marks shall be awarded Grace Marks for regular and supplementary chances until they pass the whole examination.

R14.5 Grace Marks shall be awarded only for the marks of the End Semester Examinations conducted by the University.

R14.6 The request for Grace Marks shall be submitted to the Controller of Examinations through the principal along with all relevant documents, within the time limit prescribed by the University. The request for Grace Marks received after the time limit shall not be entertained on any account.

15. Transitory provision.

15.1 Notwithstanding anything contained in these regulations, the Vice-Chancellor shall, for a period of two years from the date of coming into force of these regulations, has the power to provide by order that these Regulations shall beapplied to any B. Tech program with such modifications as may be necessary.

REGULATIONS 2015 SCHEME

1. Conditions for Admission

Candidate for admission to B Tech degree programme should pass the Higher Secondary Examination, Kerala or 12th Standard VHSE, CBSE, or ISC or any other examination considered equivalent to the above mentioned ones. Other eligibility criteria for admission is currently prescribed by the Government of Kerala through Government orders which is based on the entrance examination conducted by the Commission for Entrance Examinations, Government of Kerala and the marks in the qualifying examination subject to the relaxations allowed for backward classes and other communities as specified from time to time.

2. Duration of the Course

The B Tech programme in all branches of study is structured on a credit based system following duration of programme completion. The duration for the B Tech programme in all branches of study shall be 8 semesters. The maximum duration shall be six academic years spanning 12 semesters. Each semester has 72 instructional days, followed by end semester examinations.

3. Eligibility for the Degree

A student will be eligible for B Tech degree of the University on satisfying the following requirements.

3. Earned credits for all the core courses and the project.

4. Earned the required minimum credits as specified in the curriculum for the branch of study.

5. No pending disciplinary action.

B Tech Degree will not have any classifications like distinction or first class.

4. Subjects of Study

Every branch of study in B Tech programme will have a curriculum, list of courses, syllabi and course plans approved by the Academic Committee of the University. Courses are categorized as Core Theory (CT), Core Practice (CP) and Electives (EL).Each course is identified by a course code and a three digit number. The two letter code refers to the department offering the course or knowledge segment of the course. The knowledge segment is used when the course is to be offered by different departments either individually or together having the same syllabus andcourse plan. All courses listed in the curriculum other than the electives are core courses. Earning credits in the core courses is mandatory for the B Tech degree.

5. Academic Assessment / Evaluation

Academic evaluation procedures of the University are as follows:-

For theory courses:- $1/3^{rd}$ weightage for internal evaluation and $2/3^{rd}$ for end semester examination. The maximum marks for internal evaluation and end semester examination for theory courses are fixed as 50 and 100 respectively.

Scheme of evaluation are as follows.

1. Two internal tests each of 20 marks and of one hour duration.(Internally by the College)
2. Tutorials /Assignments/Mini Projects carrying 100 marks.(Internally by the College)
3. End semester examination carrying 100 marks.(Conducted by the University)

For Laboratory/Practical/Workshop courses

4. Practical records/Outputs 60 marks (Internally by the College)
5. Regular class Viva 10 marks (Internally by the College)
6. Final written test/quiz 30 marks (Internally by the College)

As the students appear for placements from seventh semester, onwards, a comprehensive examination is to be completed in the sixth semester. This examination will be a written cum oral examination covering broadly all courses so far completed. This will be an objective type of 1 hour duration and shall have 50 marks and is to be conducted by the concerned department. Oral examination shall carry 50 marks and will be conducted any time during 6^{th} semester with sufficient notice given to the students.

Seminar: Each student has to give a seminar on a professional topic of current interest in consultation with the faculty member in charge of the seminar in the Department. The seminar is to be of 20 minutes duration with another five minutes given for questions and answers. Evaluation is based on the report, seminar presentation as well as on the ability of the student to answer the questions put forward. Distribution of marks for the seminar is as follows.

1. Marks for the report:30%
2. Presentation:40%
3. Ability to answer questions on the topic:30%

Design Project: Each student has to take up a design project. Evaluation of project is to be done in two stages. Two project progress evaluations each carrying 20 marks and a final report evaluation and presentation of the project for 60 marks.

Final Semester Project: Students either individually or in a small batch not exceeding four, have to do a project approved by their faculty supervisor.

Evaluation scheme is as follows:

1. Two progress assessments: 20% by the faculty supervisor
2. Final Project Report: 50% by the Assessment Board
3. Project presentation and Viva: 50% by the Assessment Board

6. Summer Courses and Contact Courses

Summer Courses are meant for students who could not earn the required minimum credits at the end of second and fourth semester. They are offered at the end of second and the fourth semesters for the courses covered till that semester. This provision is meant for students who have got 45 % or more in the internal evaluation for the courses they attended in the regular semester. Students should have 75% attendance in the summer course to write the final examination. For fifth semester onwards, summer courses are not offered. Failed students have to register again for the course in the regular semester in which it is offered and complete the course as per regulations and appear for the end semester examination. Failed students having 45% internal marks are permitted to register again for the course.

Contact courses are meant for students, who have to earn credits only just for one course to qualify for the degree after completing eight semesters of study. It is considered as a fresh registration and is to be offered by the teacher concerned who shall conduct the internal evaluation procedures and allot the marks as per the regulations. Minimum hours specified for the course is 20.

7. Academic Calendar

The University publishes in its website the academic calendar for every academic semester registration and enrolment dates, the schedule for mandatory internal tests for theory courses, dates by which laboratory/practical evaluations are to be completed, date for finalization of internal marks, last instruction day in the semester, planned schedule of end semester examinations and result declaration as well as approved holidays falling within the semester will

be specified in the calendar.

8. End Semester University Examination

At the end of the semester, end semester examination will be conducted in all lecture based courses offered in the semester and will be of three hours duration. Supplementary examination shall be conducted before the commencement of the next semester, for students who are eligible and have registered for them.

The main eligibility criteria for writing the end semester examination are attendance in the course, internal marks and no pending disciplinary action. The minimum attendance for appearing for the end semester examination is 75% in each course. Further, the internal evaluation marks in the course should be 45 % or above. Students who do not meet the eligibility criteria are awarded an FE grade and have to register for the course again. A student should have a minimum of 45 % marks in the end semester examination to be eligible for getting a grade in a course. Otherwise he/she will be considered to have failed in the course and an F grade will be awarded. Internal marks given to students who got more than 45 % marks or more in end semester examination shall be in line with the end semester examination performance. Internal mark percentage shall not exceed 25 % over the end semester mark %. In case the student writes the supplementary examination, the mark got in that will be taken into consideration for regulating the internal marks. Those who have more than 45% marks in the end semester examination are awarded the grade based on both internal assessment and end semester examination marks. A student earns credits for a course if the grade is P or above.

9. Award of Grades

Grading is based on the percentage of marks obtained by the student in a course. Students who have written the end semester examination will be given the grade cards for the registered courses, in every semester by the respective colleges. On earning the required credits for the degree, a consolidated grade sheet for the B Tech programme will be given by the University.

The grade card will only give the grades against the courses the student has registered. Semester grade card will give the grade for each registered course, Semester Grade Point Average (SGPA) for the semester as well as Cumulative Grade Point Average (CGPA).

10. Grade and Grade Points

Grade and Grade Points as per UGC guidelines is followed by the University.

Grades	Grade Point (GP)	Percentage of total marks obtained in course
O (Outstanding)	10	90 % and above
A^+ (Excellent)	9	85 % and above, but less than 90 %
A (Very Good)	8	80 % and above, but less than 85%
B^+ (Good)	7	70 % and above, but less than 80 %
B (Above Average)	6	60 % and above, but less than 70 %
C (Average)	5	50 % and above, but less than 60 %
P (Pass)	4	45 % and above, but less than 50 %
F (Fail)	0	Less than 45 %
FE	0	Failed
I		Course Incomplete

SGPA and CGPA are calculated based on the above grading norms.

CALCULATION OF SGPA/CGPA

Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) are calculated as follows.

SGPA = $\Sigma(C_i \times GP_i)/\Sigma C_i$ where C_i is the credit assigned for a course and GP_i is the grade point forthat course. Summation is done for all courses registered by the student in the semester. Here the failed courses are also accounted.

CGPA = $\Sigma(C_i \times GP_i)/\Sigma C_i$ where C_i is the credit assigned for a course and GP_i is the grade pointfor that course. Summation is done for all courses registered by the student during all the semesters for which the CGPA is needed. Here the failed courses are also accounted. CGPA of all courses passed may also be given.

CGPA for the B. Tech programme is arrived at by considering all course credits that are needed for the degree and their respective grade points.

11. Eligibility to continue for course

A student has to earn a minimum number of credits in a semester to be eligible to register for the new courses offered in the next semester. In 1,2 & 3 semesters if this requirement is not met, the student is to be forewarned and allowed to continue to the next semester. However to register in the 4^{th}, 6^{th} &8^{th} semesters this requirement will be strictly implemented. Summer courses are offered to those who do not satisfy this norm after the 2^{nd}, as well as 4^{th}, semesters. Students who do not meet this requirement are not permitted to register for new courses in the higher semesters . They have to register for the failed courses in normal semesters in which they are offered subject to the limitations imposed by the ordinances and course timetable.

Eligibility Criteria for Registering for Higher Semester Courses

Sl. No:	Programme	Semester	Requirement
1	B.Tech	S5	26 credits from S1&S2
		S7	52 credits from S1, S2, S3&S4
2	M.Tech	S3	Eligible to write the end semester examination in atleast 2/3rd of courses in S1 & S2
3	B.Tech Lateral Entry	S7	5 credits from S3&S4 (total equivalent - 52 credits of S1 to S4 B.Tech regular

12. Revaluation and Grade Improvement

There is no provision for revaluation of the end semester answer books or for improving the grade. However, the student is permitted to check the answer books of the end semester examination after the results are declared. Any discrepancy in evaluation could be brought to the notice of the teacher concerned who will initiate appropriate action on this. The decision of the Controller of Examination shall be final on this.

13. Academic Auditing

The University shall have a detailed academic auditing procedure in place comprising of an internal academic auditing cell within the colleges and an external academic auditing for each

college. The internal academic auditing cell in each college shall oversee and monitor all the academic activities including all internal evaluations and examinations. This cell is to prepare academic audit statements for each semester at regular intervals. These reports are to be presented to the external academic auditor approved by the University, who will use it as a reference for his independent auditing and for the final report to the University.

Academic auditing shall cover:-

a. Course delivery covering syllabus, adherence to course plan, quality of question papers for internal examinations, internal evaluation, laboratory experiments, practical assignments, mini projects and conduct of practical classes and their evaluation.

b. Co-curricular and extra-curricular activities available for students, their organization and the mechanism of monitoring of activities points earned by the students

c. Academic functioning of the college encompassing students, faculty and college administration covering punctuality, attendance, discipline, academic environment, academic accountability, academic achievements and benchmarking.

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

(2015 Scheme)

Scheme of Studies for the B.Tech Degree
Semesters I to VIII

Semester I & II (Common for all branches)

SEMESTER I

SLOT	CATEGORY	COURSE CODE	COURSES	L-T-P	HOURS	CREDIT
A	BSC	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	BSC	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
		PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	BSC	CYT100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	ESC	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	ESC	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	ESC	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	ESC	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	MNC	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	BSC	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	BSC	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESC	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESC	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL					**23/24 ***	**17**

SEMESTER II

SLOT	CATEGORY	COURSE CODE	COURSES	L-T-P	HOURS	CREDIT
A	BSC	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	BSC	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
		PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	BSC	CYT100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	ESC	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	ESC	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	ESC	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	ESC	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	MNC	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	ESC	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	BSC	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	BSC	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESC	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESC	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL					**28/29**	**21**

MECHANICAL ENGINEERING

Semesters III to VIII

SEMESTER - III

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME203	Mechanics of Fluids	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
ME210	Metallurgy and Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME231	Computer Aided Machine Drawing Lab	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 24 Hours:28/29

Cumulative Credits= 71

SEMESTER - IV

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
ME202	Advanced Mechanics of Solids	3-1-0	4	B
ME204	Thermal Engineering	3-1-0	4	C
ME206	Fluid Machinery	2-1-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
ME232	Thermal Engineering Lab	0-0-3	1	S

ME230	Fluid Mechanics & Machines Lab	0-0-3	1	T

Total Credits = 23 **Hours: 28/27**

Cumulative Credits= 94

SEMESTER - V

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
ME301	Mechanics of Machinery	3-1-0	4	A
ME303	Machine Tools & Digital Manufacturing	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	2-0-1	3	C
EE311	Electrical Drives & Control for Automation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
ME341	Design Project	0-1-2	2	S
EE335	Electrical and Electronics Lab	0-0-3	1	T
ME331	Manufacturing Technology Lab I	0-0-3	1	U

Total Credits = 23 **Hours: 28**

Cumulative Credits= 117

Elective 1:-
1. ME361 Advanced Fluid Mechanics
2. ME363 Composite Materials and Mechanics
3. ME365 Advanced Metal Casting
4. ME367 Non-Destructive Testing
5. ME369 Tribology
6. ME371 Nuclear Engineering
7. ME373 Human Relations Management

SEMESTER - VI

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
ME302	Heat & Mass Transfer	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
ME306	Advanced Manufacturing Technology	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
ME312	Metrology and Instrumentation	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design & Analysis Lab	0-0-3	1	S
ME334	Manufacturing Technology Lab II	0-0-3	1	T
ME352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. ME362 Control System Engineering
2. ME364 Turbo Machinery
3. ME366 Advanced Metal Joining Technology
4. ME368 Marketing Management
5. ME372 Operations Research
6. ME374 Theory of Vibration
7. ME376 Maintenance Engineering

SEMESTER - VII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
ME401	Design of Machine Elements I	3-1-0	4	A
ME403	Advanced Energy Engineering	3-0-0	3	B
ME405	Refrigeration and Air Conditioning	2-1-0	3	C
ME407	Mechatronics	3-0-0	3	D
ME409	Compressible Fluid Flow	2-1-0	3	E
	Elective 3	3-0-0	3	F
ME451	Seminar & Project Preliminary	0-1-4	2	S
ME431	Mechanical Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. ME461 Aerospace Engineering
2. ME463 Automobile Engineering
3. ME465 Industrial Hydraulics
4. IE306 Supply Chain and Logistics Management
5. ME467 Cryogenic Engineering
6. ME469 Finite Element Analysis
7. ME471 Optimization Techniques

SEMESTER - VIII

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
ME402	Design of Machine Elements II	3-0-0	3	A
ME404	Industrial Engineering	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
ME492	Project		6	

Total Credits = 18 **Hours: 30**

Cumulative Credits= 180

Elective 4:-

1. ME462 Propulsion Engineering
2. ME464 Robotics and Automation
3. ME466 Computational Fluid Dynamics
4. ME468 Nanotechnology
5. ME472 Failure Analysis and Design
6. ME474 Micro and Nano Manufacturing
7. ME476 Material Handling & Facilities Planning

MECHANICAL PRODUCTION ENGINEERING

Semesters III to VIII

SEMESTER - III

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
ME210	Metallurgy & Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	S
MP231	Production Engineering Drawing	0-0-3	1	T

Total credits = 24 **Hours: 28/29**

Cumulative Credits= 71

SEMESTER - IV

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
MP212	Machine Tools	3-1-0	4	B
ME216	Mechanical Technology	4-0-0	4	C
MP206	Foundry Technology	3-0-0	3	D
MP208	Metal Joining Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
MP232	Machine Tools Lab I	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 23 **Hours:28/27**

Cumulative Credits = 94

SEMESTER - V

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
ME301	Mechanics of Machinery	3-1-0	4	A
MP301	Metal Forming Technology	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	3-0-0	3	C
MP305	Theory of Metal Cutting	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
MP341	Design Project	0-1-2	2	S
MP331	Machine Tools Lab II	0-0-3	1	T
ME339	Mechanical Engineering Lab	0-0-3	1	U

Total Credits = 23 **Hours: 28**

Cumulative Credits= 117

Elective 1:- 1. ME361 Advanced Fluid Mechanics

2. ME363 Composite Materials and Mechanics
3. ME367 Non-Destructive Testing
4. MP361 Facilities Planning and Plant Layout
5. ME369 Tribology

SEMESTER - VI

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MP302	Advanced Materials & Manufacturing Systems	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
EE312	Electrical and Electronics Engineering	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
ME312	Metrology and Instrumentation	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design & Analysis Lab	0-0-3	1	S
EE336	Electrical and Electronics Lab	0-0-3	1	T
MP352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. MP362 Precision Engineering
2. MP364 Rapid Prototyping, Tooling and Manufacture
3. MP366 Modern Manufacturing Concepts
4. MP374 Industrial Hydraulics
5. MP376 Artificial Intelligence in Manufacturing

SEMESTER - VII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
ME401	Design of Machine Elements I	3-1-0	4	A
MP403	Computer Integrated Manufacturing	3-0-0	3	B
MP405	Tool Engineering	3-0-0	3	C
ME407	Mechatronics	3-0-0	3	D
MP407	Total Quality Management	3-0-0	3	E
	Elective 3	3-0-0	3	F
MP451	Seminar & Project Preliminary	0-1-4	2	S
MP431	Production Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. IE364 Management Information Systems
2. ME469 Finite Element Analysis
3. ME461 Aerospace Engineering
4. MP463 Micromachining Methods
5. MP469 Industrial Psychology and Organizational Behaviour

SEMESTER - VIII

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
ME402	Design of Machine Elements II	3-0-0	3	A
MP404	Productions and Operations Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
MP492	Project		6	

Total Credits = 18 **Hours: 30**

Cumulative Credits= 180

Elective 4:-

1. ME462 Propulsion Engineering
2. ME464 Robotics and Automations
3. ME466 Computational Fluid Dynamics
4. ME468 Nanotechnology
5. MP462 Project Management

CIVIL ENGINEERING

Semesters III to VIII

SEMESTER -III

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CE201	Mechanics of Solids	3-1-0	4	B
CE203	Fluid Mechanics I	3-1-0	4	C
CE205	Engineering Geology	3-0-1	4	D
CE207	Surveying	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CE231	Civil Engineering Drafting Lab	0-0-3	1	S
CE233	Surveying Lab	0-0-3	1	T

Total Credits = 24 **Hours: 28/29**

Cumulative Credits= 71

SEMESTER - IV

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CE202	Structural Analysis I	3-1-0	4	B
CE204	Construction Technology	4-0-0	4	C
CE206	Fluid Mechanics II	3-0-0	3	D
CE208	Geotechnical Engineering I	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CE232	Materials Testing Lab I	0-0-3	1	S
CE234	Fluid Mechanics Lab	0-0-3	1	T

Total Credits = 23 **Hours:28/27**

Cumulative Credits= 94

SEMESTER - V

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
CE301	Design of Concrete Structures I	3-1-0	4	A
CE303	Structural Analysis II	3-0-0	3	B
CE305	Geotechnical Engineering II	3-0-0	3	C
CE307	Geomatics	3-0-0	3	D
CE309	Water Resources Engineering	3-0-0	3	E
	Elective 1	3-0-0	3	F
CE341	Design Project	0-1-2	2	S
CE331	Materials Testing Lab II	0-0-3	1	T
CE333	Geotechnical Engineering Lab	0-0-3	1	U

Total Credits = 23 **Hours: 28**

Cumulative Credits= 117

Elective 1:- 1. CE361 Advanced Concrete Technology

2. CE363 Geotechnical Investigation
3. CE365 Functional Design of Buildings
4. CE367 Water Conveyance Systems
5. CE369 Disaster Management
6. CE371 Environment and Pollution
7. CE373 Advanced Mechanics of Materials

SEMESTER - VI

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
CE302	Design of Hydraulic Structures	4-0-0	4	A
CE304	Design of Concrete Structures II	3-0-0	3	B
CE306	Computer Programming and Computational Techniques	3-0-0	3	C
CE308	Transportation Engineering I	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
CE332	Transportation Engineering Lab	0-0-3	1	S
CE334	Computer Aided Civil Engineering Lab	0-0-3	1	T
CE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 **Hours: 27**

Cumulative Credits= 140

Elective 2:-

1.	CE362	Ground Improvement Techniques
2.	CE364	Advanced Foundation Engineering
3.	CE366	Traffic Engineering and Management
4.	CE368	Prestressed Concrete
5.	CE372	Engineering Hydrology
6.	CE374	Air Quality Management

SEMESTER - VII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
CE401	Design of Steel Structures	4-0-0	4	A
CE403	Structural Analysis III	3-0-0	3	B
CE405	Environmental Engineering I	3-0-0	3	C
CE407	Transportation Engineering II	3-0-0	3	D
CE409	Quantity Surveying and Valuation	3-0-0	3	E
	Elective 3	3-0-0	3	F
CE451	Seminar & Project Preliminary	0-1-4	2	S
CE431	Environmental Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. CE461Water Hydrodynamics and Coastal Engineering
2. CE463Bridge Engineering
3. CE465Geo-Environmental Engineering
4. CE467Highway Pavement Design
5. CE469Environmental Impact Assessment
6. CE471Advanced Structural Design

SEMESTER - VIII

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
CE402	Environmental Engineering II	3-0-0	3	A
CE404	Civil Engineering Project Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CE492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. CE462 Town and Country Planning
2. CE464 Reinforced Soil Structures and Geosynthetics
3. CE466 Finite Element Methods
4. CE468 Structural Dynamics and Earthquake Resistant Design
5. CE472 Transportation Planning
6. CE474 Municipal Solid Waste Management

COMPUTER SCIENCE & ENGINEERING

Semesters III to VIII

SEMESTER - III

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CS201	Discrete Computational Structures	3-1-0	4	B
CS203	Switching Theory and Logic Design	3-1-0	4	C
CS205	Data Structures	3-1-0	4	D
CS207	Electronics Devices & Circuits	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CS231	Data Structures Lab	0-0-3	1	S
CS233	Electronics Circuits Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29

Cumulative Credits= 71

SEMESTER - IV

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CS202	Computer Organization and Architecture	3-1-0	4	B
CS204	Operating Systems	3-1-0	4	C
CS206	Object Oriented Design and Programming	2-1-0	3	D
CS208	Principles of Database Design	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CS232	Free and Open Source Software Lab	0-0-3	1	S
CS234	Digital Systems Lab	0-0-3	1	T

Total Credits = 23 Hours: 28/27
Cumulative Credits= 94

SEMESTER - V

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
CS301	Theory of Computation	3-1-0	4	A
CS303	System Software	2-1-0	3	B
CS305	Microprocessors and Microcontrollers	2-1-0	3	C
CS307	Data Communication	3-0-0	3	D
CS309	Graph Theory and Combinatorics	2-0-2	3	E
	Elective 1	3-0-0	3	F
CS341	Design Project	0-1-2	2	S
CS331	System Software Lab	0-0-3	1	T
CS333	Application Software Development Lab	0-0-3	1	U

Total Credits = 23 **Hours: 29**

Cumulative Credits= 117

Elective 1:- 1. CS361 Soft Computing

2. CS363 Signals and Systems
3. CS365 Optimization Techniques
4. CS367 Logic for Computer Science
5. CS369 Digital System Testing & Testable Design

SEMESTER - VI

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
CS302	Design and Analysis of Algorithms	3-1-0	4	A
CS304	Compiler Design	3-0-0	3	B
CS306	Computer Networks	3-0-0	3	C
CS308	Software Engineering and Project Management	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
CS332	Microprocessor Lab	0-0-3	1	S
CS334	Network Programming Lab	0-0-3	1	T
CS352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. CS362Computer Vision
2. CS364Mobile Computing
3. CS366Natural Language Processing
4. CS368Web Technologies
5. CS372High Performance Computing

SEMESTER - VII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
CS401	Computer Graphics	4-0-0	4	A
CS403	Programming Paradigms	3-0-0	3	B
CS405	Computer System Architecture	3-0-0	3	C
CS407	Distributed Computing	3-0-0	3	D
CS409	Cryptography and Network Security	3-0-0	3	E
	Elective 3	3-0-0	3	F
CS451	Seminar & Project Preliminary	0-1-4	2	S
CS431	Compiler Design Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. CS461 Computational Geometry
2. CS463 Digital Image Processing
3. CS465 Bio Informatics
4. CS467 Machine Learning
5. CS469 Computational Complexity

SEMESTER - VIII

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
CS402	Data Mining and Ware Housing	3-0-0	3	A
CS404	Embedded Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CS492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. CS462Fuzzy Set Theory and Applications
2. CS464 Artificial Intelligence
3. CS466 Data Science
4. CS468 Cloud Computing
5. CS472 Principles of Information Security

ELECTRICAL & ELECTRONICS ENGINEERING

Semesters III to VIII

SEMESTER - III

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EE201	Circuits and Networks	3-1-0	4	B
EE203	Analog Electronic Circuits	3-1-0	4	C
EE205	DC Machines and Transformers	3-1-0	4	D
EE207	Computer Programming	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EE231	Electronic Circuits Lab	0-0-3	1	S
EE233	Programming Lab	0-0-3	1	T

Total Credits = 24 **Hours: 28/29**

Cumulative Credits= 71

SEMESTER - IV

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
EE202	Synchronous and Induction Machines	3-1-0	4	B
EE204	Digital Electronics and Logic Design	2-1-0	3	C
EE206	Material Science	3-0-0	3	D
EE208	Measurements and Instrumentation	3-1-0	4	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EE232	Electrical Machines Lab I	0-0-3	1	S
EE234	Circuits and Measurements Lab	0-0-3	1	T

Total Credits = 23 **Hours 28/27**

Cumulative Credits= 94

SEMESTER - V

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
EE301	Power Generation, Transmission and Protection	3-1-0	4	A
EE303	Linear Control Systems	2-1-0	3	B
EE305	Power Electronics	3-0-0	3	C
EE307	Signals and Systems	3-0-0	3	D
EE309	Microprocessor and Embedded Systems	2-1-0	3	E
	Elective 1	3-0-0	3	F
EE341	Design Project	0-1-2	2	S
EE331	Digital Circuits and Embedded Systems Lab	0-0-3	1	T
EE333	Electrical Machines Lab II	0-0-3	1	U

Total Credits = 23 **Hours: 28**

Cumulative Credits= 117

Elective 1:- 1. EE361 Object Oriented Programming

2. EE363 Computer Organization and Architecture
3. EE365 Digital System Design
4. EE367 New and Renewable Energy Systems
5. EE369 High Voltage Engineering

SEMESTER – VI

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EE302	Electromagnetics	2-1-0	3	A
EE304	Advanced Control Theory	3-1-0	4	B
EE306	Power System Analysis	3-0-0	3	C
EE308	Electric Drives	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
EE332	Systems and Control Lab	0-0-3	1	S
EE334	Power Electronics & Drives Lab	0-0-3	1	T
EE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. EE362 Data Structures and Algorithms
2. EE364 Switched Mode Power Converters
3. EE366 Illumination Technology
4. EE368 Soft Computing
5. EE372 Biomedical Instrumentation

SEMESTER – VII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EE401	Electronic Communication	2-1-0	3	A
EE403	Distributed Generation and Smart Grids	3-0-0	3	B
EE405	Electrical System Design	3-1-0	4	C
EE407	Digital Signal Processing	3-0-0	3	D
EE409	Electrical Machine Design	3-0-0	3	E
	Elective 3	3-0-0	3	F
EE451	Seminar & Project Preliminary	0-1-4	2	S
EE431	Power System Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. EE461 Modern Operating Systems
2. EE463 Computer Aided Power Systems Analysis
3. EE465 Power Quality
4. EE467 Nonlinear Control Systems
5. EE469 Electric and Hybrid Vehicles

SEMESTER - VIII

Course Code	***Course Name***	***L-T-P***	***Credits***	***Exam Slot***
EE402	Special Electric Machines	3-0-0	3	A
EE404	Industrial Instrumentation & Automation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
EE492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits = 180

Elective 4:-

1. EE462 Design of Digital Control Systems
2. EE464 FACTS
3. EE466 Digital Image Processing
4. EE468 Computer Networks
5. EE472 Internet of Things
6. EE474 Energy Management and Auditing

ELECTRONICS & COMMUNICATION ENGINEERING

Semesters III to VIII

SEMESTER - III

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EC201	Network Theory	3-1-0	4	B
EC203	Solid State Devices	3-1-0	4	C
EC205	Electronic Circuits	3-1-0	4	D
EC207	Logic Circuit Design	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EC231	Electronic Devices & Circuits Lab	0-0-3	1	S
EC223	Electronic Design Automation Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29

Cumulative Credits= 71

SEMESTER - IV

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
MA204	Probability, Random Processes and Numerical Methods	3-1-0	4	A
EC202	Signals & Systems	3-1-0	4	B
EC204	Analog Integrated Circuits	4-0-0	4	C
EC206	Computer Organization	3-0-0	3	D
EC208	Analog Communication Engineering	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EC232	Analog Integrated Circuits Lab	0-0-3	1	S
EC230	Logic Circuit Design Lab	0-0-3	1	T

Total Credits = 23 Hours 27/28

Cumulative Credits= 94

SEMESTER - V

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EC301	Digital Signal Processing	3-1-0	4	A
EC303	Applied Electromagnetic Theory	3-0-0	3	B
EC305	Microprocessors & Microcontrollers	3-0-0	3	C
EC307	Power Electronics & Instrumentation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
EC341	Design Project	0-1-2	2	S
EC333	Digital Signal Processing Lab	0-0-3	1	T
EC335	Power Electronics & Instrumentation Lab	0-0-3	1	U

Total Credits = 23 **Hours: 28**

Cumulative Credits= 117

Elective 1:- 1. EC361 Digital System Design

2. EC363 Optimization Techniques

3. EC365 Biomedical Engineering

4. EC360 Soft Computing

SEMESTER – VI

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EC302	Digital Communication	4-0-0	4	A
EC304	VLSI	3-0-0	3	B
EC306	Antenna & Wave Propagation	3-0-0	3	C
EC308	Embedded Systems	3-0-0	3	D
EC312	Object Oriented Programming	3-0-0	3	E
	Elective 2	3-0-0	3	F
EC332	Communication Engg Lab (Analog & Digital)	0-0-3	1	S
EC334	Microcontroller Lab	0-0-3	1	T
EC352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. EC362 Modelling & Simulation of Communication Systems
2. EC364 Computer Vision
3. EC366 Real Time Operating Systems
4. EC368 Robotics
5. EC370 Digital Image Processing

SEMESTER – VII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EC401	Information Theory & Coding	4-0-0	4	A
EC403	Microwave & Radar Engineering	3-0-0	3	B
EC405	Optical Communication	3-0-0	3	C
EC407	Computer Communication	3-0-0	3	D
EC409	Control Systems	3-0-0	3	E
	Elective 3	3-0-0	3	F
EC451	Seminar & Project Preliminary	0-1-4	2	S
EC431	Communication Systems Lab (Optical & Microwave)	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. EC461 Microwave Devices and Circuits
2. EC463 Speech and Audio Processing
3. EC465 MEMS
4. EC467 Pattern Recognition
5. EC469 Opto Electronic Devices

SEMESTER - VIII

Course Code	*Course Name*	*L-T-P*	*Credits*	*Exam Slot*
EC402	Nano electronics	3-0-0	3	A
EC404	Advanced Communication Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
EC492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. EC462 Mixed Signal Circuit Design
2. EC464Low Power VLSI Design
3. EC466Cyber Security
4. EC468Secure Communication
5. EC472Integrated Optics & Photonic Systems

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Scheme of Studies for the M.Tech Degree
Semesters I to IV

MECHANICAL ENGINEERING *(Specialization:* Machine Design*)*

SEMESTER - I

Exam Slot	Course Code	Course Title	L-T-P	Internal Marks	End Semester Exam		Credits
					Marks	Duration (Hrs.)	
A	03 MA 6001	Engineering Mathematics	3-0-0	50	50	3	3
B	03 ME 6201	Theory of Vibration	3-1-0	50	50	3	4
C	03 ME 6211	Finite Element Method	3-1-0	50	50	3	4
D	03 ME 6221	Advanced Theory of Mechanisms	3-1-0	50	50	3	4
E		Elective I	3-0-0	50	50	3	3
	03 RM 6001	Research Methodology	1-1-0	100	0	0	2
	03 ME 6811	Design Engineering Lab I	0-0-2	100	0	0	1
	03 ME 6901	Seminar I	0-0-2	100	0	0	2
TOTAL			**16-4-4**	**550**	**250**	**15**	**23**

ELECTIVE I

03 ME 6231 Design for Manufacture, Assembly and Environments
03 ME 6241 Industrial Tribology
03 ME 6251 Mechatronics
03 ME 6261 Optimization Techniques for Engineering

SEMESTER II

Exam Slot	*Course Code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam Marks*	*Duration (Hrs)*	*Credits*
A	03ME 6202	Continuum Mechanics	3-1-0	50	50	3	4
B	03ME 6212	Fracture Mechanics	3-0-0	50	50	3	3
C	03ME 6222	DesignofPower Transmission Elements	3-0-0	50	50	3	3
D		**Elective II**	3-0-0	50	50	3	3
E		**Elective III**	3-0-0	50	50	3	3
	03ME 6902	Mini Project	0-0-4	100	0	0	2
	03ME 6812	Design Engineering Lab II	0-0-2	100	0	0	1
TOTAL			**15-1-6**	**450**	**250**	**15**	**19**

ELECTIVE II

03 ME 6232Advanced Design Synthesis
03 ME 6242Design Engineering
03 ME 6252 Design of Pressure Vessels and Piping
03 ME 6262 Mechanics of Composite Materials

ELECTIVE III

03 ME 6272 Advanced Machine Tool Design
03 ME 6282 Computational Fluid Dynamics
03 ME 6292 Experimental Stress Analysis
03 ME 6302 Advanced Theory of Vibration

SEMESTER III

Exam Slot	*Course code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam Marks*	*Duration (Hrs)*	*Credits*
A		Elective IV	3-0-0	50	50	3	3
B		Elective V	3-0-0	50	50	3	3
	03ME 7903	Seminar II	0-0-2	100	0	0	2
	03ME 7913	Project Phase I	0-0-8	50	0	0	6
TOTAL			**6-0-10**	**250**	**100**	**6**	**14**

ELECTIVE IV

03 ME 7203	Computer Integrated Manufacturing
03 ME 7213	Acoustics and Noise Control
03 ME 7223	Plates and Shells
03 ME 7233	Applied Elasticity and Plasticity

ELECTIVE V

03 ME 7243	Industrial Instrumentation
03 ME 7253	Principles of Robotics and Applications
03 ME 7263	Advanced Finite Element Methods
03 ME 7273	Design of Thermal Systems

SEMESTER IV

Exam Slot	***Course code***	***Course Title***	Internal Marks	**L-T-P**	***Credits***
1	03ME 7904	Project Phase II	100	0-0-21	12
TOTAL			**100**	**0-0-21**	**12**

	Credits
Grand total credits (Semester I to IV)	**68**

ELECTRONICS ENGINEERING *(Specialization: Signal Processing)*

SEMESTER- I

Exam Slot	*Course Code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam*		*Credits*
					Marks	*Duration (Hrs)*	
A	03EC6401	Linear Algebra for Signal Processing	3-1-0	50	50	3	4
B	03 EC 6411	Probability & Random Process	3-1-0	50	50	3	4
C	03 EC 6421	Multi rate Signal Processing	3-1-0	50	50	3	4
D	03 EC 6431	Digital Signal Processors	3-0-0	50	50	3	3
E		Elective I	3-0-0	50	50	3	3
	03 RM 6001	Research Methodology	1-1-0	100	0	0	2
	03 EC 6821	Signal Processing Lab I	0-0-2	100	0	0	1
	03 EC 6901	Seminar I		100	0	0	2
Total credits for Semester I							***23***

ELECTIVE I

1. 03 EC 6441 Modulation & Coding Theory
2. 03 EC 6451 Artificial Neural Networks
3. 03 EC 6461 Advanced Digital System Design
4. 03 EC 6471 Signal Compression Techniques

SEMESTER II

Exam Slot	*Course Code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam Marks*	*Duration (Hrs)*	*Credits*
A	03EC 6402	Estimation & Detection Theory	3-1-0	50	50	3	4
B	03EC 6412	Digital image Processing	3-0-0	50	50	3	3
C	03EC 6422	Adaptive Signal Processing	3-0-0	50	50	3	3
D		Elective II	3-0-0	50	50	3	3
E		Elective III	3-0-0	50	50	3	3
	03EC 6902	Mini Project	0-0-4	100	0	0	2
	03EC 6832	Signal Processing Lab II	0-0-2	100	0	0	1
Total credits for Semester II							***19***

ELECTIVE II

1. 03EC 6432 Speech processing & coding
2. 03EC 6442 Wavelet theory & applications
3. 03EC 6452 Multidimensional Signal Processing
4. 03EC 6462 Optical Signal Processing

ELECTIVE III

1. 03EC 6472 VLSI Architectures For DSP
2. 03EC 64822 Pattern Recognition
3. 03EC 6492 Audio signal processing
4. 03EC 6502 Array Signal Processing

SEMESTER III

Exam Slot	*Course code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam*		*Credits*
					Marks	*Duration (Hrs)*	
A		Elective IV	3-0-0	50	50	3	3
B		Elective V	3-0-0	50	50	3	3
	03EC 7903	Seminar II	0-0-2	100	0	0	2
	03EC 7913	Project Phase I	0-0-8	50	0	0	6
Total credits for semester III							***14***

ELECTIVE IV

1. 03EC 7403 Soft Computing
2. 03EC 7413 Wireless Networks
3. 03EC 7423 Biomedical Signal Processing
4. 03EC 7433 Multimedia Security

ELECTIVE V

1. 03EC 7443 Time Frequency Analysis
2. 03EC 7453 Computer Vision
3. 03EC 7463 Digital Control system
4. 03EC 7473 Optimization Techniques

SEMESTER-IV

Exam Slot	*Course code*	*Course Title*	*Credits*
A	03EC 7914	Project Phase II	12
Total credits for Semester IV			***12***

	Credits
Grand total credits (Semester I to IV)	**68**

CIVIL ENGINEERING *(Specialization: Structural Engineering & Construction Management)*

SEMESTER I

Exam Slot	*Course Code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam*		*Credits*
					Marks	*Duration (Hrs)*	
A	03CE 6001	Structural Dynamics	3-1-0	50	50	3	4
B	03CE6011	Advanced Theory and Design of Reinforced Concrete Structures	3-1-0	50	50	3	4
C	03CE6021	Theory of Elasticity	3-1-0	50	50	3	4
D	03CE 6071	Construction management and planning	3-0-0	50	50	3	3
E		Elective I	3-0-0	50	50	3	3
	03 RM 6001	Research Methodology	1-1-0	100	0	0	2
	03CE 6901	Seminar I	0-0-1	100	0	0	2
	03CE 6811	Structural Engineering Lab	0-0-2	100	0	0	1
	TOTAL		**16-4-4**	**550**	**250**	**15**	**23**

ELECTIVE I

03 CE 6081	Advanced Design of Steel Structures
03 CE 6091	Shoring, scaffolding and formwork
03 CE 6101	Advanced Analysis of Structures

SEMESTER II

Exam Slot	*Course Code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam Marks*	*Duration (Hrs)*	*Credits*
A	03CE 6002	Finite Element Method	4-0-0	50	50	3	4
B	03CE 6012	Advanced Design of Earthquake Resistant Structures	3-0-0	50	50	3	3
C	03 CE 6092	Project formulation and Appraisal	3-0-0	50	50	3	3
D	**	Elective II	3-0-0	50	50	3	3
E	**	Elective III	3-0-0	50	50	3	3
	03 CE 6902	Mini Project	0-0-4	100	0	0	2
	03 CE 6812	Structural Dynamics Lab	0-0-2	100	0	0	1
	TOTAL		**15-1-6**	**450**	**250**	**15**	**19**

ELECTIVE II

03CE6032	Advanced Prestressed Concrete Design
03 CE 6102/03CE7033	Stability of Structures
03 CE 6022	Theory and design of plates and shells

ELECTIVE III

03CE6082	Design of Bridges
03 CE 6112/03CE7003	High Rise Structures
03CE6052	Structural Optimization

SEMESTER III

Exam Slot	*Course code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam Marks*	*Duration (Hrs)*	*Credits*
A		Elective IV	3-0-0	50	50	3	3
B		Elective V	3-0-0	50	50	3	3
	03 CE 7903	Seminar II	0-0-2	100	0	0	2
	03 CE 7913	Project Phase I	0-0-8	50	0	0	6
	TOTAL		**6-0-10**	**250**	**100**	**6**	**14**
Total credits for semester III							***14***

ELECTIVE IV

03CE7063	Design of Steel Concrete Composite Structures
03CE7073	Strength and Behaviour of Structural Materials
03CE7083	Advanced Design of Substructures

ELECTIVE V

03CE7093	Management Quality and Safety in Construction
03CE7103	Construction Methods and Equipments
03CE7113	Construction Productivity Improvement

SEMESTER-IV

Exam Slot	*Course code*	*Course Title*	*L-T-P*	*Internal Marks*	*End Semester Exam Marks*	*Duration (Hrs)*	*Credits*
A	03CE 7904	Project Phase II	0-0-21	100	0	0	12
Total credits for Semester IV							***12***

	Credits
Grand total credits (Semester I to IV)	**68**

CURRICULUM I TO VIII: B.TECH CIVIL ENGINEERING

Every course of B. Tech. Program shall be placed in one of the nine categories as listed in table below.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
	Total Mandatory Credits	**162**	
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum. Semester-wise credit distribution shall be as below:

Sem	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2
G.Total									**162**

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc

Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, , Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Communication, Management, Finance & Accounting, Life Skills, Professional Communication, Economics etc.

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like **E C L 2 0 1.** The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the Table 1.

Table 1: Code for the courses

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Programme of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi.

Departments

Each course is offered by a Department and their two-letter course prefix is given in Table 2.

Table 2: Departments and their codes

Sl.No	Department	Course Prefix	Sl.No	Department	Course Prefix
01	Aeronautical Engg	AO	16	Information Technology	IT
02	Applied Electronics & Instrumentation	AE	17	Instrumentation & Control	IC
03	Automobile	AU	18	Mandatory Courses	MC
04	Biomedical Engg	BM	19	Mathematics	MA
05	Biotechnology	BT	20	Mechanical Engg	ME
06	Chemical Engg	CH	21	Mechatronics	MR
07	Chemistry	CY	22	Metallurgy	MT
08	Civil Engg	CE	23	Mechanical (Auto)	MU
09	Computer Science	CS	24	Mechanical(Prod)	MP
10	Electrical & Electronics	EE	25	Naval & Ship Building	SB
11	Electronics & Biomedical	EB	26	Physics	PH
12	Electronics & Communication	EC	27	Polymer Engg	PO
13	Food Technology	FT	28	Production Engg	PE
14	Humanities	HU	29	Robotics and Automation	RA
15	Industrial Engg	IE	30	Safety & Fire Engg	FS

SEMESTER

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**23/24 ***	**17**

*Minimum hours per week

NOTE:

To make up for the hours lost due to induction program, one extra hour may be allotted to each course

SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**28/29**	**21**

NOTE:

1. Engineering Physics B and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics B in SI and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics B in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.

2. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Mechanics in SI and Engineering Graphics in S2 & vice versa.
3. Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLY can choose this course in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the same semester.

4. LIFE SKILLS

Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

5. PROFESSIONAL COMMUNICATION

Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self-expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.

SEMESTER 99

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	CET201	MECHANICS OF SOLIDS	3-1-0	4	4
C	CET203	FLUID MECHANICS& HYDRAULICS	3-1-0	4	4
D	CET205	SURVEYING & GEOMATICS	4-0-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	--
S	CEL201	CIVIL ENGINEERING PLANNING &DRAFTING LAB	0-0-3	3	2
T	CEL203	SURVEY LAB	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4 *	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
B	CET202	ENGINEERING GEOLOGY	3-0-1	4	4
C	CET204	GEOTECHNICAL ENGINEERING – I	4-0-0	4	4
D	CET206	TRANSPORTATION ENGINEERING	4-0-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	--
S	CEL202	MATERIAL TESTING LAB– I	0-0-3	3	2
T	CEL204	FLUID MECHANICS LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CET301	STRUCTURAL ANALYSIS – I	3-1-0	4	4
B	CET303	DESIGN OF CONCRETE STRUCTURES	3-1-0	4	4
C	CET305	GEOTECHNICAL ENGINEERING – II	4-0-0	4	4
D	CET307	HYDROLOGY & WATER RESOURCES ENGINEERING	4-0-0	4	4
E	CET309	CONSTRUCTION TECHNOLOGY& MANAGEMENT	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	CEL331	MATERIAL TESTING LAB – II	0-0-3	3	2
T	CEL333	GEOTECHNICAL ENGINEERING LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
TOTAL				**27/31**	**23/27**

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

SEMESTER VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CET302	STRUCTURAL ANALYSIS – II	3-1-0	4	4
B	CET304	ENVIRONMENTAL ENGINEERING	4-0-0	4	4
C	CET306	DESIGN OF HYDRAULIC STRUCTURES	4-0-0	4	4
D	CETXXX	PROGRAM ELECTIVE I	3-0-0	3	3
E	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
F	CET308	COMREHENSIVE COURSE WORK	1-0-0	1	1
S	CEL332	TRANSPORTATION ENGINEERING LAB	0-0-3	3	2
T	CEL334	CIVIL ENGINEERING SOFTWARE LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
TOTAL				**25/29**	**23/27**

PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	CET312	ADVANCED COMPUTATIONAL METHODS	3-0-0	3	3
	CET322	GEOTECHNICAL INVESTIGATION	3-0-0		
	CET332	TRAFFIC ENGINEERING & MANAGEMENT	3-0-0		
	CET342	MECHANICS OF FLUID FLOW	3-0-0		
	CET352	ADVANCED CONCRETE TECHNOLOGY	3-0-0		
	CET362	ENVIRONMENTAL IMPACT ASSESSMENT	3-0-0		
	CET372	FUNCTIONAL DESIGN OF BUILDINGS	3-0-0		

NOTE:

1. **All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 2 to 4 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.
2. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted online by the University. **Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5.** The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.

SEMESTER VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CET401	DESIGN OF STEEL STRUCTURES	3-0-0	3	3
B	CETXXX	PROGRAM ELECTIVE II	3-0-0	3	3
C	CETXXX	OPEN ELECTIVE	3-0-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	CEL411	ENVIRONMENTAL ENGG LAB	0-0-3	3	2
T	CEQ413	SEMINAR	0-0-3	3	2
U	CED415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
TOTAL				**24/28**	**15/19**

PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	CET413	PRESTRESSED CONCRETE	3-0-0	3	3
	CET423	GROUND IMPROVEMENT TECHNIQUES	3-0-0		
	CET433	HIGHWAY MATERIALS AND DESIGN	3-0-0		
	CET443	APPLIED HYDROLOGY	3-0-0		
	CET453	CONSTRUCTION PLANNING & MANAGEMENT	3-0-0		
	CET463	ADVANCED ENVIRONMENTAL ENGINEERING	3-0-0		
	CET473	OPTIMISATION TECHNIQUES IN CIVIL ENGINEERING	3-0-0		

OPEN ELECTIVE

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. The courses listed below are offered by **the Department of CIVIL ENGINEERING for students of other undergraduate branches offered in the college.**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	CET415	ENVIRONMENTAL IMPACT ASSESSMENT	2-1-0	3	3
	CET425	APPLIED EARTH SYSTEMS	2-1-0		
	CET435	INFORMATICS FOR INFRASTRUCTURE MANAGEMENT	2-1-0		
	CET445	NATURAL DISASTERS AND MITIGATION	2-1-0		
	CET455	ENVIRONMENTAL HEALTH AND SAFETY	2-1-0		
	CET465	GEOINFORMATICS	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of internal members comprising three senior faculty members based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50

Attendance	10
Guide	20
Technical Content of the Report	30
Presentation	40

3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Civil Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
    - Survey and study of published literature on the assigned topic;
    - Preparing an Action Plan for conducting the investigation, including team work;
    - Working out a preliminary Approach to the Problem relating to the assigned topic;
    - Block level design documentation
    - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;
    - Preparing a Written Report on the Study conducted for presentation to the Department;
    - Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide	: 30
Interim evaluation by the evaluation committee	: 20
Final Seminar	: 30
The report evaluated by the evaluation committee	: 20

The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project supervisor.

SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	CET402	QUANTITY SURVEYING & VALUATION	3-0-0	3	3
B	CETXXX	PROGRAM ELECTIVE III	3-0-0	3	3
C	CETXXX	PROGRAM ELECTIVE IV	3-0-0	3	3
D	CETXXX	PROGRAM ELECTIVE V	3-0-0	3	3
E	CET404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	CED416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4*	4
TOTAL				**25/29**	**17/21**

PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	CET414	ADVANCED STRUCTURAL DESIGN	3-0-0	3	3
	CET424	GEOENVIRONMENTAL ENGINEERING	3-0-0		
	CET434	RAILWAY AND TUNNEL ENGINEERING	3-0-0		
	CET444	IRRIGATION & DRAINAGE ENGINEERING	3-0-0		
	CET454	CONSTRUCTION METHODS & EQUIPMENT	3-0-0		
	CET464	AIRQUALITY MANAGEMENT	3-0-0		
	CET474	URBAN PLANNING & ARCHITECTURE	3-0-0		

PROGRAM ELECTIVE IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	CET416	BRIDGE ENGINEERING	3-0-0	3	3
	CET426	ADVANCED FOUNDATION DESIGN	3-0-0		
	CET436	TRANSPORTATION PLANNING	3-0-0		
	CET446	INFORMATICS FOR INFRASTRUCTURE MANAGEMENT	3-0-0		
	CET456	REPAIR AND REHABILITATION OF BUILDINGS	3-0-0		
	CET466	ENVIRONMENTAL REMOTESENSING	3-0-0		
	CET476	BULDING SERVICES	3-0-0		

PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	CET418	EARTHQUAKERESISTANT DESIGN	3-0-0	3	3
	CET428	SOIL STRUCTURE INTERACTION	3-0-0		
	CET438	AIRPORT, SEAPORT AND HARBOUR ENGINEERING	3-0-0		
	CET448	HYDROCLIMATOLOGY	3-0-0		
	CET458	SUSTAINABLE CONSTRUCTION	3-0-0		
	CET468	CLIMATE CHANGE & SUSTAINABILITY	3-0-0		
	CET478	BUILDING INFORMATION MODELLING	3-0-0		

NOTE

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honors programme, he/she can be given remedial class.
2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the syllabus mentioned for comprehensive course work in the sixth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
3. **Project Phase II:** The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
    - In depth study of the topic assigned in the light of the Report prepared under PhaseI;
    - Review and finalization of the Approach to the Problem relating to the assigned topic;
    - Detailed Analysis/ Modelling/ Simulation/ Design/ Problem Solving/ Experiment as needed;
    - Final development of product/process, testing, results, conclusions and future directions;
    - Preparing a paper for Conference presentation/Publication in Journals, if possible;
    - Preparing a Dissertation in the standard format for being evaluated by the Department;
    - Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide	30
Interim evaluation, 2 times in the semester by the evaluation committee	50
Quality of the report evaluated by the above committee	30
Final evaluation by a three member committee	40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute

and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by **M slot courses.**

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

(iv) There won't be any supplementary examination for the courses chosen for Minor.

(v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.

(vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered **for B.Tech Minor in CIVIL ENGINEERING Branch** can opt to study the courses listed below:

Semester	BASKET I				BASKET II				BASKET III			
	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT
S3	CET281	Building construction & structural systems	4	4	CET283	Introduction to Geotechnical Engineering	4	4	CET285	Informatics for Infrastructure Management	4	4
S4	CET282	Building drawing	4	4	CET284	Introduction to Transportation Engineering	4	4	CET286	Climate change & hazard mitigation	4	4
S5	CET381	Structural mechanics	4	4	CET383	Eco-friendly transportation systems	4	4	CET385	Sustainability analysis & design	4	4
S6	CET382	Estimation & costing	4	4	CET384	Geotechnical investigation & ground improvement techniques	4	4	CET386	Environmental health& safety	4	4
S7	CED481	MINI PROJECT	4	4	CED481	MINI PROJECT	4	4	CED481	MINI PROJECT	4	4
S8	CED482	MINI PROJECT	4	4	CED482	MINI PROJECT	4	4	CED482	MINI PROJECT	4	4

HONOURS

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as “Bachelor of Technology in xxx, with Honours.” The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

(i) The curriculum/syllabus committee/BOS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.

(ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses).

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.

(iv) There won't be any supplementary examination for the courses chosen for honours.

(v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.

(vi) The registration for honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. Students who have registered for **B.Tech Honours in CIVIL ENGINEERING** can opt to study the courses listed below:

Semester	GROUP I				GROUP II				GROUP III			
	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT
S 4	CET292	ADVANCED MECHANICS OF SOLIDS	4	4	CET294	PAVEMENT CONSTRUCTION AND MANAGEMENT	4	4	CET296	GEOGRAPHICAL INFORMATION SYSTEMS	4	4
S 5	CET393	STRUCTURAL DYNAMICS	4	4	CET395	TRANSPORTATION SYSTEMS MANAGEMENT	4	4	CET397	GROUND WATER HYDROLOGY	4	4
S 6	CET394	FINITE ELEMENT METHODS	4	4	CET396	EARTH DAMS AND EARTH RETAINING STRUCTURES	4	4	CET398	ENVIRONMENTAL POLLUTION MODELLING	4	4
S 7	CET495	MODERN CONSTRUCTION MATERIALS	4	4	CET497	SOIL DYNAMICS AND MACHINE FOUNDATIONS	4	4	CET499	ENVIRONMENTAL POLLUTION CONTROL TECHNIQUES	4	4
S 8	CED496	MINI PROJECT	4	4	CED496	MINI PROJECT	4	4	CED496	MINI PROJECT	4	4

CURRICULUM I TO VIII: B.Tech ELECTRONICS & COMMUNICATION ENGINEERING

Every course of B. Tech. Program shall be placed in one of the nine categories as listed in tablebelow.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
	Total Mandatory Credits	162	
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/ordrawing/seminar/project courses in the curriculum.

Semester-wise credit distribution shall be as below:

Semester	1	2	3	4	5	6	7	8	Total
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2
Grand.Total									162

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc

Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Ethics, Management, Finance & Accounting, Life skills, Professional Communication, Economicsetc

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like E C L 2 0 1. The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the following table.

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Programme of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi.

Departments

Each course is offered by a Department and their two-letter course prefix is given in Table 2.

Table 2: Departments and their codes

Sl.No	Department	Course Prefix	Sl.No	Department	Course Prefix
01	Aeronautical Engg	AO	16	Information Technology	IT
02	Applied Electronics & Instrumentation	AE	17	Instrumentation & Control	IC
03	Automobile	AU	18	Mandatory Courses	MC
04	Biomedical Engg	BM	19	Mathematics	MA
05	Biotechnology	BT	20	Mechanical Engg	ME
06	Chemical Engg	CH	21	Mechatronics	MR
07	Chemistry	CY	22	Metallurgy	MT
08	Civil Engg	CE	23	Mechanical (Auto)	MU
09	Computer Science	CS	24	Mechanical(Prod)	MP
10	Electrical & Electronics	EE	25	Naval & Ship Building	SB
11	Electronics & Biomedical	EB	26	Physics	PH
12	Electronics & Communication	EC	27	Polymer Engg	PO
13	Food Technology	FT	28	Production Engg	PE
14	Humanities	HU	29	Robotics and Automation	RA
15	Industrial Engg	IE	30	Safety & Fire Engg	FS

SEMESTER

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**23/24 ***	**17**

*Minimum hours per week

Note:

To make up for the hours lost due to induction program, one extra hour may be allotted to eachcourse

SEMESTER

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**28/29**	**21**

NOTE:

1. Engineering Physics A and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics A in SI and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics A in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.

2. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Mechanics in SI and Engineering Graphics in S2 & vice versa.
3. Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for

Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY,

BT, BCE, CHEM, FT, POLY can choose this course in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the same semester.

4. LIFE SKILLS

Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

5. PROFESSIONAL COMMUNICATION

Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self-expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.

Semester

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	ECT 201	SOLID STATE DEVICES	3-1-0	4	4
C	ECT 203	LOGIC CIRCUIT DESIGN	3-1-0	4	4
D	ECT 205	NETWORK THEORY	3-1-0	4	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	--
S	ECL 201	SCIENTIFIC COMPUTING LAB	0-0-3	3	2
T	ECL 203	LOGIC DESIGN LAB	0-0-3	3	2
R/M	VAC	Remedial/Minor course	3-1-0	4**	4
		TOTAL		26/30	22/26

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.

2. *All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

Semester

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 204	PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS	3-1-0	4	4
B	ECT 202	ANALOG CIRCUITS	3-1-0	4	4
C	ECT 204	SIGNALS AND SYSTEMS	3-1-0	4	4
D	ECT 206	COMPUTER ARCHITECTURE AND MICROCONTROLLERS	3-1-0	4	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	--
S	ECL 202	ANALOG CIRCUITS AND SIMULATION LAB	0-0-3	3	2
T	ECL 204	MICROCONTROLLER LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4**	4
		TOTAL		26/30	22/26

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

Semester V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 301	LINEAR INTEGRATED CIRCUITS	3-1-0	4	4
B	ECT 303	DIGITAL SIGNAL PROCESSING	3-1-0	4	4
C	ECT 305	ANALOG AND DIGITAL COMMUNICATION	3-1-0	4	4
D	ECT 307	CONTROL SYSTEMS	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	ECL 331	ANALOG INTEGRATED CIRCUITS AND SIMULATION LAB	0-0-3	3	2
T	ECL 333	DIGITAL SIGNAL PROCESSING LAB	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4**	4
		TOTAL		**27/31**	**23/27**

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

Semester VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 302	ELECTROMAGNETICS	3-1-0	4	4
B	ECT 304	VLSI CIRCUIT DESIGN	3-1-0	4	4
C	ECT 306	INFORMATION THEORY AND CODING	3-1-0	4	4
D	ECTXXX	PROGRAM ELECTIVE I	2-1-0	3	3
E ½	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	ECT 308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	ECL 332	COMMUNICATION LAB	0-0-3	3	2
T	ECD 334	MINIPROJECT	0-0-3	3	2
R/M/H	VAC	Remedial/Minor/Honours course	3-1-0	4**	4
TOTAL				25/29	23/27

PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	ECT 312	Digital System Design	2-1-0	3	3
	ECT 322	Power Electronics	2-1-0		
	ECT 332	Data Analysis	2-1-0		
	ECT 342	Embedded Systems	2-1-0		
	ECT 352	Digital Image Processing	2-1-0		
	ECT 362	Introduction to MEMS	2-1-0		
	ECT 372	Quantum Computing	2-1-0		

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted by the University. **Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5.** The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.
4. Mini project: It is introduced in sixth semester with a specific objective to strengthen the understanding of student's fundamentals through application of theoretical concepts. Mini project can help to boost their skills and widen the horizon of their thinking. The ultimate aim of an engineering student is to resolve a problem by applying theoretical knowledge. Doing more projects increases problem-solving skills. Students should identify a topic of interest in consultation with Faculty/Advisor. Review the literature and gather information pertaining to the chosen topic. State the objectives and develop a methodology to achieve the objectives. Carryout the design/fabrication or develop codes/programs to achieve the objectives. Demonstrate the novelty of the project through the results and outputs. The progress of the mini project is evaluated based on a minimum of two reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The product has to be demonstrated for its full design specifications. Innovative design concepts, reliability considerations, aesthetics/ergonomic aspects taken care of in the project shall be given due weight. The internal evaluation will be made based on the product, the report and a viva- voce examination, conducted by a 3 member committee appointed by Head of the Department comprising HoD or a senior faculty member, Academic coordinator for that program, project guide/coordinator.

   Total marks: 150, CIE 75 marks and ESE 75 marks

   Split up for CIE

Attendance	10
Guide	15
Project Report	10

   Evaluation by the Committee (will be evaluating the level of completion and demonstration of functionality/specifications, presentation, oral examination, work knowledge and involvement) : 40

Semester VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 401	WIRELESS COMMUNICATION	2-1-0	3	3
B	ECTXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	ECTXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	ECL 411	ELECTROMAGNETICS LAB	0-0-3	3	2
T	ECQ 413	SEMINAR	0-0-3	3	2
U	ECD 415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	Remedial/Minor/Honors course	3-1-0	4*	4
TOTAL				24/28	15/19

PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	ECT 413	Optical Fiber Communication	2-1-0	3	3
	ECT 423	Computer Networks	2-1-0		
	ECT 433	Opto-electronic Devices	2-1-0		
	ECT 443	Antenna and Wave propagration	2-1-0		
	ECT 453	Error Control Codes	2-1-0		
	ECT 463	Machine Learning	2-1-0		
	ECT 473	DSP Architectures	2-1-0		

OPEN ELECTIVE (OE)

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. The courses listed below are offered by **the Department of ELECTRONICS AND COMMUNICATION ENGINEERING for students of other undergraduate branches offered in the college under KTU.**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	ECT 415	Mechatronics	2-1-0	3	3
	ECT 425	Biomedical Instrumentation	2-1-0		
	ECT 435	Electronic Hardware for Engineers	2-1-0		
	ECT 445	IoT and Applications	2-1-0		
	ECT 455	Entertainment Electronics	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

   Total marks: 100, only CIE, minimum required to pass 50

Attendance	10
Guide	20
Technical Content of the Report	30
Presentation	40

3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Electronics and Communication Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
   - Survey and study of published literature on the assigned topic;
   - Preparing an Action Plan for conducting the investigation, including team work;
   - Working out a preliminary Approach to the Problem relating to the assigned topic;
   - Block level design documentation
   - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;

- Preparing a Written Report on the Study conducted for presentation to the Department;
- Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide : 30

Interim evaluation by the evaluation committee : 20

Final Seminar : 30

The report evaluated by the evaluation committee : 20

The evaluation committee comprises HoD or a senior faculty member, Project coordinator and project supervisor.

Semester VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	ECT 402	INSTRUMENTATION	2-1-0	3	3
B	ECTXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	ECTXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	ECTXXX	PROGRAM ELECTIVE V	2-1-0	3	3
E	ECT 404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	ECD 416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	Remedial/Minor/Honors course	3-1-0	4*	4
TOTAL				25/28	17/21

PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	ECT 414	Biomedical Engineering	2-1-0	3	3
	ECT 424	Satellite Communication	2-1-0		
	ECT 434	Secure Communication	2-1-0		
	ECT 444	Pattern Recognition	2-1-0		
	ECT 454	RF Circuit Design	2-1-0		
	ECT 464	Mixed Signal Circuit Design	2-1-0		
	ECT 474	Entrepreneurship	2-1-0		

PROGRAM ELECTIVE IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	ECT 416	Modern Communication Systems	2-1-0	3	3
	ECT 426	Real Time Operating Systems	2-1-0		
	ECT 436	Adaptive Signal Processing	2-1-0		
	ECT 446	Microwave Devices and Circuits	2-1-0		
	ECT 456	Speech and Audio Processing	2-1-0		
	ECT 466	Analog CMOS Design	2-1-0		
	ECT 476	Robotics	2-1-0		

PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	ECT 418	Mechatronics	2-1-0	3	3
	ECT 428	Optimization Techniques	2-1-0		
	ECT 438	Computer Vision	2-1-0		
	ECT 448	Low Power VLSI	2-1-0		
	ECT 458	Internet of Things	2-1-0		
	ECT 468	Renewable Energy Systems	2-1-0		
	ECT 478	Organic Electronics	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the core subjects studied from third to eighth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.

3. Project Phase II: The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
   - In depth study of the topic assigned in the light of the Report prepared under PhaseI;
   - Review and finalization of the Approach to the Problem relating to the assigned topic;
   - Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed;
   - Final development of product/process, testing, results, conclusions and future directions;
   - Preparing a paper for Conference presentation/Publication in Journals, if possible;
   - Preparing a Dissertation in the standard format for being evaluated by the Department;
   - Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide	30
Interim evaluation, 2 times in the semester by the evaluation committee	50
Quality of the report evaluated by the above committee	30

(The evaluation committee comprises HoD or a senior faculty member, Projectcoordinator and project supervisor).

Final evaluation by a three member committee 40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by **M slot courses**.

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

(iv)There won't be any supplementary examination for the courses chosen for Minor.

(v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.

(vi)The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered for B.Tech Minor in **ELECTRONICS AND COMMUNICATION** can opt to study the courses listed below:

SEMESTER	BASKET I				BASKET II					BASKET III			
	COURSE NO.	COURSE NAME	HOURS	CREDIT	HOURS	COURSE NO.	COURSE NAME	HOURS	CREDIT	COURSE NO.	COURSE NAME	HOURS	CREDIT
S3	ECT281	ELECTRONIC CIRCUITS	4	4		ECT283	ANALOG COMMUNICATION	4	4	ECT285	INTRODUCTION TO SIGNALS AND SYSTEMS	4	4
S4	ECT282	MICROCONTROLLERS	4	4		ECT284	DIGITAL COMMUNICATION	4	4	ECT286	INTRODUCTION TO DIGITAL SIGNAL PROCESSING	4	4
S5	ECT381	EMBEDDED SYSTEM DESIGN	4	4		ECT383	COMMUNICATION SYSTEMS	4	4	ECT385	TOPICS IN DIGITAL IMAGE PROCESSING	4	4
S6	ECT382	VLSI CIRCUITS	4	4		ECT384	DATA NETWORKS	4	4	ECT386	TOPICS IN COMPUTER VISION	4	4
S7	ECD481	MINIPROJECT	4	4		ECD481	MINIPROJECT	4	4	ECD481	MINIPROJECT	4	4
S8	ECD482	MINIPROJECT	4	4		ECD482	MINIPROJECT	4	4	ECD482	MINIPROJECT	4	4

HONOURS

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.

(ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses).

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.

(iv) There won't be any supplementary examination for the courses chosen for honours.

(v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.

(vi) The registration for Honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. Students who have registered for B.Tech Honours in **ELECTRONICS AND COMMUNICATION ENGINEERING** can opt to study the courses listed below:

	GROUP I				GROUP II				GROUP II			
SEMESTER	**COURSE NO.**	**COURSE NAME**	**HOURS**	**CREDIT**	**COURSE NO.**	**COURSE NAME**	**HOURS**	**CREDIT**	**COURSE NO.**	**COURSE NAME**	**HOURS**	**CREDIT**
S4	ECT292	NANOELECTRONICS	4	4	ECT294	STOCHASTIC PROCESSES FOR COMMUNICATION	4	4	ECT296	STOCHASTIC SIGNAL PROCESSING	4	4
S5	ECT393	FPGA BASED SYSTEM DESIGN	4	4	ECT395	DETECTION AND ESTIMATION THEORY	4	4	ECT397	COMPUTATIONAL TOOLS FOR SIGNAL PROCESSING	4	4
S6	ECT394	ELECTRONIC DESIGN AND AUTOMATION TOOLS	4	4	ECT396	MIMO AND MULTIUSER COMMUNICATION SYSTEMS	4	4	ECT398	DETECTION AND ESTIMATION THEORY	4	4
S7	ECT495	RF MEMS	4	4	ECT497	DESIGN AND ANALYSIS OF ANTENNAS	4	4	ECT499	MULTIRATE SIGNAL PROCESSING AND WAVELETS	4	4
S8	ECD496	MINIPROJECT	4	4	ECD496	MINIPROJECT	4	4	ECD496	MINIPROJECT	4	4

APJ ABDUL KALAM
TECHNOLOGICAL
UNIVERSITY
KTU
Estd.
2014

CURRICULUM I TO VIII: ELECTRICAL & ELECTRONICS ENGINEERING

Every course of B. Tech. Program shall be placed in one of the nine categories as listedin table below.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
	Total Mandatory Credits	**162**	
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum. Semester-wise credit distribution shall be as below:

Sem	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2
G.Total									**162**

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc

Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Ethics, Management, Finance & Accounting, Life Skills, Professional Communication, Economics etc

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like **E C L 2 0 1.** The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the Table 1.

Table 1: Code for the courses

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Programme of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi.

Departments

Each course is offered by a Department and their two-letter course prefix is given in Table 2.

Table 2: Departments and their codes

Sl.No	Department	Course Prefix	Sl.No	Department	Course Prefix
01	Aeronautical Engg	AO	16	Information Technology	IT
02	Applied Electronics & Instrumentation	AE	17	Instrumentation & Control	IC
03	Automobile	AU	18	Mandatory Courses	MC
04	Biomedical Engg	BM	19	Mathematics	MA
05	Biotechnology	BT	20	Mechanical Engg	ME
06	Chemical Engg	CH	21	Mechatronics	MR
07	Chemistry	CY	22	Metallurgy	MT
08	Civil Engg	CE	23	Mechanical (Auto)	MU
09	Computer Science	CS	24	Mechanical(Prod)	MP
10	Electrical & Electronics	EE	25	Naval & Ship Building	SB
11	Electronics & Biomedical	EB	26	Physics	PH
12	Electronics & Communication	EC	27	Polymer Engg	PO
13	Food Technology	FT	28	Production Engg	PE
14	Humanities	HU	29	Robotics and Automation	RA
15	Industrial Engg	IE	30	Safety & Fire Engg	FS

SEMESTER

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**23/24 ***	**17**

*Minimum hours per week

Note: To make up for the hours lost due to induction program, one extra hour may be allotted to each course

SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 100	ENGINEERING PHYSICS A	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**28/29**	**21**

NOTE:

1. Engineering Physics A and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics A in SI and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics A in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.

2. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches

in the Institution to opt for Engineering Mechanics in SI and Engineering Graphics in S2 & vice versa.

3. Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

   Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLY can choose this course

   in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the same semester.

4. LIFE SKILLS

   Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

5. PROFESSIONAL COMMUNICATION

   Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self- expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.

SEMESTER

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	EET201	CIRCUITS AND NETWORKS	2-2-0	4	4
C	EET203	MEASUREMENTS AND INSTRUMENTATION	3-1-0	4	4
D	EET205	ANALOG ELECTRONICS	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	--
S	EEL201	CIRCUITS AND MEASUREMENTS LAB	0-0-3	3	2
T	EEL203	ANALOG ELECTRONICS LAB	0-0-3	3	2
R/M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4 *	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	MAT 204	PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS	3-1-0	4	4
B	EET202	DC MACHINES AND TRANSFORMERS	2-2-0	4	4
C	EET204	ELECTROMAGNETIC THEORY	3-1-0	4	4
D	EET206	DIGITAL ELECTRONICS	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	--
S	EEL202	ELECTRICAL MACHINES LAB I	0-0-3	3	2
T	EEL204	DIGITAL ELECTRONICS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student doesnot opt for minor programme, he/she can be given remedial class.

SEMESTER

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET301	POWER SYSTEMS I	3-1-0	4	4
B	EET303	MICROPROCESSORS AND MICROCONTROLLERS	3-1-0	4	4
C	EET305	SIGNALS AND SYSTEMS	3-1-0	4	4
D	EET307	SYNCHRONOUS AND INDUCTION MACHINES	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	EEL331	MICROPROCESSORS AND MICROCONTROLLERS LAB	0-0-3	3	2
T	EEL333	ELECTRICAL MACHINES LAB II	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**27/31**	**23/27**

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

SEMESTER VI

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET302	LINEAR CONTROL SYSTEMS	2-2-0	4	4
B	EET304	POWER SYSTEMS II	3-1-0	4	4
C	EET306	POWER ELECTRONICS	3-1-0	4	4
D	EETXXX	PROGRAM ELECTIVE I	2-1-0	3	3
E 1/2	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	EET308	COMREHENSIVE COURSE WORK	1-0-0	1	1
S	EEL332	POWER SYSTEMS LAB	0-0-3	3	2
T	EEL334	POWER ELECTRONICS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**28/32**	**23/27**

PROGRAM ELECTIVE I

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
D	EET312	BIOMEDICAL INSTRUMENTATION	2-1-0	3	3
	EET322	RENEWABLE ENERGY SYSTEMS	2-1-0		
	EET332	COMPUTER ORGANIZATION	2-1-0		
	EET342	HIGH VOLTAGE ENGINEERING	2-1-0		
	EET352	OBJECT ORIENTED PROGRAMMING	2-1-0		
	EET362	MATERIAL SCIENCE	2-1-0		
	EET372	SOFT COMPUTING	2-1-0		

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted by the University. **Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5.** The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.

SEMESTER VII

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET401	ADVANCED CONTROL SYSTEMS	2-1-0	3	3
B	EETXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	EETXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	EEL411	CONTROL SYSTEMS LAB	0-0-3	3	2
T	EEQ413	SEMINAR	0-0-3	3	2
U	EED415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**24/28**	**15/19**

PROGRAM ELECTIVE II

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
B	EET413	ELECTRIC DRIVES	2-1-0	3	3
	EET423	DIGITAL CONTROL SYSTEMS	2-1-0		
	EET433	MODERN OPERATING SYSTEMS	2-1-0		
	EET443	DATA STRUCTURES	2-1-0		
	EET453	DIGITAL SIGNAL PROCESSING	2-1-0		
	EET463	ILLUMINATION TECHNOLOGY	2-1-0		
	EET473	DIGITAL PROTECTION OF POWER SYSTEMS	2-1-0		

OPEN ELECTIVES

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs. For example the courses listed below are offered by **the Department of ELECTRICAL & ELECTRONICS ENGINEERING for students of other undergraduate branches offered in the college under KTU.**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	EET415	CONTROL SYSTEMS ENGINEERING	2-1-0	3	3
	EET425	INTRODUCTION TO POWER PROCESSING	2-1-0		
	EET435	RENEWABLE ENERGY SYSTEMS	2-1-0		
	EET445	ELECTRIC VEHICLES	2-1-0		
	EET455	ENERGY MANAGEMENT	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

   Total marks: 100, only CIE, minimum required to pass 50

Attendance	10
Guide	20
Technical Content of the Report	30
Presentation	40

3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Electrical &Electronics Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
   - Survey and study of published literature on the assigned topic;
   - Preparing an Action Plan for conducting the investigation, including team work;
   - Working out a preliminary Approach to the Problem relating to the assigned topic;
   - Block level design documentation

- Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;
- Preparing a Written Report on the Study conducted for presentation to the Department;
- Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide	30
Interim evaluation by the evaluation committee	20
Final Seminar	30
The report evaluated by the evaluation committee	20

The evaluation committee comprises HoD or a senior faculty member, Projectcoordinator and project supervisor.

SEMESTER VIII

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
A	EET402	ELECTRICAL SYSTEM DESIGN AND ESTIMATION	2-1-0	3	3
B	EETXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	EETXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	EETXXX	PROGRAM ELECTIVE V	2-1-0	3	3
T	EET404	COMPREHENSIVE COURSE VIVA	1-0-0	1	1
U	EED416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**25/29**	**17/21**

PROGRAM ELECTIVE III

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
B	EET414	ROBOTICS	2-1-0	3	3
	EET424	ENERGY MANAGEMENT	2-1-0		
	EET434	SMART GRID TECHNOLOGIES	2-1-0		
	EET444	ELECTRICAL MACHINE DESIGN	2-1-0		
	EET454	SWITCHED MODE POWER CONVERTERS	2-1-0		
	EET464	COMPUTER AIDED POWER SYSTEM ANALYSIS	2-1-0		
	EET474	MACHINE LEARNING	2-1-0		

PROGRAM ELECTIVE IV

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
C	EET416	NONLINEAR SYSTEMS	2-1-0	3	3
	EET426	SPECIAL ELECTRIC MACHINES	2-1-0		
	EET436	POWER QUALITY	2-1-0		
	EET446	COMPUTER NETWORKS	2-1-0		
	EET456	DESIGN OF POWER ELECTRONIC SYSTEMS	2-1-0		
	EET466	HVDC & FACTS	2-1-0		
	EET476	ADVANCED ELECTRONIC DESIGN	2-1-0		

PROGRAM ELECTIVE V

SLOT	COURSE NO	COURSES	L-T-P	HOURS	CREDIT
D	EET418	ELECTRIC AND HYBRID VEHICLES	2-1-0	3	3
	EET428	INTERNET OF THINGS	2-1-0		
	EET438	ENERGY STORAGE SYSTEMS	2-1-0		
	EET448	ROBUST AND ADAPTIVE CONTROL	2-1-0		
	EET458	SOLAR PV SYSTEMS	2-1-0		
	EET468	INDUSTRIAL INSTRUMENTATION &AUTOMATION	2-1-0		
	EET478	BIG DATA ANALYTICS	2-1-0		

NOTE

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the core subjects studied from third to eighth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.

3. **Project Phase II:** The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
    - In depth study of the topic assigned in the light of the Report prepared under PhaseI;
    - Review and finalization of the Approach to the Problem relating to the assigned topic;
    - Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed;

- Final development of product/process, testing, results, conclusions and future directions;
- Preparing a paper for Conference presentation/Publication in Journals, if possible;
- Preparing a Dissertation in the standard format for being evaluated by the Department;
- Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide	30
Interim evaluation, 2 times in the semester by the evaluation committee	50
Quality of the report evaluated by the above committee	30

(The evaluation committee comprises HoD or a senior faculty member, Projectcoordinator and project supervisor).

Final evaluation by a three-member committee 40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as “Bachelor of Technology in xxx with Minor in yyy”. The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by **M slot courses.**

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

(iv) There won't be any supplementary examination for the courses chosen for Minor.

(v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.

(vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered **for B. Tech Minor in ELECTRICAL & ELECTRONICS ENGINEERING** can opt to study the courses listed below:

Semester	BASKET I				BASKET II				BASKET III			
	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT
S3	EET281	ELECTRIC CIRCUITS	4	4	EET 283	INTRODUCTION TO POWER ENGINEERING	4	4	EET 285	DYNAMIC CIRCUITS AND SYSTEMS	4	4
S4	EET 282	ELECTRICAL MACHINES	4	4	EET 284	ENERGY SYSTEMS	4	4	EET 286	PRINCIPLES OF INSTRUMENTATION	4	4
S5	EET 381	SOLID STATE POWER CONVERSION	4	4	EET 383	SOLAR AND WINDENERGY CONVERSION SYSTEMS	4	4	EET 385	CONTROL SYSTEMS	4	4
S6	EET 382	POWER SEMICONDUCTOR DRIVES	4	4	EET 384	INSTRUMENTATION AND AUTOMATION OF POWER PLANTS	4	4	EET 386	DIGITAL CONTROL	4	4
S7	EED 481	MINIPROJECT	4	4	EED 481	MINIPROJECT	4	4	EED 481	MINIPROJECT	4	4

S8	EED 482	MINIPROJECT	4	4	EED 482	MINIPROJECT	4	4	EED 482	MINIPROJECT	4	4

Notes on Minor from Electrical Engineering Department:

Students have to credit additional 5 courses (20 credits) to receive minor in Electrical and Electronics Engineering. While choosing the minor basket, at least two courses in the selected basket should have contents different from the courses in the curriculum of the parent branch. (This is necessary in the case of related branches like Electronics and Communication, Electronics and Instrumentation, Applied Electronics and Instrumentation, Electronics and Biomedical, Computer Science and Engineering etc.) In case where the student chooses a basket with only two courses different from their parent curriculum, the remaining courses have to be selected from the approved MOOC courses. This restrictionmay be incorporated in the regulations/curriculum.

HONOURS

Honours is an additional credential a student may earn if she/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.

(ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses).

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired through 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.

(iv) There won't be any supplementary examination for the courses chosen for honours.

(v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.

(vi) The registration for honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. For example: Students who have registered for **B.Tech Honours in ELECTRICAL & ELECTRONICS ENGINEERING** can opt to study the courses listed below:

Semester	GROUP I				GROUP II				GROUP III			
	Course No	Course Name	HOURS	CREDIT	Course No	Course Name	HOURS	CREDIT	Course No	Course Name	HOURS	CREDIT
S4	EET292	NETWORK ANALYSIS AND SYNTHESIS	4	4	EET 292	NETWORK ANALYSIS AND SYNTHESIS	4	4	EET 292	NETWORK ANALYSIS AND SYNTHESIS	4	4
S5	EET393	DIGITAL SIMULATION	4	4	EET 393	DIGITAL SIMULATION	4	4	EET 393	DIGITAL SIMULATION	4	4
S6	EET394	GENERALISED MACHINE THEORY	4	4	EET 396	ANALYSIS OF POWER ELECTRONIC CIRCUITS	4	4	EET 398	OPERATION AND CONTROL OF POWER SYSTEMS	4	4
S7	EET495	OPERATION AND CONTROL OF GENERATORS	4	4	EET 497	DYNAMICS OF POWER CONVERTERS	4	4	EET 499	CONTROL AND DYNAMICS OF MICROGRIDS	4	4
S8	EED496	MINIPROJECT	4	4	EED 496	MINIPROJECT	4		EED 496	MINIPROJECT	4	4

CURRICULUM I TO VIII: B. TECH MECHANICAL ENGINEERING

Every course of B. Tech. Program shall be placed in one of the nine categories as listed in tablebelow.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
	Total Mandatory Credits	**162**	
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum. Semester-wise credit distribution shall be as below:

Sem	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2
G.Total									**162**

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc **Engineering science courses:** Basic Electrical, Engineering Graphics, Programming, Workshop,Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, ,Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Communication, Management, Finance & Accounting, Life Skills, Professional Communication, Economics etc.

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like **E C L 2 0 1.** The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the Table 1.

Table 1: Code for the courses

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Programme of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi.

Departments

Each course is offered by a Department and their two-letter course prefix is given in Table 2.

Table 2: Departments and their codes

Sl.No	Department	Course Prefix	Sl.No	Department	Course Prefix
01	Aeronautical Engg	AO	16	Information Technology	IT
02	Applied Electronics & Instrumentation	AE	17	Instrumentation & Control	IC
03	Automobile	AU	18	Mandatory Courses	MC
04	Biomedical Engg	BM	19	Mathematics	MA
05	Biotechnology	BT	20	Mechanical Engg	ME
06	Chemical Engg	CH	21	Mechatronics	MR
07	Chemistry	CY	22	Metallurgy	MT
08	Civil Engg	CE	23	Mechanical (Auto)	MU
09	Computer Science	CS	24	Mechanical(Prod)	MP
10	Electrical & Electronics	EE	25	Naval & Ship Building	SB
11	Electronics & Biomedical	EB	26	Physics	PH
12	Electronics & Communication	EC	27	Polymer Engg	PO
13	Food Technology	FT	28	Production Engg	PE
14	Humanities	HU	29	Robotics and Automation	RA
15	Industrial Engg	IE	30	Safety & Fire Engg	FS

SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**23/24 ***	**17**

*Minimum hours per week

NOTE:

To make up for the hours lost due to induction program, one extra hour may beallotted to each course

SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**28/29**	**21**

NOTE:

1. Engineering Physics B and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics B in SI and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics B in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.

2. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Mechanics in SI and Engineering Graphics in S2 & vice versa.

3. Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLY can choose this course in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the samesemester.

4. LIFE SKILLS

Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

5. PROFESSIONAL COMMUNICATION

Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self-expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.

SEMESTER III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	MET201	MECHANICS OF SOLIDS	3-1-0	4	4
C	MET203	MECHANICS OF FLUIDS	3-1-0	4	4
D	MET205	METALLURGY & MATERIAL SCIENCE	3-1-0	4	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	--
S	MEL201	COMPUTER AIDED MACHINE DRAWING	0-0-3	3	2
T	MEL203	MATERIALS TESTING LAB	0-0-3	3	2
R/M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4**	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
B	MET202	ENGINEERING THERMODYNAMICS	3-1-0	4	4
C	MET204	MANUFACTURING PROCESS	3-1-0	4	4
D	MET206	FLUID MACHINERY	3-1-0	4	4
E 1/2	EST200	DESIGN AND ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	--
S	MEL202	FM & HM LAB	0-0-3	3	2
T	MEL204	MACHINE TOOLS LAB-I	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET301	MECHANICS OF MACHINERY	3-1-0	4	4
B	MET303	THERMAL ENGINEERING	3-1-0	4	4
C	MET305	INDUSTRIAL & SYSTEMS ENGINEERING	3-1-0	4	4
D	MET307	MACHINE TOOLS AND METROLOGY	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	MEL331	MACHINE TOOLS LAB-II	0-0-3	3	2
T	MEL333	THERMAL ENGINEERING LAB-I	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
TOTAL				**27/31**	**23/27**

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

SEMESTER VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET302	HEAT & MASS TRANSFER	3-1-0	4	4
B	MET304	DYNAMICS OF MACHINERY & MACHINE DESIGN	3-1-0	4	4
C	MET306	ADVANCED MANUFACTURING ENGINEERING	3-1-0	4	4
D	METXXX	PROGRAM ELECTIVE I	2-1-0	3	3
E ½	HUT300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MET308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	MEL332	COMPUTER AIDED DESIGN & ANALYSIS LAB	0-0-3	3	2
T	MEL334	THERMAL ENGINEERING LAB-II	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**25/29**	**23/27**

PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	MET312	NONDESTRUCTIVE TESTING	2-1-0	3	3
	MET322	DATA ANALYTICS FOR ENGINEERS	2-1-0		
	MET332	ADVANCED MECHANICS OF SOLIDS	2-1-0		
	MET342	IC ENGINE COMBUSTION AND POLLUTION	2-1-0		
	MET352	AUTOMOBILE ENGINEERING	2-1-0		
	MET362	PRODUCT DESIGN AND DEVELOPMENT	2-1-0		
	MET372	ADVANCED METAL JOINING TECHNIQUES	2-1-0		

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

2. **All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 2 to 4 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honors programme, he/she can be given remedial class.

3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted online by the University. **Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5.** The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.

SEMESTER VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET401	DESIGN OF MACHINE ELEMENTS	2-1-0	3	3
B	METXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	METXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	MEL411	MECHANICAL ENGINEERING LAB	0-0-3	3	2
T	MEQ413	SEMINAR	0-0-3	3	2
U	MED415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
TOTAL				**24/28**	**15/19**

PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	MET413	ADVANCED METHODS IN NONDESTRUCTIVE TESTING	2-1-0	3	3
	MET423	OPTIMIZATION TECHNIQUES AND APPLICATIONS	2-1-0		
	MET433	FINITE ELEMENT METHOD	2-1-0		
	MET443	AEROSPACE ENGINEERING	2-1-0		
	MET453	HYBRID AND ELECTRIC VEHICLES	2-1-0		
	MET463	OPERATIONS MANAGEMENT	2-1-0		
	MET473	AIR CONDITIONING AND REFRIGERATION	2-1-0		

OPEN ELECTIVE

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs The courses listed below are offered by the **Department of MECHANICAL ENGINEERING for students of other undergraduate branches offered in the college under KTU.**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	MET415	INTRODUCTION TO BUSINESS ANALYTICS	2-1-0	3	3
	MET425	QUANTITATIVE TECHNIQUES FOR ENGINEERS	2-1-0		
	MET435	AUTOMOTIVE TECHNOLOGY	2-1-0		
	MET445	RENEWABLE ENERGY ENGINEERING	2-1-0		
	MET455	QUALITY ENGINEERING AND MANAGEMENT	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honors course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of internal members comprising three senior faculty members based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

Total marks: 100, only CIE, minimum required to pass 50

Attendance	10
Guide	20
Technical Content of the Report	30
Presentation	40

3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Mechanical Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
    - Survey and study of published literature on the assigned topic;
    - Preparing an Action Plan for conducting the investigation, including team work;
    - Working out a preliminary Approach to the Problem relating to the assigned topic;
    - Block level design documentation
    - Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/

Feasibility;

- Preparing a Written Report on the Study conducted for presentation to the Department;
- Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide	30
Interim evaluation by the evaluation committee	20
Final Seminar	30
The report evaluated by the evaluation committee	20

The evaluation committee comprises HoD or a senior faculty member, Project coordinator andproject supervisor.

SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET402	MECHATRONICS	2-1-0	3	3
B	METXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	METXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	METXXX	PROGRAM ELECTIVE V	2-1-0	3	3
E	MET404	COMPREHENSIVE VIVA VOCE	1-0-0	1	1
U	MED416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	REMEDIAL/MINOR/HONORS COURSE	3-1-0	4*	4
TOTAL				**25/28**	**17/21**

PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	MET414	QUALITY MANAGEMENT	2-1-0	3	3
	MET424	DECISIONS WITH METAHEURISTICS	2-1-0		
	MET434	PRESSURE VESSEL AND PIPING DESIGN	2-1-0		
	MET444	COMPUTATIONAL FLUID DYNAMICS	2-1-0		
	MET454	INDUSTRIAL TRIBOLOGY	2-1-0		
	MET464	MICRO AND NANO MANUFACTURING	2-1-0		
	MET474	HEATING AND VENTILATION SYSTEMS	2-1-0		

PROGRAM ELECTIVE IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	MET 416	COMPOSITE MATERIALS	2-1-0	3	3
	MET 426	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	2-1-0		
	MET 436	ACOUSTICS AND NOISE CONTROL	2-1-0		
	MET 446	HEAT TRANSFER EQUIPMENT DESIGN	2-1-0		
	MET 456	ROBOTICS AND AUTOMATION	2-1-0		
	MET 466	TECHNOLOGY MANAGEMENT	2-1-0		
	MET 476	CRYOGENIC ENGINEERING	2-1-0		

PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	MET 418	RELIABILITY ENGINEERING	2-1-0	3	3
	MET 428	INDUSTRIAL INTERNET OF THINGS	2-1-0		
	MET438	FRACTURE MECHANICS	2-1-0		
	MET 448	GAS TURBINES AND JET PROPULSION	2-1-0		
	MET 458	ADVANCED ENERGY ENGINEERING	2-1-0		
	MET 468	ADDITIVE MANUFACTURING	2-1-0		
	MET 478	POWER PLANT ENGINEERING	2-1-0		

NOTE

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12). If a student does not opt for minor/honors programme, he/she can be given remedial class.
2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the syllabus mentioned for comprehensive course work in the sixth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.
3. **Project Phase II:** The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
    - In depth study of the topic assigned in the light of the Report prepared under PhaseI;
    - Review and finalization of the Approach to the Problem relating to the assigned topic;
    - Detailed Analysis/ Modelling/ Simulation/ Design/ Problem Solving/ Experiment as needed;
    - Final development of product/process, testing, results, conclusions and future directions;
    - Preparing a paper for Conference presentation/Publication in Journals, if possible;

- Preparing a Dissertation in the standard format for being evaluated by the Department;
- Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide	30
Interim evaluation, 2 times in the semester by the evaluation committee	50
Quality of the report evaluated by the above committee	30
Final evaluation by a three member committee	40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx with Minor in yyy". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by **M slot courses.**

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

(iv) There won't be any supplementary examination for the courses chosen for Minor.

(v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.

(vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered **for B.Tech Minor in MECHANICAL ENGINEERING Branch** can opt to study the courses listed below:

Semester	BASKET I				BASKET II				BASKET III			
	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT
S3	MET281	MECHANICS OF MATERIALS	4	4	MET283	FLUID MECHANICS & MACHINERY	4	4	MET285	MATERIAL SCIENCE & TECHNOLOGY	4	4
S4	MET282	THEORY OF MACHINES	4	4	MET284	THERMODYNAMICS	4	4	MET286	MANUFACTURING TECHNOLOGY	4	4
S5	MET381	DYNAMICS OF MACHINES	4	4	MET383	THERMAL ENGINEERING	4	4	MET385	MACHINE TOOLS ENGINEERING	4	4
S6	MET382	MACHINE DESIGN	4	4	MET384	HEAT TRANSFER	4	4	MET386	INDUSTRIAL ENGINEERING	4	4
S7	MED481	MINIPROJECT	4	4	MED481	MINIPROJECT	4	4	MED481	MINIPROJECT	4	4
S8	MED482	MINIPROJECT	4	4	MED482	MINIPROJECT	4	4	MED482	MINIPROJECT	4	4

HONOURS

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all

semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

(i) The curriculum/syllabus committee/BOS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.

(ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses).

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.

(iv) There won't be any supplementary examination for the courses chosen for honours.

(v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.

(vi) The registration for honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. Students who have registered for **B.Tech Honours in MECHANICAL ENGINEERING** can opt to study the courses listed below.

SEMESTER	GROUP I				GROUP II				GROUP III			
	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT

S4	MET292	CONTINUUM MECHANICS	4	4	MET294	ADVANCED MECHANICS OF FLUIDS	4	4	MET296	MATERIALS IN MANUFACTURING	4	4
S5	MET393	EXPERIMENTAL STRESS	4	4	MET395	ADVANCED THERMODYNA	4	4	MET397	FLUID POWER	4	4

CURRICULUM I TO VIII: MECHANICAL PRODUCTION ENGINEERING

Every course of B. Tech. Program shall be placed in one of the nine categories as listed intable below.

Sl. No	Category	Code	Credits
1	Humanities and Social Sciences including Management courses	HMC	8
2	Basic Science courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Program Core Courses	PCC	76
5	Program Elective Courses	PEC	15
6	Open Elective Courses	OEC	3
7	Project work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with grade	MNC	-----
9	Mandatory Student Activities (P/F)	MSA	2
	Total Mandatory Credits	**162**	
10	Value Added Course (Optional)	VAC	20

No semester shall have more than six lecture-based courses and two laboratory and/or drawing/seminar/project courses in the curriculum.

Semester-wise credit distribution shall be as below:

Sem	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
Credits	17	21	22	22	23	23	15	17	160
Activity Points	50				50				---
Credits for Activity	2								2

G.Total		**162**

Basic Science Courses: Maths, Physics, Chemistry, Biology for Engineers, Life Science etc

Engineering science courses: Basic Electrical, Engineering Graphics, Programming, Workshop, Basic Electronics, Basic Civil, Engineering Mechanics, Mechanical Engineering, Thermodynamics, Design Engineering, Materials Engineering etc.

Humanities and Social Sciences including Management courses: English, Humanities, Professional Ethics, Management, Finance & Accounting, Life Skills, Professional Communication, Economics etc

Mandatory non-credit courses: Sustainable Engineering, Constitution of India/Essence of Indian Knowledge Tradition, Industrial Safety Engineering, disaster management etc.

Course Code and Course Number

Each course is denoted by a unique code consisting of three alphabets followed by three numerals like **E C L 2 0 1.** The first two letter code refers to the department offering the course. EC stands for course in Electronics & Communication, course code MA refers to a course in Mathematics, course code ES refers to a course in Engineering Science etc. Third letter stands for the nature of the course as indicated in the Table 1.

Table 1: Code for the courses

Code	Description
T	Theory based courses (other the lecture hours, these courses can have tutorial and practical hours, e.g., L-T-P structures 3-0-0, 3-1-2, 3-0-2 etc.)
L	Laboratory based courses (where performance is evaluated primarily on the basis of practical or laboratory work with LTP structures like 0-0-3, 1-0-3, 0-1-3 etc.)
N	Non-credit courses
D	Project based courses (Major, Mini Projects)
Q	Seminar Courses

Course Number is a three digit number and the first digit refers to the Academic year in which the course is normally offered, i.e. 1, 2, 3, or 4 for the B. Tech. Programme of four year duration. Of the other two digits, the last digit identifies whether the course is offered normally in the odd (odd number), even (even number) or in both the semesters (zero). The middle number could be any digit. ECL 201 is a laboratory course offered in EC department for third semester, MAT 101 is a course in Mathematics offered in the first semester, EET 344 is a course in Electrical Engineering offered in the sixth semester, PHT 110 is a course in Physics offered both the first and second semesters, EST 102 is a course in Basic Engineering offered by one or many departments. These course numbers are to be given in the curriculum and syllabi.

Departments

Each course is offered by a Department and their two-letter course prefix is given in Table 2.

Table 2: Departments and their codes

Sl.No	Department	Course Prefix	Sl.No	Department	Course Prefix
01	Aeronautical Engg	AO	16	Information Technology	IT
02	Applied Electronics & Instrumentation	AE	17	Instrumentation & Control	IC
03	Automobile	AU	18	Mandatory Courses	MC
04	Biomedical Engg	BM	19	Mathematics	MA
05	Biotechnology	BT	20	Mechanical Engg	ME
06	Chemical Engg	CH	21	Mechatronics	MR
07	Chemistry	CY	22	Metallurgy	MT
08	Civil Engg	CE	23	Mechanical (Auto)	MU
09	Computer Science	CS	24	Mechanical(Prod)	MP
10	Electrical & Electronics	EE	25	Naval & Ship Building	SB
11	Electronics & Biomedical	EB	26	Physics	PH
12	Electronics & Communication	EC	27	Polymer Engg	PO
13	Food Technology	FT	28	Production Engg	PE
14	Humanities	HU	29	Robotics and Automation	RA
15	Industrial Engg	IE	30	Safety & Fire Engg	FS

SEMESTER I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 101	LINEAR ALGEBRA AND CALCULUS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 101	LIFE SKILLS	2-0-2	4	--
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**23/24 ***	**17**

*Minimum hours per week

NOTE:

To make up for the hours lost due to induction program, one extra hour may be allotted to each course

SEMESTER II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	3-1-0	4	4
B 1/2	PHT 110	ENGINEERING PHYSICS B	3-1-0	4	4
	CYT 100	ENGINEERING CHEMISTRY	3-1-0	4	4
C 1/2	EST 100	ENGINEERING MECHANICS	2-1-0	3	3
	EST 110	ENGINEERING GRAPHICS	2-0-2	4	3
D 1/2	EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	4-0-0	4	4
	EST 130	BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	4-0-0	4	4
E	HUN 102	PROFESSIONAL COMMUNICATION	2-0-2	4	--
F	EST 102	PROGRAMMING IN C	2-1-2	5	4
S 1/2	PHL 120	ENGINEERING PHYSICS LAB	0-0-2	2	1
	CYL 120	ENGINEERING CHEMISTRY LAB	0-0-2	2	1
T 1/2	ESL 120	CIVIL & MECHANICAL WORKSHOP	0-0-2	2	1
	ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	0-0-2	2	1
TOTAL				**28/29**	**21**

NOTE:

1. Engineering Physics B and Engineering Chemistry shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Engineering Physics B in SI and Engineering Chemistry in S2 & vice versa. Students opting for Engineering Physics B in a semester should attend Physics Lab in the same semester and students opting for Engineering Chemistry in one semester should attend Engineering Chemistry Lab in the same semester.

2. Engineering Mechanics and Engineering Graphics shall be offered in both semesters. Institutions can advise students belonging to about 50% of the number of branches

in the Institution to opt for Engineering Mechanics in SI and Engineering Graphics in S2 & vice versa.

3. Basics of Civil & Mechanical Engineering and Basics of Electrical & Electronics Engineering shall be offered in both semesters. Basics of Civil & Mechanical Engineering contain equal weightage for Civil Engineering and Mechanical Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to branches of AEI, EI, BME, ECE, EEE, ICE, CSE, IT, RA can choose this course in S1.

   Basics of Electrical & Electronics Engineering contain equal weightage for Electrical Engineering and Electronics Engineering. Slot for the course is D with CIE marks of 25 each and ESE marks of 50 each. Students belonging to AERO, AUTO, CE, FSE, IE, ME, MECHATRONICS, PE, METTULURGY, BT, BCE, CHEM, FT, POLYcan choose this course
   in S1. Students having Basics of Civil & Mechanical Engineering in one semester should attend Civil & Mechanical Workshop in the same semester and students having Basics of Electrical & Electronics Engineering in a semester should attend Electrical & Electronics Workshop in the same semester.

4. LIFE SKILLS

   Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underlie personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

5. PROFESSIONAL COMMUNICATION

   Objective is to develop in the under-graduate students of engineering a level of competence in English required for independent and effective communication for their professional needs. Coverage: Listening, Barriers to listening, Steps to overcome them, Purposive listening practice, Use of technology in the professional world. Speaking, Fluency & accuracy in speech, Positive thinking, Improving self- expression, Tonal variations, Group discussion practice, Reading, Speed reading practice, Use of extensive readers, Analytical and critical reading practice, Writing Professional Correspondence, Formal and informal letters, Tone in formal writing, Introduction to reports. Study Skills, Use of dictionary, thesaurus etc., Importance of contents page, cover & back pages, Bibliography, Language Lab.

SEMESTER III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	3-1-0	4	4
B	MET201	MECHANICS OF SOLIDS	3-1-0	4	4
C	MPT203	FLUID MECHANICS AND MACHINERY	3-1-0	4	4
D	MET205	METALLURGY & MATERIAL SCIENCE	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN201	SUSTAINABLE ENGINEERING	2-0-0	2	--
S	MPL201	PRODUCTION ENGINEERING DRAWING	0-0-3	3	2
T	MEL203	MATERIAL TESTING LAB	0-0-3	3	2
R/M	VAC	REMEDIAL/MINOR COURSE	3-1-0	4 *	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions shall keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student does not opt for minor programme, he/she can be given remedial class.

SEMESTER IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MAT202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	3-1-0	4	4
B	MPT202	MECHANICAL TECHNOLOGY	3-1-0	4	4
C	MET204	MANUFACTURING PROCESS	3-1-0	4	4
D	MPT206	MACHINE TOOL TECHNOLOGY	3-1-0	4	4
E 1/2	EST200	DESIGN & ENGINEERING	2-0-0	2	2
	HUT200	PROFESSIONAL ETHICS	2-0-0	2	2
F	MCN202	CONSTITUTION OF INDIA	2-0-0	2	--
S	MEL202	FM & HM LAB	0-0-3	3	2
T	MPL204	PRODUCTION TOOLING LAB -I	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**26/30**	**22/26**

NOTE:

1. Design & Engineering and Professional Ethics shall be offered in both S3 and S4. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Design & Engineering in S3 and Professional Ethics in S4 & vice versa.
2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor course (Thursdays from 3 to 5 PM and Fridays from 2 to 4 PM). If a student doesnot opt for minor programme, he/she can be given remedial class.

SEMESTER V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MPT301	THEORY OF MACHINES	3-1-0	4	4
B	MPT303	METROLOGY AND INSTRUMENTATION	3-1-0	4	4
C	MET305	INDUSTRIAL & SYSTEMS ENGINEERING	3-1-0	4	4
D	MPT307	CAD/CAM/CIM	3-1-0	4	4
E 1/2	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MCN301	DISASTER MANAGEMENT	2-0-0	2	--
S	MPL331	PRODUCTION TOOLING LAB -II	0-0-3	3	2
T	MPL333	PRODUCTION PROCESS LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**27/31**	**23/27**

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.
2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 3 to 5 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

SEMESTER VI

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MPT302	ADVANCED MATERIALS AND MANUFACTURING SYSTEMS	4-0-0	4	4
B	MPT304	PRODUCTIONS AND OPERATIONS MANAGEMENT	3-1-0	4	4
C	MPT306	DYNAMICS OF MACHINERY	3-1-0	4	4
D	MPTXXX	PROGRAM ELECTIVE I	2-1-0	3	3
E 1/2	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	3-0-0	3	3
	HUT310	MANAGEMENT FOR ENGINEERS	3-0-0	3	3
F	MPT308	COMPREHENSIVE COURSE WORK	1-0-0	1	1
S	MEL332	COMPUTER AIDED AND DESIGN ANALYSIS LAB	0-0-3	3	2
T	MPL334	PRODUCTION ENGINEERING LAB	0-0-3	3	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**25/29**	**23/27**

PROGRAM ELECTIVE I

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	MPT312	SUPPLY CHAIN AND LOGISTICS MANAGEMENT	2-1-0	3	3
	MPT322	PRECISION ENGINEERING	2-1-0		
	MPT332	MAINTENANCE AND SAFETY ENGINEERING	2-1-0		
	MPT342	THERMODYNAMICS	2-1-0		
	MPT352	OPERATIONS RESEARCH	2-1-0		
	MET312	NON DESTRUCTIVE TESTING	2-1-0		
	MET352	AUTOMOBILE ENGINEERING	2-1-0		

NOTE:

1. Industrial Economics & Foreign Trade and Management for Engineers shall be offered in both S5 and S6. Institutions can advise students belonging to about 50% of the number of branches in the Institution to opt for Industrial Economics & Foreign Trade in S5 and Management for Engineers in S6 and vice versa.

2. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Tuesdays from 3 to 5 PM and Wednesdays from 2 to 4 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.

3. Comprehensive Course Work: The comprehensive course work in the sixth semester of study shall have a written test of 50 marks. The written examination will be of objective type similar to the GATE examination and will be conducted by the University. **Syllabus for comprehensive examination shall be prepared by the respective BoS choosing any 5 core courses studied from semester 3 to 5.** The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum.

SEMESTER VII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MPT401	MACHINE DESIGN	2-1-0	3	3
B	MPTXXX	PROGRAM ELECTIVE II	2-1-0	3	3
C	MPTXXX	OPEN ELECTIVE	2-1-0	3	3
D	MCN401	INDUSTRIAL SAFETY ENGINEERING	2-1-0	3	---
S	MPL411	MECHANICAL ENGINEERING LAB	0-0-3	3	2
T	MPQ413	SEMINAR	0-0-3	3	2
U	MPD415	PROJECT PHASE I	0-0-6	6	2
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**24/28**	**15/19**

PROGRAM ELECTIVE II

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	MPT413	STATISTICS FOR ENGINEERS	2-1-0	3	3
	MPT423	ROBOTICS	2-1-0		
	MPT433	DESIGN OF EXPERIMENTS	2-1-0		
	MPT443	MARKETING MANAGEMENT	2-1-0		
	MPT453	COMPOSITE MATERIALS AND MECHANICS	2-1-0		
	MET433	FINITE ELEMENT METHOD	2-1-0		
	MET473	AIR CONDITIONING AND REFRIGERATION	2-1-0		

OPEN ELECTIVE

The open elective is offered in semester 7. Each program should specify the courses (maximum 5) they would like to offer as electives for other programs.The courses listed below are offered by **the Department of MECHANICAL PRODUCTION ENGINEERING for students of other undergraduate branches offered in the college**

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	MPT415	PRODUCT DEVELOPMENT AND DESIGN	2-1-0	3	3
	MPT435	PLANT ENGINEERING AND MAINTENANCE	2-1-0		
	MPT445	INDUSTRIAL PSYCHOLOGY AND ORGANISATIONAL BEHAVIOUR	2-1-0		
	MET425	QUANTITATIVE TECHNIQUE FOR ENGINEERS	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 Noon). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Seminar: To encourage and motivate the students to read and collect recent and reliable information from their area of interest confined to the relevant discipline from technical publications including peer reviewed journals, conference, books, project reports etc., prepare a report based on a central theme and present it before a peer audience. Each student shall present the seminar for about 20 minutes duration on the selected topic. The report and the presentation shall be evaluated by a team of faculty members comprising Academic coordinator for that program, seminar coordinator and seminar guide based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the report.

   Total marks: 100, only CIE, minimum required to pass 50

Attendance	10
Guide	20
Technical Content of the Report	30
Presentation	40

3. Project Phase I: A Project topic must be selected either from research literature or the students themselves may propose suitable topics in consultation with their guides. The object of Project Work I is to enable the student to take up investigative study in the broad field of Mechanical(Production) Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on a group of three/four students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&D work. The assignment to normally include:
   - Survey and study of published literature on the assigned topic;
   - Preparing an Action Plan for conducting the investigation, including team work;

- Working out a preliminary Approach to the Problem relating to the assigned topic;
- Block level design documentation
- Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility;
- Preparing a Written Report on the Study conducted for presentation to the Department;
- Final Seminar, as oral Presentation before the evaluation committee.

Total marks: 100, only CIE, minimum required to pass 50

Guide	30
Interim evaluation by the evaluation committee	20
Final Seminar	30
The report evaluated by the evaluation committee	20

The evaluation committee comprises HOD or a senior faculty member, Projectcoordinator and project supervisor.

SEMESTER VIII

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
A	MET402	MECHATRONICS	2-1-0	3	3
B	MPTXXX	PROGRAM ELECTIVE III	2-1-0	3	3
C	MPTXXX	PROGRAM ELECTIVE IV	2-1-0	3	3
D	MPTXXX	PROGRAM ELECTIVE V	2-1-0	3	3
T	MPT404	COMPREHENSIVE COURSE VIVA	1-0-0	1	1
U	MPD416	PROJECT PHASE II	0-0-12	12	4
R/M/H	VAC	REMEDIAL/MINOR/HONOURS COURSE	3-1-0	4*	4
TOTAL				**25/29**	**17/21**

PROGRAM ELECTIVE III

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
B	MPT414	MACHINE TOOL DESIGN	2-1-0	3	3
	MPT424	ARTIFICIAL INTELIGENCE IN MANUFACTURING	2-1-0		
	MPT434	ADVANCED OPERATION RESEARCH	2-1-0		
	MPT444	RAPID PROTOTYPING, TOOLING AND MANUFACTURE	2-1-0		
	MPT454	NUCLEAR ENGINEERING	2-1-0		
	MPT464	PROJECT ENGINEERING AND MANAGEMENT	2-1-0		
	MPT474	FACILITIES PLANNING	2-1-0		

PROGRAM ELECTIVE IV

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
C	MPT416	METAL FORMING TECHNOLOGY	2-1-0	3	3
	MPT426	INDUSTRIAL HYDRAULICS	2-1-0		
	MPT436	LEAN AND AGILE MANUFACTURING	2-1-0		
	MPT446	HUMAN RESOURCE MANAGEMENT	2-1-0		
	MPT456	TRIBOLOGY	2-1-0		
	MPT466	TOTAL QUALITY MANAGEMENT	2-1-0		
	MPT476	ADVANCED METAL CASTING	2-1-0		

PROGRAM ELECTIVE V

SLOT	COURSE NO.	COURSES	L-T-P	HOURS	CREDIT
D	MPT418	TOOL ENGINEERING	2-1-0	3	3
	MPT428	NANOTECHNOLOGY	2-1-0		
	MPT438	INDUSTRIAL AUTOMATION	2-1-0		
	MPT448	BIOMEDICAL ENGINEERING	2-1-0		
	MPT458	CREATIVITY AND PRODUCT ENGINEERING	2-1-0		
	MET458	ADVANCED ENERGY ENGINEERING	2-1-0		
	MET478	POWER PLANT ENGINEERING	2-1-0		

NOTE:

1. *All Institutions should keep 4 hours exclusively for Remedial class/Minor/Honours course (Mondays from 10 to 12 and Wednesdays from 10 to 12 PM). If a student does not opt for minor/honours programme, he/she can be given remedial class.
2. Comprehensive Course Viva: The comprehensive course viva in the eighth semester of study shall have a viva voce for 50 marks. The viva voce shall be conducted based on the core subjects studied from third to eighth semester. The viva voce will be conducted by the same three member committee assigned for final project phase II evaluation towards the end of the semester. The pass minimum for this course is 25. The course should be mapped with a faculty and classes shall be arranged for practising questions based on the core courses listed in the curriculum. The mark will be treated as internal and should be uploaded along with internal marks of other courses.

3. **Project Phase II:** The object of Project Work II & Dissertation is to enable the student to extend further the investigative study taken up in Project 1, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory/Industry. This is expected to provide a good training for the student(s) in R&D work and technical leadership. The assignment to normally include:
    - In depth study of the topic assigned in the light of the Report prepared under PhaseI;
    - Review and finalization of the Approach to the Problem relating to the assigned topic;
    - Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed;

- Final development of product/process, testing, results, conclusions and future directions;
- Preparing a paper for Conference presentation/Publication in Journals, if possible;
- Preparing a Dissertation in the standard format for being evaluated by the Department;
- Final Presentation before a Committee

Total marks: 150, only CIE, minimum required to pass 75

Guide	30
Interim evaluation, 2 times in the semester by the evaluation committee	50
Quality of the report evaluated by the above committee	30

(The evaluation committee comprises HoD or a senior faculty member, Projectcoordinator and project supervisor).

Final evaluation by a three member committee	40

(The final evaluation committee comprises Project coordinator, expert from Industry/research Institute and a senior faculty from a sister department. The same committee will conduct comprehensive course viva for 50 marks).

MINOR

Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programs.

The academic units offering minors in their discipline will prescribe the set of courses and/or other activities like projects necessary for earning a minor in that discipline. A specialist basket of 3-6 courses is identified for each Minor. Each basket may rest on one or more foundation courses. A basket may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as “Bachelor of Technology in xxx with Minor in yyy”. The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from third to eight semesters for all branches. The minor courses shall be identified by **M slot courses.**

(ii) Registration is permitted for Minor at the beginning of third semester. Total credits required is 182 (162 + 20 credits from value added courses)

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for minor, of which one course shall be a mini project based on the chosen area. They can do miniproject either in S7 or in S8.The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Minor shall be conducted along with regular classes and no extra time shall be required for conducting the courses.

(iv) There won't be any supplementary examination for the courses chosen for Minor.

(v) On completion of the program, "Bachelor of Technology in xxx with Minor in yyy" will be awarded.

(vi) The registration for minor program will commence from semester 3 and the all academic units offering minors in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3baskets. The basket of courses may have sequences within it, i.e., advanced courses may rest on basic courses in the basket. Reshuffling of courses between various baskets will not be allowed. In any case, they should carry out a mini project based on the chosen area in S7 or S8. Students who have registered **for B.Tech Minor in INSPECTION AND QUALITY CONTROL** can opt to study the courses listed below:

SEMESTER	**BASKET I: INSPECTION AND QUALITY CONTROL**			
	COURSE NO.	**COURSE NAME**	**HOURS**	**CREDIT**
S3	MPT281	INDUSTRIAL INSPECTION METHODS	4	4
S4	MPT 282	STATISTICAL PROCESS CONTROL	4	4
S5	MPT 381	RELIABILITY ENGINEERING AND MANAGEMENT	4	4
S6	MPT 382	CONTINUOUS IMPROVEMENT TECHNIQUES	4	4
S7	MPD 481	MINIPROJECT	4	4
S8	MPD 482	MINIPROJECT	4	4

HONOURS

Honours is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honours is not indicative of class. KTU is providing this option for academically extra brilliant students to acquire Honours. Honours is intended for a student to gain expertise/specialise in an area inside his/her major B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students aiming to pursue higher studies. Upon completion of Honours, a student will be better equipped to perform research in her/his branch of engineering. On successful accumulation of credits at the end of the programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in xxx, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses. The Honours courses shall be identified by H slot courses.

(i) The curriculum/syllabus committee/BoS shall prepare syllabus for courses to be included in the curriculum from fourth to eight semesters for all branches. The honours courses shall be identified by H slot courses.

(ii) Registration is permitted for Honours at the beginning of fourth semester. Total credits required is 182 (162 + 20 credits from value added courses).

(iii) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for honours, of which one course shall be a mini project based on the chosen area. The remaining 8 credits could be acquired by undergoing 2 MOOCs recommended by the Board of studies and approved by the Academic Council or through courses listed in the curriculum. The classes for Honours shall be conducted along with regular classes and no extra time shall be required for conducting the courses. The students should earn a grade of 'C' or better for all courses under honours.

(iv) There won't be any supplementary examination for the courses chosen for honours.

(v) On successful accumulation of credits at the end of the programme, "Bachelor of Technology in xxx, with Honours" will be awarded if overall CGPA is greater than

or equal to 8.5, earned a grade of 'C' or better for all courses chosen for honours and without any history of 'F' Grade.

(vi) The registration for honours program will commence from semester 4 and the all academic units offering honours in their discipline should prescribe set of such courses. The courses shall be grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. In any case, they should carry out a mini project based on the chosen area in S8. Students who have registered for **B.Tech Honours in MECHANICAL PRODUCTION ENGINEERING** can opt to study the courses listed below:

(vii)(vii)

SEMESTER	GROUP I:PRECISION ENGINEERING				GROUP II: SUSTAINABLE PRODUCT DEVELOPMENT			
	Course No.	Course Name	HOURS	CREDIT	Course No.	Course Name	HOURS	CREDIT
S4	MPT292	PRECISION ENGINEERING	4	4	MPT294	ERGONOMICS	4	4
S5	MPT393	SURFACE ENGINEERING	4	4	MPT395	DESIGN FOR MANUFACTURE	4	4
S6	MPT394	PROCESSING OF NON-METALLIC MATERIALS	4	4	MPT396	PRODUCT DESIGN AND DEVELOPMENT	4	4
S7	MPT495	DESIGN AND MANUFACTURING OF MEMS	4	4	MPT497	SYSTEM DESIGN FOR SUSTAINABILITY	4	4
S8	MPD496	MINIPROJECT	4	4	MPD496	MINIPROJECT	4	4

TIME TABLE ODD SEMESTER

DAY /TIME	8.30 TO 9.30	9.30 TO 10.30	BREAK	10.45 TO 11.45	11.45 TO 12.45	LUNCH BREAK	12.45 TO 1.30	1.30 TO 2.25	2.25 TO 3.20	BREAK	3.30 TO 4.30
MON											
TUES											
WED											
THUR											
FRI											

TIME TABLE EVEN SEMESTER

DAY /TIME	8.30 TO 9.30	9.30 TO 10.30	BREAK	10.45 TO 11.45	11.45 TO 12.45	LUNCH BREAK	12.45 TO 1.30	1.30 TO 2.25	2.25 TO 3.20	BREAK	3.30 TO 4.30
MON											
TUES											
WED											
THUR											
FRI											

Jun-20

1	MON	
2	TUE	
3	WED	
4	THU	
5	FRI	
6	SAT	
7	SUN	
8	MON	
9	TUE	
10	WED	
11	THU	
12	FRI	
13	SAT	
14	SUN	
15	MON	
16	TUE	
17	WED	
18	THU	
19	FRI	
20	SAT	
21	SUN	
22	MON	
23	TUE	
24	WED	
25	THU	
26	FRI	
27	SAT	
28	SUN	
29	MON	
30	TUE	

Jul-20

1	WED	
2	THU	
3	FRI	
4	SAT	
5	SUN	
6	MON	
7	TUE	
8	WED	
9	THU	
10	FRI	
11	SAT	
12	SUN	
13	MON	
14	TUE	
15	WED	
16	THU	
17	FRI	
18	SAT	
19	SUN	
20	MON	
21	TUE	
22	WED	
23	THU	
24	FRI	
25	SAT	
26	SUN	
27	MON	
28	TUE	
29	WED	
30	THU	
31	FRI	BAKRID

Aug 20

1	SAT	
2	SUN	
3	MON	
4	TUE	
5	WED	
6	THU	
7	FRI	
8	SAT	
9	SUN	
10	MON	
11	TUE	
12	WED	
13	THU	
14	FRI	
15	SAT	INDEPENDENCE DAY
16	SUN	
17	MON	COMMENCEMENT OF CLASS AND REGISTRATION 1
18	TUE	
19	WED	
20	THU	
21	FRI	
22	SAT	
23	SUN	
24	MON	
25	TUE	
26	WED	
27	THU	
28	FRI	BIRTHDAY OF AYYANKALI ONAM VACATION BEGINS
29	SAT	MUHHARRAM
30	SUN	FIRST ONAM
31	MON	THIRUVONAM

NO.OF WORKING DAYS:9

Sep-20

1	TUE	THIRD ONAM
2	WED	FOURTH ONAM/ SREE NARAYANA GURU JAYANTHI
3	THU	
4	FRI	
5	SAT	
6	SUN	ONAM VACATION ENDS
7	MON	
8	TUE	
9	WED	
10	THU	SREEKRISHNA JAYANTHI
11	FRI	
12	SAT	
13	SUN	
14	MON	
15	TUE	
16	WED	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	THU	
18	FRI	
19	SAT	
20	SUN	
21	MON	
22	TUE	
23	WED	
24	THU	
25	FRI	
26	SAT	
27	SUN	
28	MON	
29	TUE	
30	WED	

NO.OF WORKING DAYS: 16

Oct-20

1	THU	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE, GMT-II (S1,S3,S5,S7)
2	FRI	**GANDHI JAYANTHI**
3	SAT	
4	SUN	
5	MON	
6	TUE	
7	WED	
8	THU	
9	FRI	
10	SAT	
11	SUN	
12	MON	
13	TUE	
14	WED	
15	THU	TEST 1 TO BE COMPLETED (S3,S5,S7)
16	FRI	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	SAT	
18	SUN	
19	MON	
20	TUE	
21	WED	
22	THU	
23	FRI	
24	SAT	MAHANAVAMI
25	SUN	
26	MON	VIJAYADASAMI
27	TUE	
28	WED	
29	THU	MILAD-I-SHERIF
30	FRI	
31	SAT	

NO.OF WORKING DAYS: 20

Nov-20

1	SUN	
2	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
3	TUE	
4	WED	
5	THU	
6	FRI	
7	SAT	
8	SUN	
9	MON	
10	TUE	
11	WED	
12	THU	
13	FRI	
14	SAT	DEEPAVALI
15	SUN	
16	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	TUE	
18	WED	
19	THU	
20	FRI	
21	SAT	
22	SUN	
23	MON	
24	TUE	
25	WED	
26	THU	
27	FRI	
28	SAT	
29	SUN	
30	MON	TEST 2 TO BE COMPLETED (S3,S5,S7)

NO.OF WORKING DAYS: 21

Dec-19

1	TUE	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
2	WED	
3	THU	
4	FRI	
5	SAT	
6	SUN	
7	MON	
8	TUE	
9	WED	
10	THU	CLASS ENDS
11	FRI	
12	SAT	
13	SUN	
14	MON	
15	TUE	
16	WED	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	THU	
18	FRI	
19	SAT	CHRISTMAS HOLIDAY BEGINS
20	SUN	
21	MON	
22	TUE	
23	WED	**CHRISTMAS HOLIDAYS**
24	THU	
25	FRI	
26	SAT	
27	SUN	
28	MON	
29	TUE	
30	WED	
31	THU	

NO.OF WORKING DAYS:17

Jan-21

1	FRI	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
2	SAT	MANNAM JAYANTHI
3	SUN	
4	MON	
5	TUE	
6	WED	
7	THU	
8	FRI	
9	SAT	
10	SUN	
11	MON	
12	TUE	
13	WED	
14	THU	
15	FRI	
16	SAT	
17	SUN	
18	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
19	TUE	
20	WED	
21	THU	
22	FRI	
23	SAT	
24	SUN	
25	MON	
26	TUE	**REPUBLIC DAY**
27	WED	
28	THU	
29	FRI	
30	SAT	
31	SUN	

NO.OF WORKING DAYS: 20

Feb-21

1	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
2	TUE	
3	WED	
4	THU	
5	FRI	
6	SAT	
7	SUN	
8	MON	
9	TUE	
10	WED	
11	THU	
12	FRI	
13	SAT	
14	SUN	
15	MON	
16	TUE	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	WED	
18	THU	
19	FRI	
20	SAT	
21	SUN	SIVARATHRI
22	MON	
23	TUE	
24	WED	
25	THU	
26	FRI	
27	SAT	
28	SUN	

NO.OF WORKING DAYS: 19

Mar-21

1	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
2	TUE	
3	WED	
4	THU	
5	FRI	
6	SAT	
7	SUN	
8	MON	
9	TUE	
10	WED	
11	THU	**Maha Sivrathri**
12	FRI	
13	SAT	
14	SUN	
15	MON	Commencement of class (S8)
16	TUE	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	WED	
18	THU	
19	FRI	
20	SAT	
21	SUN	
22	MON	
23	TUE	
24	WED	
25	THU	
26	FRI	
27	SAT	
28	SUN	
29	MON	
30	TUE	
31	WED	

Number of working days: 13

Apr-21

1	THU	MAUNDY THURSDAY
2	FRI	**GOOD FRIDAY**
3	SAT	
4	SUN	
5	MON	
6	TUE	
7	WED	
8	THU	
9	FRI	
10	SAT	
11	SUN	
12	MON	
13	TUE	
14	WED	VISHU
15	THU	**PROJECT/JURY EVALUATION 1 TO BE COMPLETED**
16	FRI	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
17	SAT	
18	SUN	
19	MON	
20	TUE	
21	WED	
22	THU	
23	FRI	
24	SAT	**FIRST SERIES TEST TO BE COMPLETED**
25	SUN	
26	MON	
27	TUE	
28	WED	
29	THU	
30	FRI	

NO.OF WORKING DAYS: 17

May-21

1	SAT	**MAY DAY**
2	SUN	
3	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
4	TUE	
5	WED	
6	THU	
7	FRI	
8	SAT	
9	SUN	
10	MON	
11	TUE	
12	WED	
13	THU	**EID-UL-FITR(RAMZAN)**
14	FRI	
15	SAT	**PROJECT/JURY EVALUATION 2 TO BE COMPLETED**
16	SUN	
17	MON	SUBMISSION OF LOG BOOK TO H.O.D AND PUBLISHING ATTENDANCE PERCENTAGE
18	TUE	
19	WED	
20	THU	
21	FRI	
22	SAT	
23	SUN	
24	MON	
25	TUE	
26	WED	
27	THU	
28	FRI	
29	SAT	
30	SUN	
31	MON	

NO.OF WORKING DAYS: 20

	Jun-21	
1	TUE	
2	WED	
3	THU	
4	FRI	
5	SAT	**SECOND SERIES TEST TO BE COMPLETED**
6	SUN	
7	MON	
8	TUE	
9	WED	
10	THU	**PROJECT EVALUATION 3 TO BE COMPLETED**
11	FRI	
12	SAT	
13	SUN	
14	MON	
15	TUE	
16	WED	
17	THU	
18	FRI	
19	SAT	**CLASS ENDS**
20	SUN	
21	MON	
22	TUE	
23	WED	
24	THU	
25	FRI	
26	SAT	
27	SUN	
28	MON	
29	TUE	
30	WED	

Number of working days: 16

Phone Numbers of Staff

Teaching Staff

Name	Mobile Number
Dr Manju J (Principal)	9995449854
Dr E Arun (Dean, Academics)	9443535337

Civil Engineering

Prof Priya Grace IttiEipe (HOD)	9605468862
Ms Suji P	9562446045
Ms Athira Raj	9497238949
Ms Najma Ananthakumar	9496108818
Ms Rajalakshmi U	9497716280
Ms Neeraja Chandrashhekhar	8281423078
Ms Reshma S	8113008169
Ms Lekshmy	9446028530
Mr Ajay	9544052848

Mechanical Engineering

Mr Arun Kumar G(HOD)	**8547081280**
Mr John P George	**9847525250**
Mr Roshin Thomas Varghese	**8547550474**
Mr Athul M V	**8281436337**
Mr Vinod Vijayan	**9946561086**
Mr Arundev M G	**7736421664**
Mr Rantheesh J	**9496326795**
Mr Sumanlal M S	**8891153224**

Mechanical Production Engineering

Mr Yadhu Krishnan	**9746449609**
Mr Sangeeth S	**7012919595**
Ms Arya P Mohan	**8943021805**

Computer Science and Engineering

Ms Suma S G (HOD)	**9447972495**
Ms Amitha R	**9496733394**

Mr Sukesh Babu V S	**9847630806**
Mr Dhanunath	**9995790692**
Ms Vivitha Vijay	**8089259851**
Ms Neethu Krishna	**9526100102**
Ms Chithra S Ravi	**8891252510**
Ms Devika P	**9526557811**
Ms Chippy T	**8606226027**
Ms Hema H	**9895741525**
Ms Sreelekshmi B	**9746636171**

Electronics and Communication Engineering

Mr Ratheesh Kumar S (HOD)	**8943436201**
Mr Anup Vasavan	**9496330734**
Mr Prajeesh R	**9447305765**
Ms Sony Sethukumar	**9495121723**
Ms Ponnambili S	**9446705565**
Ms Malu U	**8547332712**
Ms Samitha T	**9496534012**
Ms Arathi Babu	**9497358986**

Ms Chinchu S	**7012215076**
Ms Soubhagya Sasikumar	**8943721158**
Ms Remya K	**8086629055**

Electrical and Electronics Engineering

Mr Rahul P Raj(HOD)	**9605441461**
Ms Karthika V S	**9633575370**
Ms Aryamol Sudhakaran	**8129082981**
Ms Seethu Vijayan	**9567589526**
Ms Gayathri Devi G	**7019644056**
Mr Amjith	**8547441808**
Mr Arjun Mohanlal	**9846021980**

Department of Humanities

Ms Geetha	**9946834332**

Department of Physics

Dr B Sasi	**9447071051**
Ms Sreeti Gangadharan	**9446901284**

Department of Chemistry

Dr Shalini Sasi	**9562337162**
Ms Renju R	**8943401901**

Department of Mathematics

Ms Lijimole S	**9447710088**
Ms Sangeetha S	**9495983050**
Ms Ambilimol V P	**9495508580**
Mr Ambady V K	**9747158015**

Technical Staff

Mr Binu S Krishnan (System Administrator)	**9447050203**
Mr Rahul O	**9656954968**
Mr Vamanan K	**9446027603**
Mr Arun Kumar M	**9995512428**

Ms Nisha R	**9562289051**
Mr Sathya Babu	**9746290642**
Mr Rajan R	**9048789521**
Mr Dayanithi	**9497129116**
Mr Abhilash R	**8921218639**
Ms Sreevidya S	**9946837445**
Ms Beena P	**7559969909**
Ms Sheeja Santhsoh	**9526698525**
Mr Vishnu R Kurup	**9539886849**

Library Staff

Ms Smija Raju	**9446952157**

Administrative Staff

Mr V Ramachandran (A O)	**9496994197**
Mr Anil Kumar Sivarajan	**9447955551**
Ms Deepa K S	**9048783054**
Ms Sreelatha P R	**9747045221**
Ms Malini Vinu	**9895043019**

Mr Anpu Ashok	**9846250337**
Ms Priya P	**8943262160**
Mr Rejith R	**9446839000**
Mr Sivanandhan P	**9539139345**
Ms Laila Soman	**9946414112**
Mr Bhargavan M	**9567599732**
Mr Rajendran R	**9947394845**
Mr Vineeth V	**9446226236**
Ms Priya C	**8606533230**
Mr K R C Pillai (Warden)	**9526030019**
Ms Rema D (Warden, Ladies Hostel)	**9847184066**