KERALA TECHNOLOGICAL UNIVERSITY

CET Campus, Thiruvananthapuram, Kerala-695016

ORDINANCE

For

Bachelor of Technology B.Tech./B.Tech. (Honours)

In exercise of the Powers conferred under Clause 44 of the Ordinance, the Executive Committee of the University hereby promulgate the Ordinance for the University for the Academic Year 2015-2016.This Ordinance shall come into effect from the date of its publication in the Gazette.

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1.   **Admission to Bachelor of Technology / B.Tech. / B.Tech. (Honours)**

a.   Eligibility for admission to the B.Tech., programme, admission policy and procedure shall be decided from time to time by following the guidelines issued by the Government of Kerala and the Government of India and other statutory body such as AICTE.

b.   Subject to Clause 1(a), Admission to B.Tech., shall be based on the guidelines given by the State and Central Governments on reservation. Candidates for admission to B.Tech., programme shall have passed the Higher Secondary Examination, Kerala or 12th Standard V.H.S.E., C.B.S.E., I.S.C 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.

c.   The Branches of study and number of students admitted are to be based on the approval by the All India Council for Technical Education and the Kerala Technological University.

d.   Notwithstanding all that is stated above, the admission policy may be modified from time to time by the University, particularly to confirm to directions from the Government of Kerala and the Government of India.

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e. The B.Tech., / B.Tech. (Honours) programme is a credit based programme. The duration of the B. Tech / B. Tech (Honours) programme will normally be four academic years spanning 8 semesters. The maximum duration shall be six academic years spanning 12 semesters.

2. Examination

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

b. Students, who have completed a course but could not write the end semester examination for valid reasons like illness or personal exigencies, are allowed to write the supplementary examination or the end semester examination at the next opportunity and earn the credits without having to register for the course again provided they meet other eligibility criteria.

c. The main eligibility criteria for 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 these eligibility criteria are awarded an FE grade and have to register for the course again.

d. Students who could not write the end semester examination due to health reasons or other exigencies can register for the supplementary examination, with the approval of the principal provided they have 45% or above marks in the internal evaluations for the course. Candidates who received F grade can also write the supplementary examination. Grades awarded in the supplementary examination will be taken as the end semester grades in these courses.

3. Eligibility for Award of Degree

The award of B. Tech. / B. Tech. (Honours) degree shall be based on the recommendation of the Academic Committee and the approval of the Board of Governors and in accordance with the academic regulations, if any, issued for the said purpose by the University.

Award of B. Tech. Degree

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

i) Earned credits for all the core courses and the Project.
ii) Earned the required minimum credits as specified in the curriculum for the branch of study.

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iii) No pending disciplinary action.

4. **Fee charged by the University**
Fee charged for the programme shall be decided by the University from time to time and informed to all concerned for compliance.

5. **Discipline of the student – Action against breach of discipline**
Every college shall have a Student's Welfare Committee and a Disciplinary Action Committee, constituted by the Principal of the college. Each college should have a Grievance Redressal and Appeals Committee constituted by the Principal to address the grievances of the students and to consider their appeals on any decisions made by the college. Details on the constitution and terms of reference are outlined in 7-x, 7-y, and 7-z.

6. **Breach of guidelines and unfair practices in Examinations**
These are viewed seriously and appropriate actions are to be taken by the colleges as detailed in 7-x.

  a. **Language of Instruction and Examination.**
  Unless otherwise stated, the language of instruction and examinations shall be English.

  b. **Academic Calendar.**
  The University shall publish in its website the academic calendar for every academic semester indicating the commencement of the semester and beginning of instruction. It will specify the course 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. Schedules for the supplementary examinations and result declaration dates are to be included in the calendar. Summer course schedule and result declaration have also to be indicated in the calendar. Additionally colleges may publish their academic calendar, in line with the University academic calendar, indicating other schedules and events they plan to conduct during the semester.

  c. **Branches of B. Tech. Programmes.**
  The Branches of B. Tech. /B. Tech. (Honours) programme offered by the University are listed separately at the end of this Ordinance

  d. **B. Tech. Programme Structure**
    i) B. Tech. / B. Tech. (Honours) programme in all branches of study is structured on a credit based system following the semester pattern with continuous evaluation allowing flexibility for students to decide on the duration of programme completion.

ii) The duration for the B. Tech. /B. Tech. (Honours) programme in all branches of study, will normally be 8 semesters.

iii) The maximum duration shall be six academic years spanning 12 semesters.

iv) Each semester shall have 72 instructional days, followed by end semester examinations.

v) A student can opt for B.Tech. (Honours) at the end of the fourth semester.

vi) The curriculum of any branch of the B. Tech. programme is designed to have a minimum of **180** academic credits and 2 additional pass/fail credits, for the award of the degree.

vii) The University follows Credit System and Credits are apportioned among the following knowledge segments.

B.Tech. Programme.

Knowledge Segments		Credits	
Basic Sciences	]	10	[8 Theory+ 2 Labs]
Mathematics		16	
Humanities		9	
Basic Engineering		29	[25 Theory +4 Labs]
Professional Engineering		89	[80 Theory +9 Labs]
Electives		15	
Seminar		2	
Comprehensive Viva		2	
Design Project		2	
Project		6	
Total Academic Credits:		**180**	
Student's Activities		2	[Audit-Pass/Fail]
Total credits for B.Tech. Degree		182	

Credits are assigned to courses based on the following general pattern.

One credit for each lecture hour per week for one semester
One credit for each tutorial hour per week for one semester

One credit for each laboratory/ practical session of 2 or 3 hrs, per week for one semester

viii) In a semester normally up to six lecture based courses and three laboratory/practical courses, carrying a maximum credit of 26, could be offered.

ix) University may allow students to transfer credits they have earned at other Universities and Academic Institutions, as per the guidelines given by the Academic Committee and approved by the Board of Governors.

x) Student Activities Points:

To be an engineer capable of competing globally, in addition to technical knowledge and skills, students should develop excellent soft skills, nurture team work and leadership qualities and have an entrepreneurial and trail blazing outlook. To achieve this, in addition to academics, students are to actively engage in co-curricular and extra-curricular activities. For such activities, points are allotted. On getting a minimum of 100 activity points the student passes the course and earns 2 credits which do not count for the CGPA but mandatory for the award of the degree. Listing of these activities and the maximum points that could be earned by engaging in them are given at the end of this document. Additional activities could be included in the list with the approval of the Academic Committee.

e. Curriculum, List of Courses and Syllabi

i) Every branch of study in the B.Tech., programme will have a curriculum, list of courses, syllabi and course plans approved by the Academic Committee of the University.

ii) Courses are categorized as Core Theory (CT), Core Practice (CP) and Electives (EL).

iii) Each course has a course number. Course number includes the offering department or knowledge segment code and a three digit number. Knowledge segment code is used when a course is offered by any one or more departments with the same course content and syllabus. Details on this are given under Rule, RU-1.

f. Faculty Advisor/Counsellor

All students shall have faculty advisors whose role will be:-
To guide and help students on academics
To monitor their progress in academics and advise them
To counsel them and hand-hold them in any difficulty

g. Course Registration and Enrolment

It is mandatory for students to register for the courses they want to attend in a semester. Students admitted freshly to the first semester, are advised to register for all courses listed for the semester. However they do not have to enrol for the

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semester. All other students are required to register at the end of the semester for the courses they desire to take in the coming semester. They have to enrol for these courses at the beginning of the new semester, based on the previous semester results. This allows them to make changes in the list of courses already registered for. Before enrolment, students should clear all dues including any fees to be paid and should not have any disciplinary issues pending. The dates for registration and enrolment will be given in the academic calendar. Any late registration or enrolment, allowed up to 7 working days from the stipulated date, will attract a late fee.

A student can withdraw from a course or substitute one already registered by another on valid reasons with the approval of the faculty advisor. However this has to be done within seven working days from the commencement of the semester. The maximum number of credits a student can register in a semester is limited to 26.

h. Course Completion and Earning of Credits

Students registered and later enrolled for a course have to attend the course regularly and meet the attendance rules of the university [RU-2] and appear for all the internal evaluation procedures for the completion of the course. Credits for the course are earned only on getting a pass grade in the composite evaluation.

i) Core courses, Prerequisites and Electives

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. For electives, failure to earn credits does not necessarily require repeating the course. Instead another approved elective is permitted as a replacement course by the faculty advisor concerned. For some courses there could be a prerequisite course completion requirement for registration.

J) Summer Courses

Students who could not earn the required minimum credits at the end of the second or fourth semester have two options to continue with the studies. They may register again for the courses, when they are offered in the next academic year. However, there is also a provision to run summer courses in failed courses for these students who may register and attend the course and write the final examination. This provision is only 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 examination.

For the final grading their internal evaluation marks obtained in the regular semester in which they had undergone the course shall be applicable. Summer courses are to be conducted for a minimum of 20 contact hours for each course. Summer courses are to be offered only at the end of the second and fourth semesters for the courses covered till that semester. They will be conducted either by all colleges or only by some, depending on the number of students registering for them. Details of summer courses planned will be announced by the colleges after the declaration of the even semester results. Final examination for summer courses will be conducted by the University. Based on the availability of faculty and the number of students opting for courses, it will be the prerogative of the colleges to decide on the summer courses to be offered.

Options for the fifth and higher semesters

For higher semesters, i.e., fifth semester onwards, summer courses are not offered. Failed students who have less than 45% marks in internal assessments have to register again for the course in the regular semester in which it is offered and complete the course as per the regulations and appear for the end semester examination. Failed students having 45% marks or more in internal assessments have the option to register again for the course as mentioned above or register only for the end semester examination without attending the course again. A separate registration format will be available for this. This option is available in all semesters.

k) Contact Courses

If a student has to earn credits only just for one course to qualify for the degree after completing eight semesters of study, the college concerned may offer a contact course on a written request by the student. The contact course is considered as 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 contact hours for the course shall be 20. The final examination will be conducted by the college and shall be monitored by the external academic auditor. Question paper for the examination will be given by the Controller of Examination. No grade above C shall be given for a contact course.

l) Academic Assessment/Evaluation

Academic Evaluation of Courses
University follows a continuous academic evaluation procedure.
Academic evaluation procedure and corresponding weights are as follows:-

    a) For theory courses: - $1/3^{rd}$ weightage for internal evaluation and $2/3^{rd}$ for end semester examination.

For convenience, the maximum marks for internal evaluation and end semester examination for theory courses are fixed as 50 and 100 respectively.

Scheme of evaluation is as follows.

i)   Two internal tests each of 20 marks and of one hour duration. (Internally by the College)

ii)   Tutorials/Assignments/Mini Projects carrying 10 marks. (Internally by the College)

iii)   End Semester examination carrying 100 marks. (Conducted by the University)

All the above evaluations are mandatory requirements to earn credits.

Students who have missed either the first or the second test can register with the consent of the faculty and the Head of the Department (HOD) concerned for a re-test which shall be conducted soon after the completion of the second test, but before the end semester examination. The re-test will cover both first and second test course plans. Those who have missed both the tests are not eligible to appear for the end semester examination.

However if one misses both tests due to medical reasons or other personal exigencies, based on genuine evidence, a single test of 2 hour duration for 40 marks will be conducted covering the whole syllabus, before the end semester examinations. Decision on this will be taken by the Principal and verified by the external academic auditor.

b)   For Laboratory /Practical /Workshop courses

i)   Practical records /Outputs   60 marks   (Internally by the College)

ii)   Regular class Viva   10 marks   (Internally by the College)

iii)   Final written test/quiz   30 marks   (Internally by the College)

All the above assessments are mandatory to earn credits. If not, the student has to complete the course/assessments during his free time in consultation with the faculty members. On completion of these, grades will be assigned. In case the Practical /Laboratory/Workshop courses are not completed in the semester, grade I (incomplete) will be awarded against the course and the final grade will be given only after the completion of the course/assessments.

c)   Comprehensive Examination

As students appear for placements from seventh semester onwards, 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 [RU45].

d) 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 will be evaluated based on RU-6

e) Design Project

Each student or a group of students has to take up a design project. The project topic could be arrived at in consultation with any faculty member in the department. The Evaluation of the 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. The project supervisor and two other faculty members from the same or any other department, nominated by the Head of the Department form the evaluation board.

f) 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 given below:-

i)	Two progress assessments	20%	by the faculty supervisor/s
ii)	Final Project Report	30%	by the Assessment Board
iii)	Project presentation and Viva	50%	by the Assessment Board

If the project work is not completed satisfactorily, the student has to put in more work and appear again for assessment on a specified date, not earlier than one month after the first evaluation. If the student fails in the project, a fresh registration for the project for one semester is mandatory.

The project assessment board shall consist of the following members.

Chairman: Head of the Department

Members: Project supervisor/s of the student

One faculty member from the Department

One faculty member from a sister Department

An external expert, either from an academic/research institute or industry

m) Eligibility to Continue

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 odd semesters if this requirement is not met, the student is to be forewarned and allowed to continue to the next even semester. However at the end of even semesters this requirement will be strictly implemented. Summer courses are offered to those who do not satisfy this norm after the 2nd as well as the 4th 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

Dr. SUNNY JOSEPH KALAYATHANKAL B.Ed
M.Tech, MCA, M.Sc, M.Phil (CS)
Ph.D (Computer Science), Ph D (Maths)
PRINCIPAL
Jyothi Engineering College

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they are offered subject to the limitations imposed by the ordinances and course timetable.

Action plan, for dealing with course arrears in theory courses at the end of each semester to continue with the programme, is given below. Faculty advisors shall monitor advice and support the students in this. Students should be informed about the minimum cumulative credits requirement to register for higher semester courses.

Eligibility Criteria for Registering for Higher Semester Courses

Semester	Allotted Credits	Cumulative Credits	Minimum cumulative credits required to register for courses in higher semesters
First	24	24	Not insisted
Second	23	47	35
Third	24	71	Not insisted
Fourth	23	94	80
Fifth	23	117	Not insisted
Sixth	23	140	126
Seventh	22	162	Not insisted
Eighth	18	180	

n) **Course Committees and Class Committees**

These committees are to be in place in each college affiliated to the University.

a) Course Committee

This is for common courses (electives are excluded) offered to students admitted for the B. Tech. programme irrespective of their branch of study. Each of such courses will have a course committee constituted by the Principal of the college.

The chairman of the course committee shall be a senior faculty member not offering the course.

Members:-
i)   All teachers offering the course.
ii)   Four student representatives nominated by the Principal.

b) Class Committee

Beginning from the third semester, all branches of study will have class committees for every semester constituted by the respective Heads of Departments.

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The chairman of the committee shall be a senior faculty member who does not offer any course during that semester.

Members:-

i)   All faculty members teaching courses in that semester.
ii)   Two student representatives nominated by the head of the Department.

The course committees and class committees shall meet at least thrice in a semester – the first at the beginning of the semester, the second and the third after the first and the second internal tests respectively. Both committees should monitor the conduct of the courses, adherence to the course plan and time schedule, completion of the syllabus, standards of internal tests, evaluation process and difficulties faced by the students and take suitable remedial actions at the appropriate time. At the end of the semester, the committee should meet without student representatives to review the conduct of the course and finalize the internal assessment marks and approve them.

o)   Eligibility for writing the end semester examination and for grading

Students with 45% or more marks in internal assessment in a course shall only be permitted to write the end semester examination in that course. Those with less than 45% internal marks shall be awarded 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 grading 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 the students who got 45% marks or more in the end semester examination shall be regulated in line with the end semester examination performance. Internal mark percentage shall not exceed 25% over the end semester mark %.

(For example if the end semester mark % is 45, then the maximum internal mark % is to be 45+25 = 70 %.)

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.

p)   Award of Grades

Grading is based on the % marks obtained by the student in a course, as given in 7qd The grade card will only give the grades against the courses the student has registered.

Dr. SUNNY JOSEPH KALAYATHANKAL
M.Tech, MCA, M.Sc(Maths)
Ph.D (Computer Science), Ph.D (Maths)
PRINCIPAL
Jyothi Engineering College
Cheruthuruthi

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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).

q) **Grades and Grade Points**

Grades and Grade Points as per UGC guidelines is to be followed by the University

Grades		Grade Point (GP)	% of Total Marks obtained in the 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 due to eligibility criteria [7-o]
I			Course Incomplete

SGPA and CGPA are calculated based on the above grading norms and are explained at the end of this document.

r) **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:-

i) 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.

ii) Co-curricular and Extra-curricular activities available for students, their organization and the mechanism of monitoring of activities points earned by the students.

iii) Academic functioning of the college encompassing students, faculty and college administration covering punctuality, attendance, discipline, academic

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environment, academic accountability, academic achievements and benchmarking.

s) Break of Study

A student may break study for a maximum duration of two semesters, preferably in one academic year, to initiate start-up ventures, product development etc. This is however permitted only on successfully completing the courses listed out in the first four semesters. Request for this with ample evidence to the seriousness of the venture should be forwarded to the college principal for approval. [RU-3]

Break of study on serious health reasons is also permitted with the approval of the college Principal. [RU-3]

All such cases of break of study are to be reported to the University. In both the cases, the maximum duration for completing the B. Tech. programme will still be twelve semesters.

t) 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.

u) Grade Cards

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.

v) B. Tech Degree

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

w) B. Tech. (Honours)

Accredited departments in institutions, having at least two post graduate programmes, may offer B. Tech. (Honours). It should be noted that students with a CGPA above 8 at the end of the fourth semester and having no credit arrears only are eligible for this option. As only selected institutions may have this provision, students cannot demand this or move later to an institute where this is available. Students have to earn 12 additional credits to get B. Tech (Honours). Furthermore their CGPA at the

Dr. SUNNY JOSEPH KALAYATHANKAL
M.Tech, MCA, M.Sc. M.Phil, B.Ed
Ph.D (Computer Science; Ph.D (Maths)
PRINCIPAL
Jyothi Engineering College
- 679 531

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end of the programme should be 8 or higher. Those who opted for B. Tech (Honours) but unable to earn the required additional credits in 8 semesters or whose final CGPA is less than 8 shall automatically fall back to the B. Tech. programme. However, additional course credits and the grades thus far earned by them will be shown in the grade card but not included for the CGPA.

x) Academic Discipline and Malpractices in Examinations

Every student is required to observe discipline and decorous behaviour.

Any act of indiscipline, misbehaviour and unfair practice in examinations will be referred to the **Disciplinary Action Committee (DAC)**. Malpractices in examinations shall be viewed seriously and any such incident observed or reported by a faculty member or an invigilator associated with the examinations shall be reported to the Principal who in turn shall refer it to DAC. On the basis of the report and evidence available or gathered, DAC shall immediately initiate an enquiry giving the concerned student a chance to explain his/her case. Based on this the committee shall recommend the course of action in line with the guidelines formulated for this by the Controller of Examination of the University and forward it to the Principal for action.

Actions are to be based on the severity of the offence and are to be dealt with, on a course basis. Guidelines on this shall be given by the Controller of Examination which is to be followed by the Disciplinary Action Committee of the college.

The student may appeal to the Grievances and Appeals Committee for a relook on the matter. Based on the committee's report, the Principal shall take a final decision on the matter.

DAC shall be headed by a department head and shall have three other faculty members drawn from different departments as members. In case of malpractices in end semester examinations, the report given by the college DAC and the action taken by the Principal shall be intimated to the Controller of Examination of the University

y) Student's Welfare Committee

Every college shall have a Student's Welfare Committee, constituted by the Principal of the college. This committee shall have at least three faculty members as members and the chairman shall be a senior faculty member in the rank of a Professor. This committee is entrusted with the task of looking after the welfare of the students by taking appropriate steps with the concurrence of the principal.

z) Grievances and Appeals Committee

Each college should have a Grievances Redress Committee constituted by the Principal to address the grievances of the students and to consider their appeals on any decisions made by the college. This committee consisting of at least three faculty

True Copy Attested

Dr. SUNNY JOSEPH KALAYATHANKAL
M.Tech, M Sc M Ed B Ed
Ph.D (Computer science) Ph D (Maths)
PRINCIPAL
...ng College
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members and chaired by a senior professor shall look into student's grievances and appeals and give its recommendations to the Principal for action.

8) **Amendment to Ordinance/ Regulations/Rules**

Notwithstanding all that has been stated above, the University has the right to modify any of the above Ordinance/Rules/regulations from time to time.

RULES:

RU-1 Course Code and Course Number

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 the knowledge segment of the course. The knowledge segment code is used when the course is to be offered by different departments either individually or together but having the same syllabus and course plan.

Course Number: MA 101 - This refers to a course in Mathematics with the course number 101.
Course Number: BE 102 - This refers to a course in Basic Engineering.

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.

MA 101 is a course in Mathematics offered in the first semester.
EE 344 is a course in Electrical Engineering offered in the sixth semester.
PH 110 is a course in Physics offered both the first and second semesters.
BE 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.

RU-2 Attendance

Attendance is marked for each course. While 75% attendance is mandatory for writing the end semester examination in that course, students are expected to have 100% attendance. However under unavoidable circumstances students are permitted to take leave. Leave is normally sanctioned for any approved activity taken up by students outside the college covering sports and other extracurricular activities. Leave is also permitted on medical grounds or on personal exigencies. Leave of absence for all these is limited to 25% of the academic contact hours for the course.

In case of long illness or major personal tragedies/contingencies 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 Auditor. However this concession is applicable only to any two semesters during the entire programme. In case of prolonged illness, break of study is permitted as per RU-3.

RU-3   Break of Study

A student is permitted to have a break of study.

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

For break of study due to illness, student should 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. In the semester system followed by the University, break of study for an academic year is preferred over a semester break.

Students who want 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.

RU-4   Leave of Absence

Students who want to take leave under RU2 have to submit a leave letter to the teacher conducting the course. This letter is to be forwarded to the Head of the Department with recommendation of the teacher indicating the total leave of absence the student has so far availed. Leave is to be sanctioned by the Head of the Department. For medical leave over three days, medical certificate indicating the need for leave is required. After any medical leave exceeding five

instruction days, on rejoining, the student has to produce the fitness certificate given by the doctor.

RU-5   Comprehensive Examination

This examination consists of two parts. Part one a written test and the other an oral one.

The written examination shall be objective type of 1 hour duration and shall have 50 marks and is to be conducted by the concerned department. Chairman of the oral examination board shall be a senior faculty in the department and the members include two other faculty members of the department and an external expert from another academic institute or an industry. Oral examination shall carry 50 marks. Comprehensive examination may be conducted any time during the 6th semester with sufficient notice given to the students.

RU-6   Seminar

Students have to prepare a detailed report on the topic of the seminar and submit it to the teacher concerned. The seminar is to be of 20 minutes duration with another 5 minutes given for questions and answers. All students in the class have to attend the seminar without fail. Evaluation will be based on the report, seminar presentation as well as on the ability of the student to answer the questions put forward. Faculty member in charge of the seminar and another faculty member in the department nominated by the Head of the Department are the evaluators for the seminar. Distribution of marks for the seminar is as follows.

> Marks for the report: 30%
> Presentation: 40%
> Ability to answer questions on the topic: 30%

RU-7   Ragging

Ragging of any nature is a criminal and non-bailable offence. Involvement in ragging shall lead to stringent punishment, including imprisonment as per the law of the land. A student, whose involvement in ragging is established, shall be summarily dismissed from the college. Each student of the Institute, along with his/her parent, is required to give an undertaking in this regard and the same is to be submitted at the time of registration.

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Addendum:-

1. 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 for that 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 point for 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.

2. Student Activity Points

Activities that a student can engage in and the maximum quantum of points that can be earned from them are listed below.

i) National Level Activities

Code	Name of activity	Max. Activity Points	Minimum Duration
NA1	N S O	70	Two Semesters
NA2	N C C	70	Two Semesters
NA3	N S S	70	Two Semesters

ii) College Level Activities

Code	Name of activity	Max. Activity Points	Minimum Duration
CA1	Active Member/Office bearer of Professional Societies (Student Chapters)	30/40	Four Semesters
CA2	Elected Office bearer of Student forums	30	Two semesters
CA3	Member/Captain- College Athletic/ Games teams	20/30	Two Semesters
CA3	Executive Member of Student Clubs	20	Two Semesters
CA4	Volunteer for important College functions	20	Two Semesters
CA5	Committee member/ Organizer of Tech Fest/Cultural Fest/ Conference	20/30	Two Semesters

| CA6 | Placed within top three in Paper presentation/debate/ cultural competitions etc | 30 |
| CA7 | Placed within top three in State level Sports/Games/ | 30 |

Additional 20 points are given for CA3/CA7 if the achievement is at the national level.

iii) Entrepreneurship

EA1	Any Creative Project execution	40
EA2	Awards for Projects	60
EA3	Initiation of Start-ups	60
EA4	Attracted Venture Capital	80
EA5	Filed a Patent	80
EA6	Completed Prototype Development	80

iv) Self Initiatives

SA1	Attend a National Conference	20
SA2	Attend an Int. National Conference	30
SA3	Published/ got an Award for a Technical paper.	30/40
SA4	Organiser of student level Technical Conf/Competition	30
SA5	Foreign language skills	50
SA6	Online courses taken& completed	50

Thiruvanthapuram
26-6-2015

Registrar

Dr. SUNNY JOSEPH KALAYATHANKAL
M.Tech, MCA, M.Sc, M.Phil, B.Ed
Ph.D (Computer Science), Ph.D (Maths)
PRINCIPAL
Jyothi Engineering College

LIST OF B.Tech NON-DEPARTMENTAL ELECTIVE COURSES (ELECTIVE - 5 OFFERED IN S8)

Note : The table gives the list of branches and the corresponding courses which are NOT eligible for that branch. In the column under "Courses Conditionally eligible" a student can choose a course if he/she has not studied or is not studying (in S8) the elective course given in the bracket.

BRANCH	COURSES NOT ELIGIBLE	COURSES CONDITIONALLY ELIGIBLE
1.Aeronautical Engineering	AO482, ME484, EE484	ME471 (AO467)
2. Applied Electronics and Instrumentation Engineering	AE482,AE484, EE484, AU484, EE492,BM482	MP469 (AE362), EE486(EC360)
3. Automobile Engineering	AU484, AU486	MP482 (AU465)
4. Biomedical Engineering	BM482,BM484, IC482, AU484, EE484 , EC482	MR482 (BM362)
5. Biotechnology	BT362, BT461, MT482	FT482 (BT464)
6. Chemical Engineering	CH482, CH484, MT482	MA484 (CH369), ME471(CH369)
7. Civil Engineering	CE482, CE484, CE486, CE488, CE492, MP484	ME484 (CE466), ME471 (CE473)
8. Computer Science and Engineering	CS482, CS484, CS486, CS488, MA488, AU484, MP484	EE486 (CS361), MA484 (CS365), ME471(CS365)
9. Electrical and Electronics Engineering	EE482, EE484, EE486, EE488, EE492, AU484, AE482	CS486 (EE361), CS482 (EE362), BM482 (EE372), ME482 (EE474)
10. Electronics and Biomedical Engineering	BM482, BM484, IC482, AU484, EE484, EC482	MR482 (BM362)
11. Electronics and Communication Engineering	EC482, AU484, CS486, EE484	EE486 (EC360), MA484 (EC363), ME471 (EC363)
12. Food Technology	FT482, FT484, FT486	EE488(FT466)
13. Industrial Engineering	IE482, IE484, IE486, IE488, CS486, MA484, ME471, EE488	MP469(IE363), MT482(IE466)
14. Information Technology	IT482, CS482, CS486, AU484, MA488	CS484(IT367), MP484(IT364)
15. Instrumentation and Control Engineering	AE482, AE484, AU484, EE484, EE492, BM482, IC482	EE488 (IC362), IE488 (IC364)
16. Mechanical Engineering	ME482, ME484, ME471, EE482, MR482	EE484 (ME362), EE488 (ME464), MA484 (ME372)
17. Mechanical (Automobile) Engineering	AU482, AU484, AU486, ME482, ME484, ME471, MR482	
18. Mechanical (Production) Engineering	ME482, ME484, ME471, MP482, MP469, MP484, MR482, IE488	EE488 (ME464)

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Cheruthuruthy, Th

19. Mechatronics	MR482, AU484, EE484, BM482, EE488, EE486	EE482(MR364), BM482(AE403), CS486(MR363), ME484 (ME469)
20. Metallurgy	MT482	
21. Naval Architecture and Ship Building	SB482, CS482	ME484(SB468)
22. Production Engineering	MP482, MP469, MP484, , MR482, IE488, MA484, ME471	EE486(MP369), EE488(MP372), ME484(ME469)
23. Safety and Fire Engineering	FS482, MT482, CE488	

LIST OF NON DEPARTMENTAL COURSES

1. AE482 INDUSTRIAL INSTRUMENTATION
2. AE484 INSTRUMENTATION SYSTEM DESIGN
3. AO482 FLIGHT AGAINST GRAVITY
4. AU484 MICROPROCESSOR AND EMBEDDED SYSTEMS
5. AU486 NOISE, VIBRATION AND HARSHNESS
6. BM482 BIOMEDICAL INSTRUMENTATION
7. BM484 MEDICAL IMAGING & IMAGE PROCESSING TECHNIQUES
8. BT362 SUSTAINABLE ENERGY PROCESSES
9. BT461 DESIGN OF BIOLOGICAL WASTE WATER TREATMENT SYSTEMS
10. CE482 ENVIRONMENTAL IMPACT ASSESSMENT
11. CE484 APPLIED EARTH SYSTEMS
12. CE486 GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
13. CE488 DISASTER MANAGEMENT
14. CE494 ENVIRONMENTAL HEALTH AND SAFETY
15. CH482 PROCESS UTILITIES AND PIPE LINE DESIGN
16. CH484 FUEL CELL TECHNOLOGY
17. CS482 DATA STRUCTURES
18. CS484 COMPUTER GRAPHICS
19. CS486 OBJECT ORIENTED PROGRAMMING
20. CS488 C # AND .NET PROGRAMMING
21. EC482 BIOMEDICAL ENGINEERING
22. EE482 ENERGY MANAGEMENT AND AUDITING
23. EE484 CONTROL SYSTEMS
24. EE486 SOFT COMPUTING
25. EE488 INDUSTRIAL AUTOMATION
26. EE494 INSTRUMENTATION SYSTEMS
27. FS482 RESPONSIBLE ENGINEERING
28. FT482 FOOD PROCESS ENGINEERING
29. FT484 FOOD STORAGE ENGINEERING
30. IC482 BIOMEDICAL SIGNAL PROCESSING
32. IE482 FINANCIAL MANAGEMENT
33. IE484 INTRODUCTION TO BUSINESS ANALYTICS
34. IE486 DESIGN AND ANALYSIS OF EXPERIMENTS
35. IE488 TOTAL QUALITY MANAGEMENT
36. IT482 INFORMATION STORAGE MANAGEMENT
37. MA482 APPLIED LINEAR ALGEBRA
38. MA484 OPERATIONS RESEARCH

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39. MA486 ADVANCED NUMERICAL COMPUTATIONS
40. MA488 CRYPTOGRAPHY
41. ME471 OPTIMIZATION TECHNIQUES
42. ME482 ENERGY CONSERVATION AND MANAGEMENT
43. ME484 FINITE ELEMENT ANALYSIS
44. MP469 INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR
45. MP482 PRODUCT DEVELOPMENT AND DESIGN
46. MP484 PROJECT MANAGEMENT
47. MR482 MECHATRONICS
48. MT482 INDUSTRIAL SAFETY
49. SB482 DREDGERS AND HARBOUR CRAFTS

General Guidelines

1. Non departmental electives are courses offered by a department for students of other departments.
2. Students of a department cannot choose a course offered by his/her department. The college shall ensure this.
3. Also, the college should ensure that a student does not choose a course having contents in courses which he/she has studied in previous semester or is studying in the 8th Semester.
4. Each department should offer minimum one Non departmental elective.
5. Maximum number of students in a batch for non departmental elective shall be in the range 50-60 and minimum number around {Total students/(1.5*No of batches)}.
6. The syllabus of ND electives is available in KTU website.

Dr. SUNNY JOSEPH KALAYATHANKAL
M ch, MC, Sc, M.Phil b i d
Ph.l mput nce), Ph D (Maths)
PRINCIPAL
Engineering College
PO