ACADEMIC BULLETIN

2019-2020

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

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CONTENTS

PREFACE

This edition of the Academic Bulletin aims at giving a brief overview of the course structure as well as regulations for the various graduate and post- graduate programmes offered in the University. We believe that this bulletin will enable the students to choose electives according to their interest in the topic. The details of the faculty in each Department along with their specialisations are given in the text. Information in this bulletin is organised faculty wise and Department wise- within each faculty. Clarifications regarding any detail which is not included in the bulletin can be obtained from the concerned Head of the Department. It may be noted that the rules and regulations are subject to changes, depending on subsequent decisions taken by the academic bodies.

The Academic Bulletin Committee is thankful to all the Directors of Schools/ Heads of Departments and the University authorities for extending all sort of Co-operation inbringing out this bulletin. We would also like to place on record our appreciation to the staff of Academic Section for their administrative help and support.

Dr. Thomas Kurian

Dr. G.Santhosh Kumar

Dr. P.S. Seema

Dr. S.M. Sunoj (Convenor)

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21.	**Dr.Thomas Kurian**	:	Professor, Department of Polymer Science and Rubber Technology
22.	**Dr.G. Santhosh Kumar**	:	Professor, Department of Computer Science
23.	**Dr. Supriya M.H**.	:	Professor& Head, Department of Electronics
24.	**Dr.K.Ajitha**	:	Professor& Head, Department of Hindi
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27.	**Dr. A. Mujeeb**	:	Professor& Director, International School of Photonics
28.	**Sri. Roy V.Paul**	:	Associate Professor& Course Co-Ordinator K.M. School of Marine Engineering
29.	**Dr.Sunilkumar N.**	:	Associate Professor, Cochin University College of Engg. Kuttanadu
30	**Dr. Valsamma Joseph**	: :	Associate Professor, National Centre for Aquatic Animal Health
31.	**Dr. Zakkariya K.A**		Professor, DDU Kaushal Kendra
32.	**Dr. P.G. Romeo**		Professor, Department of Mathematics
33	**Dr. Glory Joseph**		Associate Professor & Head, Division of Civil Engineering, School of Engineering

REGULATION FOR POST GRADUATE PROGRAMMES UNDER CHOICE BASED CREDIT SYSTEM (CBCS) OFFEREDBY THE UNIVERSITY DEPARTMENTS/SCHOOLS/CENTRES (to be effective from 2017 admissions).

1 SCOPE

1.1	These Regulations shall apply to all M.Sc.., MA. MBA, MCA and M.F.Sc. programmes conducted by the Departments/Schools/Centre* of the Cochin University of Science and Technology.
1.2	The provisions herein supersede all other Regulations with respect to such PG Programmes unless otherwise provided.

2 DEFINITIONS

2.1	*Academic Committee* means the committee constituted by the Vice-Chancellor under this regulation to monitor the running of the programmes.
2.2	*Core course* means a course that the student admitted to a particular programme must successfully complete to receive the Degree and which cannot be substituted by any other course.
2.3	*Elective course* means a course, which a student must successfully complete in his parent or other Departments/schools/centresto earn credits to receive the degree.
2.4	*Audited course*means a course which can be opted by a student but which will not accrue any credit.
2.5	*Department/School/Centre** means Departments/Schools instituted in the University as per Statutes and Act.
2.6	All PG Programmes following this regulation will be of Second Level. *Added the amendment vide Notification No.Conf.II/2941/2/2017(4) dated 05.08.2017*

3 ELIGIBILITY FOR ADMISSION

As per the Regulations prescribed by the University from time to time.

4 ADMISSIONS

As per the Regulations prescribed by the University from time to time.

After completing the admission, each student shall be assigned a Unique Registration Number, on a format suggested by the University by the concerned department which will be valid throughout his/her programme of study in the University.

5 COURSE REGISTRATION

5.1	Every Department/School shall have Faculty Members as Student Advisors. Each student at the time of seeking admission will be assigned to an Advisor by the Department Council. He/She will advise the student about the academic programme and counsel the student on the choice of courses depending on the student's academic background and objective. The student will then register for the courses he plans to take for the semester before the classes begin and within the time prescribed by the University. The student should have completed the prescribed prerequisites if any for a course before registration.
	The Department offering any course shall prescribe the maximum number of students that can be admitted taking into consideration the facilities available. Core courses are to be compulsorily offered by the respective Departments that offers the programme. In any Department preference shall be given to those students for whom the course is a core-course if the demand for registration is beyond the maximum prescribed. The student can drop and re-register any elective/audit courses(s) within 15working days after the commencement of the classes.
5.2	The University shall make available to all students a Bulletin listing all the courses offered in every semester specifying the credits, prerequisites, list of topics the course intends to cover, the instructor who is giving the courses, the time and place of the classes for the courses and examination schedule. Each course shall have a code consisting of three characters denoting the Department and four digits of which first digit will be 2 indicating the level of the course, second indicating the Semester and third and fourth digits the serial number of the course. However in such Departments having more than 1 Masters programme of the same level, the first 2 characters will denotethe Department and the third, the course of study.

6 COURSE STRUCTURE

Note: *MBA (PT) Programme is stretched to 6 semesters with the same content as the full-time programme with 4 semesters.

Each semester shall have a minimum of 90 working days and one credit shall be given for one hour lecture or 2 hours of practical work per week. No regular student shall register for more than 24 credits per semester and less than 16 credits per semester. In case of MBA (PT) programme, the minimum and maximum credits per semester will be 12 and 19 respectively.

	A student shall compulsorily register and complete atleast one Interdisciplinary Elective (IE) course (one of the Electives) from other Departments/Schools before registering for the final semester of the Programme. However, MBA (PT) programme and the programmes following this regulation offered by CUCEK may be exempted from this clause.
	Each Department/School must announce atleast one interdisciplinary course (Electives) to be offered by them, in the "E" slot of the Common Time-table.
	This interdisciplinary course (Elective) shall not have any prerequisite.

6.1	The CBCS system will be fully internal in all sense. There shall be three kinds of courses: Core, Electives and Audit courses. Elective courses, if any offered through Massive Open Online Course (MOOC) shall be limited to have two credits*.
6.2	Total number of credits for the core courses shall not exceed 60 for MA/M.Sc.., 80 for MCA/MBA (FT) & (PT), and shall not be less than 48 for MA/M.Sc.., 72 for MCA and for MBA (FT & PT).
6.3	The Department Council shall make recommendations on the content of core and elective courses including the detailed syllabus pertaining to each programme offered by the Department to the University and approved by the concerned Board of Studies, Faculty and Academic Council. The Department Council shall have the freedom to design and introduce new electives and or audited courses, to modify/redesign existing electives and to replace any existing electives with new or modified/redesigned electives to facilitate better exposure and training for the students. Prior approval from the Board of Studies and Academic Council is not required for such modifications in the electives, but shall be done only with the approval of the Academic Committee. Such courses approved by the Academic Committee shall be placed before the Academic Council in a subsequent meeting for ratification*. *Added the amendment vide Notification No.Conf.II/2941/2/2017(4) dated 22.08.2017
6.4	The general structure of the programme shall be as given below: A minimum 75% attendance is compulsory. But the Vice-Chancellor shall have the power to condone shortage of attendance up to 10% on medical grounds on the recommendations of the Head of Department. However such condonation for shortage of attendance shall be given only once during the entire programme of study.

	MA/ M.Sc.	MBA/ Full-Time	MBA* Part-Time	MCA
Programme duration	4 Sem.	4 Sem.	6 Sem.	6 Sem.
Accumulated minimum credit required for successful completion of the programme	72	87	87	108
Minimum Attendance required	75%	75%	75%	75%

7. EVALUATION

7.1	The entire system of evaluation is internal. The evaluation scheme for each semester contains two parts, a continuous assessment and a semester end examination. The continuous assessment shall consist of minimum of two tests and assignments/seminars/quizzes etc for which proportionate weightage shall be decided by the Departmental Council*and shall be noticed to the students at the beginning of the semester. Marks obtained in the continuous assessment shall be displayed on the notice board and grievances if any may be addressed to the Head of the Department. The Department Council shall finalise the marks of the continuous assessment of each course after addressing such grievances. The semester end examination which will be of 3 hours duration shall cover the entire syllabus of the course. Equal weightage shall be given for the continuous assessment and the semester end components.

	All practical examinations will also be internally evaluated as per the procedures laid down by the Department Councils concerned.
7.2	The question paper for the semester end examination shall be set by the concerned teacher in advance, which shall be scrutinized by the respective Department council or by a committee consisting of the HOD and faculty members offering courses in that semester to ensure that questions are within the scope of the syllabus and that the entire syllabus of the course is fairly covered in the question paper. Modifications can be suggested by the council if necessary and such suggestions shall be incorporated in the final version of the question paper. There shall be only a single evaluation for the semester end examination. Immediately after the examination is over, the Head of the Department shall make arrangements to complete the evaluation and finalize the results within 10 working days. The marks and grade in all the courses obtained by the students have to be displayed in the notice board and the answer scripts can be shown to the students for scrutiny if requested.
7.3	For each course, there shall be a separate minimum of 45% marks for the semester end examination.
7.4	TheDepartment shall publish the marks obtained by the students, in the continuous assessment and semester end examination. If the student has any grievance, he/she can approach the concerned teacher and submit grievanceith with supporting documents/arguments. The teacher and the HOD will examine the case and decide on his/her grievance. If the student is not convinced with the decision, he/she can approach the appellate authority, which is the department council, in writing and the council shall examine the same and take a final decision which has to be intimated to the student in writing. The decision of the appellate authority shall be final.
7.5	The final marks and grades obtained by the students shall be published in the notice board. Those who could not obtain atleast Grade Din total for a course will be declared as failed in that course. Those who fail in any core or elective course shall submit an application to the Head of the Department within 5 working days if necessary for a re-examination of the semester end examination. Within ten days of the display of the results in the notice board, the department shall conduct an additional semester end examination for these candidates. This re examination is only to provide the student a chance to complete the course successfully.If he/she completes the souse successfully making use of this additional chance, he/she will be awarded only a D gradeenabling the candidate to be declared successful in that course. If he/she cannot make it up, he/she may repeat the semester end examination of that course in the nextavailable chance. In this case, he/she may be awarded whatever grade he/she has secured. If the candidate fails in this chance also, for the successful completion of the programme, the student has to re-register and repeat those courses in which he/she has failed. In this case also, the student may be awarded whatever grade he/she has secured. The maximum duration for completing any PG degree programme will be 4 years except for MCA/MBA (PT) for which it will be 6 years from the date of commencement of first semester. The result of the examinations will be finalized and published within 30 days form the last date of examinations by the department council, which will act as the passing board and the minutes shall be sent to the controller of examinations for issue of grade card.

8 GRADE CARD

8.1		The University under its seal shall issue a Grade Card to the students on completion of each semester. The Grade card shall contain the following:
	a.	Title of the course taken as core, elective and audit. (An audit course shall be listed only if the student has secured a pass)
	b.	The credits associated with and the grades awarded for each course.
	c.	The number of credits (core and elective separately) earned by the student and the Grade Point Average.
	d.	The total credits (core and elective) earned till that semester.
8.2		The following grading system be adopted for all the Programmes. The following grades will be awarded based on the overall performance in each subject.

Range of marks	Grades	Weightage
90 and above	S-Outstanding	10
80 to 89	A-Excellent	9
70 to 79	B-Very good	8
60 to 69	C-Good	7
50 to 59	D-Satisfactory	6
Below 50%	F-Failed	0

Overall performance at the end of the semester will be indicated by Grade Point Average (GPA) calculated as follows.

$$GPA = \frac{G_1C_1 + G_2C_2 + G_3C_3 + \ldots\ldots\ldots G_nC_n}{C_1 + C_2 + C_3 + \ldots\ldots\ldots\ldots\ldots C_n}$$

Where 'G' refers to the grade weightage and 'C' refers to the credit value of corresponding course undergone by the student. At the end of the final semester Cumulative Grade Point Average (CGPA) will be calculated based on the above formula, considering the Credits and Grades earned during the entire programme of study.

Classification for the Degree/Diploma will be given as follows based on the CGPA:

First Class with distinction	8 and above
First Class	*6.5 and above
Second Class	6 and above

*Added the amendment vide Notification No.Conf.II/2941/2/2017 (4) dated 05.08.2017/22.082017

8.3	The Grade Card issued at the end of the final semester shall contain the details of all the courses taken which shall include the titles of the courses, the credits associated with each course and the grade obtained the GPA of earlier semesters, the CGPA, the class, the grading scale and the classification scale.

9 MONITORING AND MANAGEMENT OF PROGRAMMES

9.1	Every post graduate programme conducted in the Departments shall be Monitored by the Department Council subject to these regulations. Such monitoring shall include design of programmes, prescribing the mode of conduct of the programmes and monitoring the evaluation process of students.

10 ACADEMIC COMMITTEE

10.1	There shall be an Academic Committee constituted by the Vice-Chancellor to monitor and co-ordinate the working of the CBCS System.	
10.2	The Committee shall consist of:	
	A	The Pro-Vice-Chancellor	Chairman
	B	The Registrar	Secretary
	C	The Controller of Examinations	
	D	One Teacher from each Department nominated by the Department Council	
10.3	A Senior Professor nominated by the Vice-Chancellor from among the members of the Committee shall be the Vice-Chairman of the Committee.	
10.4	The term of the office of the committee shall be two years, but the committee once constituted shall continue in office until a reconstituted committee assumes office.	

11 TRANSITORY PROVISION

Notwithstanding anything contained in these regulations, the Vice-Chancellor shall, for a period of one year from the date of coming into force of these regulations, have the power to provide by order that these regulations shall be applied to any programme with such modifications as may be necessary.

12 REPEAL

Any regulation or rule which is inconsistent with the existing shall be void to the extent of inconsistency*.

Added the amendment vide Notification No.Conf.II/2941/2/2017 (4) dated 05.08.2017

REGULATIONS FOR THE M.TECH. PROGRAMMES OFFERED BY THE UNIVERSITY DEPARTMENTS/SCHOOLS

The following regulations are made applicable to all the Full time and Part time M.Tech. programmes offered by the Departments/ Schools of the University with effect from the academic year 2015-2016.

1. M.TECH. PROGRAMME

The Full time M.Tech. programmes offered by the Departments / Schools of the University shall be of four semesters duration spanning over a period of two academic years; wherein the first two semesters will include lectures, laboratory work, and seminars. The student will devote the third and fourth semesters on a project work related to a relevant area of the specialization either in the Department/School or in an industrial/ research/academic institution outside the University.

The Part-Time M.Tech. Programme in the University shall be of six semesters duration spanning over a period of three years; wherein the first four semesters will include lectures, laboratory work/seminars. The student will devote part of fourth semester and the fifth and sixth semesters on a project work related to a relevant area of the specialization either in the Department or in collaboration with an industrial/research/ academic institution outside the University.

1.1 Branches of Study / Specialization

Sl. No.	Branch of study/ specialization	Department / Division/ School offering the programme	Full time/ Part time
1.	Atmospheric Science	Department of Atmospheric Sciences	Full time
2.	Engineering Statistics	Department of Statistics	Full time
3.	Ocean Technology	Department of Physical Oceanography	Full time
4.	Industrial Catalysis	Department of Applied Chemistry	Full time
5.	Polymer Technology	Department of Polymer Science and Rubber Technology	Full time
6.	Computer Aided Structural Analysis & Design	Department of Ship Technology	Full time
7.	Opto-Electronics and Laser Technology	International School of Photonics	Full time
8.	*Electronics &Communication Engineering	Department of Electronics	Full time
9.	Computer and Information Science	Department of Computer Science	Full time
10.	Software Engineering	Department of Computer Science	Full time
11.	Computer Science with specialization in Embedded Systems	Department of Computer Science	Part time

12	**Data Science &Artificial Intelligence	Department of Computer Science	Pat time

Added the amendment vide notification no.Conf.II/2941/2/2015 (1) dated 29.07.2016
*** Notif No.Conf.II/2941/3/2018 (1) dated 21.01.2019.*

13.	Marine Biotechnology (sponsored by Dept.of Biotechnology)	NCAAH	Full time
14.	Civil Engineering (with specialization in Geotechnical Engineering)	Division of Civil Engineering School of Engineering	Full time
15.	Mechanical Engineering (with specialization in Thermal Engineering)	Division of Mechanical Engineering, School of Engineering	Full time
16.	Electronics and Communication Engineering (with specialization in Wireless Technology)	Division of Electronics Engineering School of Engineering	Full time
17.	Software Systems	Division of Information Technology School of Engineering	Full time
18.	Industrial Safety (Specialization - HSE Management)	Division of Safety and Fire Engineering School of Engineering	Full time
19.	Computer Science and Engineering (with specialization in Network Computing)	Division of Computer Engineering, School of Engineering	Full time
20.	Marine Engineering	Kunjali Marakkar School of Marine Engineering	Full time
21.	Civil Engineering – Construction Engineering & Management	Division of Civil Engineering School of Engineering	Part time
22.	Mechanical Engineering – Production Engineering	Division of Mechanical Engineering School of Engineering	Part time
23.	Chemical Engineering – Process Engineering	Division of Chemical Engineering School of Engineering	Part time
24.	Electrical & Electronics Engineering – Power Electronics	Division of Electrical Engineering School of Engineering	Part time
25	Electronics Design and Technology	Division of Electronics and Communication Engineering School of Engineering	Full Time

26	Mechanical Engg.-Mechanical Engineering Design	Division of Mechanical Engineering School of Engineering	Full Time
27	Marine Genomics	Department of Marine Biology,Microbiology& Biochemistry	Full Time

A student is admitted to the course as per the eligibility criteria prescribed below:

1.2. Eligibility for admission

1. The specific eligibility criteria for the various full time and part time programmes are given below.

1.	**Atmospheric Science**
	Minimum 60% marks or equivalent CGPA Grade in M.Sc. Degree in Meteorology/Oceanography/Physics/Space Physics/Mathematics/B.Tech.in Civil/Mechanical/Naval Architecture and Ship Building with preference to valid GATE score/National Eligibility Test (NET/UGC/CSIR) qualified candidates:
2.	**Engineering Statistics*** 1. B.Tech. or equivalent Degree or AMIE in any discipline or AMIIChE with 60% or equivalent grade from any recognized University or Institution 2. A valid GATE score. 3. In the absence of applicants with GATE others can also be considered on the basis of the performance in DAT. *Amended vide U O No.Ac.A4/Admn/2013 PF dtd 08.08.2018.*
3.	**Ocean Technology** 1. M.Sc. Degree in Oceanography/Physics/Marine Geology/Meteorology/ Marine Geophysics/Environmental Sciences or M.Sc. (Tech) Degree in Marine Geophysics or B.Tech. or equivalent Degree/AMIE in Civil Engineering/Environmental Sciences with 60% marks from any recognized University or Institution. 2. A valid GATE score in any of the subjects mentioned above as the second paper. 3. In the absence of applicants with GATE, others can also be considered on the basis of the performance in DAT .
4.	**Industrial Catalysis*** 1. M.Sc. Degree in Chemistry/Applied Chemistry or any other Post-Graduate degree recognized as equivalent with First Class (60% marks or CGPA 6.5) from any recognized University or Institution with a valid GATE score. 2. In the absence of sufficient number of candidates with GATE score, candidates without GATE score shall also be considered subject to passing a Departmental Admission Test. ** Added the amendment vide Notif No.Conf.II/2941/1/2018(1) dtd 25.07.2018.*
5.	**Polymer Technology** B.Tech. or equivalent degree/AMIE in Polymer Science and Rubber Technology/Chemical Engineering/Technology or M.Sc. Polymer Chemistry/ M.Sc. Chemistry with Polymer Chemistry as specialization with a First Class (60%) marks from any Recognized University or Institution.

6.	**Computer Aided Structural Analysis & Design** B.Tech. or Equivalent degree in Naval Architecture and Ship Building/Civil Engineering/Mechanical Engineering with first class (60%) marks from any Recognized University or Institution.
7.	**Opto-Electronics and Laser Technology** 1. Master's Degree in Physics/Electronics/Photonics/ B.Tech. or BE Degree in Electronics & Communication Engineering/ Electronics Engineering/ Electrical Engineering /Electrical and Electronics Engineering with a First Class (60%) from any recognized University or Institution 2. A valid GATE score in concerned branch of study 3. If sufficient number of candidates with GATE score in concerned branch of study are not available, candidate with GATE score in instrumentation will be considered. If sufficient numbers of GATE score holders are not available a pass in DAT is sufficient.
8.	**Electronics and Communication Engineering** 1. B.Tech. or Equivalent Degree/AMIE/AMIETE in Electronics and Communication Engineering/Electrical Engineering/Electronics and Instrumentation or M.Sc.Degree in Electronics/Physics (with Electronics as specialization) with a First Class (60%) marks from any recognized University or Institution 2. A valid GATE score in Electronics, Electronics and Communication Engineering branch of study 3. If sufficient numbers of candidates are not available in category 2 above, Candidates GATE score in Instrumentation, Electrical and Electronics Engineering Electrical Engineering or Physics will be considered. In the absence of the GATE qualified candidates. Non-GATE candidates can be admitted on the basis on the basis of DAT.
9.	**Computer and Information Science** 1. B.Tech. or equivalent degree/AIMIETE/AMIE in the branch of Computer Science or Information Technology or Electronics & Communication or MCA with a First class (60% marks) applicable to all the above, from any recognized university or institution 2. A Valid GATE score in the subject "Computer Science & Information Technology".
10.	**Software Engineering** 1. B.Tech. or equivalent degree/AIMIETE/AMIE in the branch of Computer Science or Information Technology or Electronics & Communication or MCA with a First class (60% marks) applicable to all the above, from any recognized university or institution. 2. A Valid GATE score in the subject "Computer Science & Information Technology
11.	**Computer Science with specialization in Embedded System** 1. First class B.Tech. Degree in Computer Science & Engineering/Electrical Engineering/Information Technology/Electronics Engineering or equivalent branches/MCA with 60% marks or equivalent CGPA 2. A minimum of one year experience in an Industry of repute or a University/Institution recognised by appropriate statutory bodies**.**

12.	**Computer Science (Data Science &Artificial Intelligence)** Candidates for admission should possess: **a)**. A First Class B.Tech/ BE/ AMIE Degrees in Computer Science & Engineering/Information Technology/Electronics & Communication / Electrical and Electronics / MCA/ Postgraduate degree in Maths/Statistics/Computer Science from any Universities in Kerala or an Examination of any other University/Institution accepted by this University as equivalent thereto, with a minimum of 60% marks/ 6.5 CGPA (in 10 point scale or equivalent). **b)** .Candidates should have a minimum of Two Years experience in IT industry of repute/ University/ Institutions recognized by appropriate statutory bodies, after acquiring the qualifying degree. **c)** .A valid GATE score in appropriate branch. **d)**. In the absence of GATE qualified candidates, Non-GATE candidates can be admitted on the basis of a Departmental Admission Test (DAT) conducted by the Department/School.
13.	**Marine Biotechnology** B.Tech./BE in Chemical Engineering, Biochemical Engineering, Industrial Biotechnology, Leather Biotechnology, Chemistry/Biotechnology, Biomedical Engineering, B.Pharm, Chemical Technology or M.Sc.in Biotechnology, Marine Biotechnology, Life Sciences, Botany/Zoology/Biochemistry, Microbiology/ Genetics, Biophysics, Microbial Genetics and Bioinformatics, Marine Biology/ Aquatic Biology and Fisheries/Environmental Biotechnology/Mariculture with 60% marks or Equivalent CGPA from any recognized Indian or Foreign University. For admission to M.Tech. Marine Biotechnology GATE score is not considered. Selection of candidates is done by JNU on behalf of Department of Biotechnology, Government of India.
14.	**Civil Engineering with specialization in Geotechnical Engineering** a) Shall have passed B.Tech./BE/B.Sc Engineering Degree Examination in Civil Engineering branch with a minimum 60% marks from any University in Kerala or an examination of any other University/Institution accepted by this University as equivalent thereto. b) The candidates who have passed sections A&B examinations conducted by the Institution of Engineers (India) – AMIE in Civil branch shall be eligible.
15.	**Mechanical Engineering with specialization in Thermal Engineering** *Shall have passed B.Tech./BE/B.Sc Engineering Degree Examination in Mechanical, Automobile, Aerspace, Aeronautical branches with a minimum of 60% marks from any University in Kerala or an examination of any other University/Institution accepted by this University as equivalent thereto. Candidates who have passed sections A and B examinations conducted by the Institution of Engineers (India) – AMIE or similar equivalent examinations in the branches mentioned above with a minimum of 60% of marks shall also be eligible
16.	**Electronics and Communication Engineering with specialization in Wireless Technology** Shall have passed B.Tech./BE/B.Sc Engineering Degree Examination in Electronics or Electrical and Electronics or Electronics and Communication branch with a minimum 60% marks from any University in Kerala or an examination of any other University/Institution accepted by this University as equivalent thereto.

17.	**Software Systems**
	a) Shall have passed B.Tech./BE/B.Sc Engineering Degree Examination in Information Technology/ Computer Science and Engineering/Computer Engineering/Biomedical Engineering/Electronics and Communication/ Electronics/Electrical and Electronics branch with a minimum of 60% marks or CGPA 6.5 in 10-point scale from any University of Kerala or an examination of any other University/Institution accepted by this University as equivalent thereto.
18.	**Industrial Safety (Specialization – HSE Management)**
	a) *B.E/B.Tech./B.Sc. Engg. In Aerospace Engineering/ Chemical Engineering/ Civil Engineering/Electrical Engineering/Electrical & Electronics Engineering/Fire Engineering/Mechanical Engineering/Metallurgical Engineering/ Safety & Fire Engineering with a minimum of 60% marks or CGPA 6.5 in 10 point scale from any recognized University in Kerala or any other University/Institution accepted by this University as equivalent hitherto.
	b) Two seats shall be reserved for candidates with B.Tech. Degree in Safety & Fire Engineering/B.E Degree in Fire Engineering. They can be selected through Departmental Admission Test (DAT). If such candidates are not available, these seats shall be filled as per the normal rules.
	***Added the amendment vide notification No. Conf.II/2941/02/2015 (4) dated 18.03.2016 & No.Conf.II/2941/1/2017 (1) dated 17.04.2017.**
19.	**Computer Science and Engineering (with Specialization in Network Computing)**
	a) B.Tech. or equivalent Degree/AMIETE/ AMIE in Computer Science and Engineering / Information Technology/Electronics and Communication Engineering with a minimum of 60% marks or CGPA 6.5 in 10 point scale from any recognized University in Kerala or any other University/Institution accepted by this University as equivalent thereto.
	b) A valid GATE score.
	c) In the absence of sufficient number of candidates with GATE score, candidate without GATE score shall also be considered based on the performance in the Departmental Admission Test (DAT).
20	**Marine Engineering**
	1. Shall have passed B.Tech./BE/BS.Degree in Marine Engineering or B.Tech./B.Sc. (Engg.) Degree in Mechanical Engineering or B.Tech. Degree in Naval Architecture and Ship Building with a minimum of 60% marks or an examination of any other University/Institution accepted by this University as equivalent there to with 60% marks. Preference will be given to those who have passed MEO class IV examination or a minimum of 2 years professional experience in Ship Building/Ship Repair Yard/Ship Design Office/Indian Navy.
	*Candidates who have passed sections A and B Examinations conducted the Institution of Engineers (India)-AMIE or similar equivalent examinations in Mechanical Engineering with a minimum of 60% of marks shall also be eligible.
	(*Amended vide U O No.Conf.II/2941/2/2018 (II) dated 07.06.2019.)*
	4. Seats in the programme shall be reserved for Marine engineers and 3 seats shall be reserved for sponsored candidates satisfying the above mentioned eligibility requirements.

21. 22. 23. 24.		**Civil Engineering – Construction Engineering and Management** **Mechanical Engineering – Production Engineering** **Chemical Engineering – Process Engineering** **Electrical & Electronics Engineering – Power Electronics**
		a) Shall have passed B.Tech. / B.Sc (Engg.)/B.E degree examination in the respective branch with a minimum of 50% marks from any University in Kerala or an examination of any other University /Institution accepted by this University as equivalent thereto.
		b) Applications from candidates who have passed B.Tech. / B.Sc (Engg.) /BE degree examination in allied branches of Engineering / Technology with a minimum of 50% marks may also be considered in the absence of sufficient number of candidates from the respective branch of engineering. The suitability of such candidates for the course may be assessed by an admission committee constituted by the Head of the Department / School. c) Candidates who have passed sections A and B of the Associate Membership/ Graduate Membership Examinations in respective branches conducted by the Institution of Engineers (India), Institution of Electronics and Telecommunication Engineers and Indian Institute of Chemical Engineers with a minimum of 50 percent marks are also eligible for admission if they have an engineering diploma or a basic degree in science.
	d)	A minimum of 2 years of professional experience in the concerned field is required after acquiring the qualifying degree. This may be relaxed if sufficient number of candidates with the minimum prescribed experience is not available.
	e)	Admission will be based on the rank list prepared by giving due weightage to qualifying degree marks (50%), admission test conducted by the Department (40%), and number of years of experience after obtaining the degree (weightage at the rate of 1% per year of experience subject to a maximum of 10%).
25.		**Electronics and Communication Engineering - Electronics Design and Technology** a) A pass in B.Tech./BE/AMIETE/AMIE Degrees in /Electronics and Communication/Electrical and Electronics/Electronics and Instrumentation/Applied Electronics and Instrumentation branch from any University of Kerala or an examination of any other University /Institution accepted by this University as equivalent thereto with a minimum of 60% marks . b) A valid GATE score. c) In the absence of GATE qualified candidates Non GATE candidates can be admitted on the basis of a Departmental Admission Test (DAT) conducted by the department/School. *Notif.No.Conf.II/2941/1/2017 dated 17.04.2017*
26.		**Mechanical Engineering- Mechanical Engineering Design** a) Should have passed B.Tech.,BE,B.Sc Engineering degree examination in Mechanical,Automobile,Industrial,Production,Aerospace, and Aeronautical branch with a minimum of 60% marks from any University in Kerala or an examination of any other University /Institution accepted by this University as equivalent thereto.

		b) Candidates who have passed sections A and B examinations conducted by the Institution of Engineers (India)-AMIE in Mechanical Engineering branchshall be eligible. c) A valid GATE score. d) In the absence of sufficient number of candidates with GATE score, candidates without GATE score shall also be considered subject to passing a Departmental Admission Test conducted by the University. *Notif.No.Conf.II/2941/1/2017 dated 17.04.2017*
27.		**Marine Genomics** a) M.Sc. in any branch of Life Science /M.F.Sc. with 60% marks b) A valid GATE score.In the absence of candidates with valid GATE score, others could also be considered on the basis of performance in Departmental Admission Test conducted by the University. *Notif.No.Conf.II/2941/2/2018(9) dated 24.07.2018*
1.2.2		In the case of full time programmes listed under Sl. No. 1 to 18 above, preference will be given to candidates having a valid GATE score in the concerned branch of study. In case such candidates are not available, candidates with GATE score in a related branch will be considered. In the absence of sufficient candidates with valid GATE score, admission will be made on the basis of a Departmental Admission Test (DAT).
1.2.3		Candidate for sponsored quota must have a minimum experience of three years in the relevant field and must be sponsored by University or Industry/Teaching/Research Organizations of Centre/State Government/or by Private Engineering Colleges approved by AICTE. Maximum age of sponsored candidates is fixed as 40 years as on 1st of August of the year of admission. Also, a special fee equivalent to the contingent grant received for GATE qualified candidates will be levied on the sponsored candidates.

1.3 Course Structure

	1.3.1	The course content of M.Tech. programmes shall consist of theory courses, practical courses, seminar, industrial training (optional) and project work.
	1.3.2	The curriculum for semesters 1, 2 and 3 shall generally consist of theory courses/ practical courses and seminar.The students going outside for Industrial Projects/Thesis during the third and fourth semesters can complete the courses in the third semester through MOOC from the list of Courses decided by the Departments/Schools/Divisions in the same semester. *Amended vide U O No.Conf.II/2941/2/2018 (II) dated 07.06.2019.*
	1.3.3	Each theory course will carry three or four credits and each practical course / seminar will have one or two credits.
	1.3.4	The number of credits for the project work in third and fourth semesters shall be in the range of 10 - 18 each.* *Added the amendment vide notification number Conf.II/2941/1/2017 (3) Dated 17.04.2017.*
	1.3.5	The minimum number of credits to be earned by a student for the award of the M.Tech. degree shall be 72 subject to the condition that the candidate successfully completes all the core and elective courses prescribed by the Department /School.

1.4		**Mode of Evaluation**
	1.4.1	A student would be considered to have progressed satisfactorily at the end of a semester if he/she has a minimum of 75 % attendance subject to the provision in clause (3) of the regulations. In the case of part-time students, the Vice-Chancellor shall have the power to condone shortage of attendance up to 10 percent on medical grounds on the recommendations of the Head of Division /Department. However such condonation for shortage of attendance shall be given only once during the entire course.
	1.4.2	The student shall be evaluated continuously throughout the semester and marks shall be awarded on the basis of tests / assignments as detailed below:
		A maximum of 20 marks as awarded for the assignments given to the students by the concerned teacher. There shall be two class tests and an end semester examination. The first class test carries 20 marks and will be based on the portions of the syllabi covered till then.
		The second class test also carries 20 marks and will be based on the portions covered till then after the first class test.
		The end semester examination will be for 40 marks and shall contain questions from the entire syllabi of the course.
		The duration of the end semester examination shall be three hours.
	1.4.3	The results of each subject in a semester shall be finalized by the concerned faculty member within 10 days from the last date of the end semester examination and the marks and grades obtained by the candidate in each subject shall be displayed on the notice board with the approval of the course-coordinator and head of the division/ Department/school concerned.
	1.4.4	The pass minimum in a subject is 50 %. If a candidate fails to secure 50% marks, he/she shall be deemed to have failed in the subject.
	1.4.5*	A makeup examination shall be conducted for the failed candidates within 10 days from the date of display of the marks/grades. Such examination shall carry questions from the entire portions of the syllabus and the weightage shall be 100%. The makeup examination shall substitute one of the three tests, two class tests and End Semester Examination which will maximize his total marks in the course. *Added the amendment vide notification No. Conf.II/2941/2/2017(3) dated 17.04.2017*
	1.4.6	The final marks/grade of the candidate taking into account his/her performance in the makeup examination and periodic tests and assignments shall be finalized within 5 days from the date of the makeup examination. A candidate securing a minimum 50 percent marks shall be considered to have passed in that subject.
	1.4.7	If the candidate fails to meet the minimum requirement for pass even after two attempts, he / she shall have to repeat the subject at the next available chance.
	1.4.8	A pass in the course will entitle the student to acquire the number of credits allotted for that particular course. (For the details of number of credits, please refer to the course structure.)

	1.4.9	A student shall acquire a minimum of 36 credits in the first two semesters before he/she registers for third semester. A student shall complete the M.Tech. programme in 8 (eight) consecutive semesters in the case of full time programme and 10 (ten) consecutive semesters in the case of part time programme by acquiring the minimum total credit requirement of 72.
	1.4.10	*A sponsored candidate who wishes to go back to his/her employer or a non-sponsored candidate who secures professional employment after completing the II semester of the M.Tech. Programmes shall obtain permission from the Head of the Department, for the choice of their place of project work at the commencement of the III semester. Such permission may be granted only on merit basis on the recommendation of the Departmental Council and on the production of a certificate from the Head of that institution which shall be at par with the Department offering the M.Tech. programme, to effect that the student is permitted to carry out project work at the Organization/Institution where he/she proposes to do the work. In such cases the candidate shall be supervised by an officer from the Organisation/Institution along with a member of the faculty in the respective Department. *Added the amendment vide Notification No.Conf.II/2941/03/2015 (2) dated 27.07.2016.
	1.4.11	Project evaluation shall be done at the end of III and IV semesters in the case of full time programmes and at the end of V and VI semesters in the case of part time programmes. The evaluation at the end of III Semester (Full time)/ V Semester (Part time) shall be conducted by an examination committee consisting of the head of the Department / school / division, a senior teacher nominated by the head and the project guide. At the end of IV or VI semester, the students will have to submit a dissertation on his / her project work. The dissertation shall have to be submitted as per the guidelines given in Appendix I. Three bound copies along with a soft copy of the dissertation shall be submitted to the Head of the Department/School within the last date prescribed by the Department / School for the purpose.
	1.4.12	The dissertation will be evaluated by an examination committee consisting of the head of the Department / school / division, another senior teacher of the Department/school /division concerned nominated by the Head of the Department / School and the project guide. However an external examiner may also be included in the examination committee with the approval of the Department / School Council. The candidate shall make an open defence of his/her dissertation which will be followed by a viva-voce examination.

1.4.13	For the purpose of assessment, the performance of a student in the project dissertation may be divided into the following sub components:
	At the end of III semester (Full time) / V Semester (Part time) Assessment by the project guide (based on periodic assessment of the work of the candidate) - 50% Assessment by the examination committee - 50% **At the end of IV semester (Full time) / VI Semester (Part time)** Assessment by the project guide (based on periodic assessment of the work of the candidate) - 50% Assessment by the examination committee - 50%

1.5 Classification

The following grading system is adopted for all the courses. The following grades will be awarded based on the overall performance in each subject.

Range of Marks	Grades	Weightage
90 % and above	S- Outstanding	10
(80-89)	A- Excellent	9
(70-79)	B-Very Good	8
(60-69)	C- Good	7
(50-59)	D- Satisfactory	6
Below 50%	F- Failed	0

Overall performance at the end of the semester will be indicated by Grade Point Average (GPA) calculated as follows:

$$GPA = \frac{G1C1 + G2C2 + G3C3 + \text{----------}GnCn}{C1 + C2 + C3 + \text{-----------------}Cn}$$

Where 'G' refers to the grade weightage and 'C' refers to the credit value of corresponding course undergone by the student.

At the end of the final semester, Cumulative Grade Point Average (CGPA) will also be calculated based on the above formula by including all the subjects studied by the candidate under the programme.

Classification for the Degree will be as follows :

Classification	CGPA
First class with distinction	8 and above
First class	7 and above
Second class	6 and above

2.0 Declaration of Results

An examination committee consisting of the Head of the Department (Chairperson), a senior teacher/Head of the Division concerned and the Course Coordinator shall scrutinise the marks and grades obtained by the candidates and finalise the results. The examination committee will be constituted by the Head of the Department/school. The final marks will be reported to the University for Tabulation and declaration of results. The University shall issue mark lists at the end of each semester.

2.1   Review of Question Papers and Valuation of answer books

At the end of each semester, the question papers set for class tests and end semester examination will be reviewed by the Department / School Council. The review report may be placed in the Board of Studies concerned for scrutiny.

2.2   Grievance Cell

The Departmental/School Council or a subcommittee nominated by the Council will act as the grievance cell for the redress of complaints from the students on the conduct of the class test, semester exam, and the valuation methodology. The student shall make such complaints to the Head of the Department/School within a week of the display of the marks/grades for a particular course on the Notice board of the Department/Division.

3.0   Leave for a Full time M.Tech. student

3.1 A full time M.Tech. student shall be entitled to the following kinds of leave during every academic year, counted from the date of commencement of the session concerned as prescribed in the academic calendar of the institute.

3.2 Any absence over and above the prescribed type of admissible leave shall entail deduction from the scholarship, besides other action as may be decided by the University.

Sl. No	Leave	Maximum number of days	Sanctioning authority
1.	Casual Leave	5 days per semester subject to the condition that such leave will not be allowed for more than 3 days at a time. Casual leave cannot be combined with medical leave.	Head of the Department/ School
2.	Medical Leave	3 days per semester	Head of the Department/School on the basis of a Medical Certificate from a registered Medical Practitioner certified by the University Medical Officer.

4.0   Revision of Regulation and Curriculum

The University may from time to time, revise, amend or change the regulations, schemes of examinations and syllabus. In the case of students already undergoing the course, the change will take effect from the beginning of the following academic year after the changes are introduced and shall cover the part of the course that remains to be completed.

APPENDIX-I

GUIDELINES FOR PREPARATION OF M.Tech. DISSERTATION

Preamble

While utmost attention must be paid to the content of the dissertation report, which is being submitted in partial fulfilment of the requirements of the M.Tech. degree, it is imperative that a standard format be prescribed. The same format shall also be followed in preparation of the final soft copies to be submitted to the Library in future.

I		**Organisation of the Dissertation**
		The dissertation report shall be presented in a number of chapters, starting with Introduction and ending with Summary and Conclusions. Each of the other chapters will have a precise title reflecting the contents of the chapter. A chapter can be subdivided into sections, subsections and sub-subsection so as to present the content discretely and with due emphasis. When the work comprises two or more mutually independent investigations, the dissertation report may be divided into two or more parts, each with an appropriate title. However, the numbering of chapters will be continuous right through, for example Part 1 may comprise Chapters 2 - 5, Part 2, Chapters 6 - 9.
	1.1	**Introduction**
		The title of Chapter 1 shall be Introduction. It shall justify and highlight the problem posed, define the topic and explain the aim and scope of the work presented in the dissertation report. It may also highlight the significant contributions from the investigation.
	1.2	**Review of Literature**
		This shall normally form Chapter 2 and shall present a critical appraisal of the previous work published in the literature pertaining to the topic of the investigation. The extent and emphasis of the chapter shall depend on the nature of the investigation.
	1.3	**Report on the present investigation**
		The reporting on the investigation shall be presented in one or more chapters with appropriate chapter titles. Due importance shall be given to experimental setups, procedures adopted, techniques developed, methodologies developed and adopted. While important derivations/formulae should normally be presented in the text of these chapters, extensive and long treatments, copious details and tedious information, detailed results in tabular and graphical forms may be presented in Appendices. Representative data in table and figures may, however, be included in appropriate chapters. Figures and tables should be presented immediately following their first mention in the text. Short tables and figures (say, less than half the writing area of the page) should be presented within the text, while large table and figures may be presented on separate pages. Equations should form separate lines with appropriate paragraph separation above and below the equation line, with equation numbers flushed to the right.
	1.4	**Results and Discussion**
		This shall form the penultimate chapter of the dissertation report and shall include a thorough evaluation of the investigation carried out and bring out the contributions from the study. The discussion shall logically lead to inferences and conclusions as well as scope for possible further future work.
	1.5	**Summary and Conclusions**
		This will be the final chapter of the dissertation report. A brief report of the work carried out shall form the first part of the Chapter. Conclusions derived from the logical analysis presented in the Results and Discussions Chapter shall be presented and clearly enumerated, each point stated separately. Scope for future work should be stated lucidly in the last part of the chapter.
	1.6	**Appendix**
		Detailed information, lengthy derivations, raw experimental observations etc. are to be presented in separate appendices, which shall be numbered in Roman Capitals (e.g. "Appendix IV"). Since reference can be drawn to published/unpublished literature in the appendices these should precede the "Literature Cited" section.
	1.7	**Literature Cited**
		This should follow the Appendices, if any, otherwise the Summary and Conclusions chapter. The candidates shall follow the style of citation and style of listing in one of the standard journals in the subject area consistently throughout his/her report. However, the

		names of all the authors along with their initials and the full title of the article/monogram/book etc. have to be given in addition to the journals/publishers, volume, number, pages(s) and year of publication. Citation from websites should include the names(s) of author(s) (including the initials), full title of the article, website reference and when last accessed. Reference to personal communications, similarly, shall include the author, title of the communication (if any) and date of receipt.
	1.8	**Publications by the candidate**
		Articles, technical notes etc. on the topic of the dissertation report published by the candidate may be separately listed after the literature cited. This may also be included in the contents. The candidates may also include reprints of his/her publications after the literature citation.
	1.9	**Acknowledgements**
		The acknowledgments by the candidate shall follow the citation of literature, signed by him/her, with date.
2.		**DISSERTATION FORMAT**
	2.1	**Paper**
	2.1.1	**Quality:** The dissertation report shall be printed / photo copied on white bond paper, whiteness 95% or above, weight 70 gram or more per square meter.
	2.1.2	**Size:** The size of the paper shall be standard A4; height 297 mm, width 210 mm.
	2.1.3	**Type Setting, Text Processing and Printing:** The text shall be printed employing Laserjet or Inkjet printer, the text having been processed using a standard text processor. The standard font shall be Times New Roman of 12 pts with 1.5 line spacing.
	2.1.4	**Page Format:** The Printed Sheets shall have the following written area and margins: Top Margin 15 mm Head Height 3 mm Head Separation 12 mm Bottom Margin 22 mm Footer 3 mm Foot Separation 10 mm Text Height 245 mm Text Width 160 mm When header is not used the top margin shall be 30 mm. **Left and Right Margins** Single sided Left Margin 30mm Right Margin 20 mm
	2.1.5	**Pagination:** Page numbering in the text of the report shall be Hindu Arabic numerals at the centre of the footer. But when the candidate opts for header style the page number shall appear at the right and left top corner for the odd and even number pages, respectively. Page number "1" for the first page of the Introduction chapter shall not appear in print, only the second page will bear the number "2". The subsequent chapters shall begin on a fresh page. When header style is chosen the first page of each chapter will not have the header and the page number shall be printed at the centre of the footer. Pagination for pages before the Introduction chapter shall be in lower case Roman numerals, e.g., "iv".
	2.1.7	**Paragraph format:** Vertical space between paragraphs shall be about 2.5 line spacing. The first line of each paragraph should normally be indented by five characters or 12mm. A candidate may, however, choose not to indent if he/she has provided sufficient paragraph separation. A paragraph should normally comprise more than one line. A single line of a paragraph shall not be left at the top or bottom of a page (that is, no windows or orphans

		should be left). The word at the right end of the first line of a page or paragraph should, as far as possible, not be hyphenated.
	2.2	**Chapter and Section Format**
	2.2.1	**Chapter:** Each chapter shall begin on a fresh page with an additional top margin of about 75mm. Chapter number (in Hindu-Arabic) and title shall be printed at the centre of the line in 6mm font size (18pt) in bold face using both upper and lower case (all capitals or small capitals shall not be used). A vertical gap of about 25mm shall be left between the Chapter number and Chapter title lines and between chapter title line and the first paragraph.
	2.2.2	**Sections and Subsections:** A chapter can be divided into Sections, Subsections and Sub-sub Sections so as to present different concepts separately. Sections and subsections can be numbered using decimal points, e.g. 2.2 for the second section in Chapter 2 and 2.3.4 for the fourth Subsection in third Section of Chapter 2. Chapters, Sections and Subsections shall be included in the contents with page numbers flushed to the right. Further subsections need not be numbered or included in the contents. The Section and Sub-Section titles along with their numbers in 5 and 4mm (16 and 14 pt) fonts, respectively, in bold face shall be flushed to the left (not centred) with 15 mm space above and below these lines. In further subdivisions character size of 3 and 3.5 with bold face, small caps, all caps and italics may be used for the titles flushed left or centred. These shall not feature in the contents.
	2.2.3	**Table / Figure Format:** As far as possible, tables and figures should be presented in portrait style. Small size table and figures (less than half of writing area of a page) should be incorporated within the text, while larger ones may be presented on separate pages. Table and figures shall be numbered chapter wise. For example, the fourth figure in chapter 5 will bear the number Figure 5.4 or Fig 5.4 Table number and title will be placed above the table while the figure number and caption will be located below the figure. Reference for Table and Figures reproduced from elsewhere shall be cited in the last and separate line in the table and figure caption, e.g. (after McGregor [12]).
3. Auxiliary Format		
	3.1	**Binding:** The evaluation copies of the dissertation report may be spiral bound or soft bound. The final hard bound copies to be submitted after the viva-voce examination will be accepted during the submission of dissertation report with the following colour specification:
M.Tech.. Dissertation		
	3.2	**Front Covers:** The front covers shall contain the following details: Full title of report in 6 mm 22 point's size font properly centred and positioned at the top. Full name of the candidate in 4.5 mm 15 point's size font properly centred at the middle of the page. A 40 mm dia replica of the Institute emblem followed by the name of Department, name of the Institute and the year of submission, each in a separate line and properly centred and located at the bottom of page.
	3.2.1	**Lettering:** All lettering shall be embossed in gold.
	3.2.2	**Bound back:** The degree, the name of the candidate and the year of submission shall also be embossed on the bound (side) in gold.
	3.3	**Blank Sheets:** In addition to the white sheets (binding requirement) two white sheets shall be put at the beginning and the end of the report.
	3.4	**Title Sheet:** This shall be the first printed page of the Dissertation and shall contain the

		submission statement: the Dissertation Report submitted in partial fulfilment of the requirements of the M.Tech. Degree, the name and Roll No. of the candidate, name(s) of the Supervisor and Co-supervisor(s) (if any), Department, Institute and year of submission. Sample copy of the 'Title Sheet' is appended (Specimen 'A').
	3.5	**Dedication Sheet:** If the candidate so desires(s), he/she may dedicate his/her report, which statement shall follow the title page. If included, this shall form the page 1 of the auxiliary sheets but shall not have a page number.
	3.6	**Approval Sheet:** In the absence of a dedication sheet this will form the first page and in that case shall not have a page number. Otherwise, this will bear the number two in Roman lower case "ii" at the centre of the footer. The top line shall be: Dissertation Approval for M.Tech. A sample copy of the Approval Sheet is appended (Specimen `B').
	3.7	**Abstract:** The 500 word abstract shall highlight the important features of the dissertation report and shall correspond to the electronic version to be submitted to the Library for inclusion in the website. The Abstract in the report, however, shall have two more parts, namely, the layout of the report giving a brief chapter wise description of the work and the key words.
	3.8	**Contents:** The contents shall follow the Abstract and shall enlist the titles of the chapters, section and subsection using decimal notation, as in the text, with corresponding page number against them, flushed to the right.
	3.8.1	**List of Figures and Tables:** Two separate lists of Figure captions and Table titles along with their numbers and corresponding page numbers against them shall follow the Contents.
	3.9	**Approval Sheet:** In the absence of a dedication sheet this will form the first page and in that case shall not have a page number. Otherwise, this will bear the number two in Roman lower case "ii" at the centre of the footer. The top line shall be: Dissertation Approval for M.Tech. A sample copy of the Approval Sheet is appended (Specimen `B')
	3.10	**A Declaration of Academic Honesty and Integrity:** A declaration of Academic honesty and integrity is required to be included along with every dissertation report after the approval sheet. The format of this declaration is given in Specimen 'C' attached.

****

Specimen 'A': Title Sheet

(Title)

Dissertation Submitted in partial fulfilment of the requirements of the degree of Master of Technology by

(Name of the Student)
(Roll No._____)

Project Guide(s):
_____

_____
_____

(Name of the Department / School / Division)
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

(Month and Year)

Specimen `B': Approval Sheet

This dissertation entitled (Title) by (Author Name) is recommended for the award of the Degree of Master of Technology.

Members of the Examination Committee (Name and Signature)
_____
_____
_____
_____

Date: _____
Place: _____

Specimen `C' – Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

_____
(Signature)
_____
(Name of the student)
_____
(Roll No.)
Date: _____

DEPARTMENT / SCHOOL OF --------------------------------
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

This is to certify that the dissertation work entitled "-------------------------------------"is a bonafide record of work carried out by Mr/Ms -- (Roll No.), submitted to the Department / School of ---------------------, in partial fulfilment of the requirements for the award of the degree of Master of Technology in "*name of the program*" at Cochin University of Science and Technology, Kochi during the academic year ------------.

Name and Signature of the Project Guide --------------------------------

Signature of Head of the Division / Department / School ----------------------

Date:

REGULATIONS FOR THE 5 YEAR INTEGRATED MASTERS DEGREE IN SCIENCE BY THE UNIVERSITY DEPARTMET OF PHYSICS, DEPARTMENT OF APPLIED CHEMISTRY,DEPARTMENT OF BIOTECHNOLOGY & DEPARTMENT OF MATHEMATICS

CENTRE FOR INTEGRATED STUDIES

Integrated M.Sc. Program

Introduction

In the process of the fulfilment of the set objects of the Cochin University of Science and Technology, a Centre for Integrated Studies (CIS) has to be established in the year 2018-19 to offer 5 year Integrated Master's Degree courses in Science subjects for imparting specialized education to the students on completion of their +2 level of education.

Courses offered by the Centre

The Centre offers 5-Year Integrated Master's Degree courses in Science (Physics, Chemistry, Mathematics and Statistics) subjects.

Overview of the Course

The five year Integrated M.Sc. (I.M.Sc.) courses of the Cochin University of Science and Technology are non-professional courses. They are not merely integrated programmes that combine pre-graduate and post-graduate studies, but are also trans-disciplinary, cutting across several disciplines.

The curriculum is common to all disciplines for the first four semesters. Students with biology background at the +2 stage and who had left mathematics after the 10th class are expected to put in the required efforts to learn mathematics. Similarly, students who left biology at the +2 stage are expected to learn Biology. Students of Science subjects require significant amount of Mathematics and Computation throughout the 5-Year programme. The University offers bridge courses in the first semester to facilitate this process. The students spend first two years of their programmes at the CIS. The students are transferred to their parent Departments at the end of the fourth semester.

Admission

The present intake for the Integrated M.Sc. Programme in Science is 60 (15 x 4). At the end of 2nd year, the student will move to their respective Departments based on the choice of their subject of preferences and SGPA obtained during first four semesters. 15 numbers of students will move to each Department. Reservation norms will be followed while making the allotment. At the end of the 3rd year, the students will be integrated with the M.Sc. courses conducted by the Departments (lateral entry) of Mathematics (15), Statistics (15), Chemistry (15), Physics (15). There can be a variation of +/- 3 from the number 15.

Eligibility and Entrance Examination

1. Admission will be given to students possessing KVPY Scholarship. They need not have to appear for the Entrance Test. But they also have to submit the requisite Application and should pay the Application Fee.
2. All other eligible applicants will be called for the written test to be held at various Centres.

3. Candidates with a minimum of 75% marks at +2 level of education (Intermediate, CBSE/ICSE/HSC/ and all State Boards or Equivalent with science subjects [Biology, Chemistry, Mathematics, Physics] are eligible to apply. The programmes are open to all students (Physics, Chemistry, Mathematics and Biology) as their optional subjects with a minimum of 75% at +2 level.

The admission to M.Sc. (5-Year Integrated) in Sciences (Mathematics, Statistics, Physics, Chemistry) will be through a common entrance examination. The entrance examination consists of a written test for 450 marks. The written test paper contains 50 objective questions each in Mathematics, Physics and Chemistry at +2 level. Written test for these programmes is of three hours duration. It will consist of multiple choice (of four options) questions to be answered as Computer based Online Test. The level of questions shall be consistent with +2 level of education. Each right answer shall be given 3 marks. There is negative marking; each wrong answer will be given -1 mark. The question paper will have three sections. A (Chemistry), B (Mathematics), C (Physics). Specific instructions will be given in question papers.

Selection List

Students possessing KVPY Scholarship will be directly admitted if 3 above holds. The admission will be through common counselling process. Initially, there will be not be any classification of students between the four subjects. After 2 years, the students have to opt their subject of choice. Allotment to their choice after two years will be depending on their performance (SGPA) in the first four semesters. Reservation norms will be followed while making the allotment. But attempts will be made to keep a balance in the number of students admitted to the 3rd year of the programme among the various Departments.

The following criteria shall be followed, one after the other, to resolve the ties, when more than one candidate secures the same total marks in the entrance examination:

a) *First criterion*: Total marks obtained by the candidates for Chemistry and Physics taken together in the entrance examination.

b) *Second criterion*: Marks obtained for Chemistry. If the tie has not broken still, the marks obtained for Physics will be counted.

If the tie has not broken still normal procedure of the University will be followed.

Reservation

All relevant reservation rules (Kerala State) will be followed for admission. Similarly, concession in fees for the course also will be based the Government of Kerala Rules. The seat matrix based on reservation has already been given to IRAA Unit.

Courses in Sciences

The subjects for I.M.Sc. Courses in Science (Mathematics, Statistics, Physics, Chemistry) are common in the first 4 semesters. The students with Biology background at +2 stage, who left Mathematics after 10th are expected to put in necessary effort to learn Mathematics needed for other courses. Similarly, the students who studied Mathematics at +2 stage and left Biology after

10th are expected to learn necessary Biology. To provide necessary help in this direction, the University runs bridge courses in the first semester. The students who join the programme are required to attend the relevant bridge courses. They are also encouraged to approach and seek help of the Faculty members concerned and their Mentors.

Extra Course/Credits

A student can take courses over and above those stipulated for a semester and can accumulate extra credits in a given semester. In addition to regular courses, the following extra courses are offered in either odd or even semester, based on availability of Faculty resources: Introduction to Foreign Languages (French, German). These courses cannot be taken in lieu of regular subject credit course/s; only one Extra Course is allowed per semester.

Audit Course

There is a provision for auditing of not more than one course in each semester. Students who desire to audit courses over and above the number of courses prescribed have to choose from amongst the courses offered by different Departments in that semester and inform the CIS in writing. Courses thus audited should also be indicated in the Registration forms along with other courses opted for that semester. Only one Audit Course is allowed per semester.

Possibility of Tutorials

On the basis of the request of a sizable number of students for additional guidance in coping up with the subjects; the Heads/Directors of the participating Departments/Schools will be requested to provide tutorial support for small groups subject to availability of human resources.

Enrichment Programme

 Cochin University of Science and Technology Career Guidance Bureau organizes Spoken English/UGC NET Classes/ CSIR-UGC/JRF/NET Classes (Paper-1) for the benefit of students.

Minimum Credit Requirement for Admission into a Department/Discipline

To graduate to a chosen discipline after completion of six semester (four in case of science courses), the candidates should fulfil the minimum requirements prescribed by respective Departments. For example, the candidates desiring to graduate to Chemistry need to complete a minimum of 36 credits, i.e., opting for a minimum of twelve courses from amongst the courses offered by that Department during the first six semesters. To specialize in other disciplines, a minimum of 36 credits i.e., any twelve /nine courses offered/recognized by that Department need to be completed.

Attendance

A student needs to attend at least 75% of the classes held in each course in order to be eligible to write the end-semester examination. If the student has been absent for medical reasons, the shortfall of attendance would be condoned up to 5% subject to submission of the relevant Medical Certificate to the Co-ordinator, CIS. If, due to unusual circumstances, the student's attendance falls far short of the required percentage, he/she may bring it to the notice of his/her course instructor/teacher/Co-ordinator/Assistant Co-ordinator well in advance. He/she can then explore the possibility of dropping the semester and registration during the next semester as per University rules. Students, who are not found eligible to take semester examination due to shortfall of attendance, may make up the loss by appearing in the Summer Semester (Offered during May-June of every year). It may be noted it is the responsibility of student to monitor his/her attendance and inform the instructor about his/her absence. 75% attendance is the norm for writing end-semester examinations.

Internal Assessment

CUSAT has a scheme of rigorous continuous internal assessment. The student can get the best out of this system if he/she is well informed about how it works right from the beginning. Schedule and nature of tests/assignments/quizzes that are due may be followed. The specific nature of the assignments/tests is discussed by the faculty in the class and can vary from course to course. In case of any doubt, the student may get in touch with the faculty concerned. The student will be given a minimum of three assessments per semester in each course form which the best two grades/marks will be considered for the purpose of calculating the result of continuous internal assessment. This will make part of one's final grade in the course.

End-semester Examination

A final examination at the end of the semester in each course will follow the internal assessments during the semester. The end semester examination is conducted in a totally internal manner. The setting of question papers and evaluation are done by the concerned course teacher. The final result in each course is calculated on the basis of continuous assessment and performance in the end-semester examination.

Scheme of Examination

The performance of each student enrolled in a course will be assessed at the end of each semester. Evaluation of all P.G. and integrated PG courses is done under the Grading System. There will be 6 letter grades; S,A,B,C,D and F on a 10-point scale which carries 10,9,8,7,6,0 grade points respectively. The final result in each course will be determined on the basis of continuous assessment and performance in the end semester examination which will be in the ration of 50:50 in laboratory courses and 50:50 in laboratory courses (practicals).

Computation of SGPA/CGPA

Evaluation of Integrated PG course is under the Grading System. There will be 6 letter grades: S,A,B,C,D and F on a 10-point scale which carries 10,9,8,7,6,0 grade points respectively.

The following is the procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA).

i. The SGPA is the ration of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student.

i.e., SGPA (Si) =$\sum$ (Ci x Gi)/ $\sum$Ci

Where Ci is the number of credits of the ith course and G1 is the grade point scored by the students in the ith course.

ii. The CGPA is also calculated in the same manner taking into account all the courses done by a student over all the semester of a programme.

i.e. CGPA=$\sum$ (Ci x Si)/ $\sum$Ci

Where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Supplementary Examinations

Students should obtain a minimum of 'D' grade in each course in order to pass in the Integrated PG courses. Students who obtain less than 'D' Grade in any course, may be permitted to take the supplementary examination in the course/s concerned within a week after the commencement of the teaching of the next semester or in accordance with the schedule notified. Appearance at such examinations shall be allowed only one. Those students who get less the 'D' grade in the supplementary examination also, shall have to repeat the course concerned or take an equivalent available course with the approval of the Head/Director of the Department/School concerned and the Co-ordinator of the CIS. Such approval should be obtained at the beginning of the semester concerned. Those students who are not satisfied with the grades obtained (C or D), in a course in a semester can opt for improving the grade by appearing in the exam during the supplementary exams conducted after each semester. Such students can opt for improvement for only one course after the first semester, two course after the second semester (if the facility is not exercised after the first semester), three courses after the third semester (if the facility is not exercised after the first and second semesters) and so on.

Special Supplementary Examinations

The 5-year Integrated PG students who after completion of the prescribed duration of the course are left with backlogs are eligible to appear for special supplementary exams subject to a maximum of two courses where number of courses in a semester are four and a maximum of three courses where the number of courses in a semester are more than four. Appearance in such exams shall be allowed only once.

Improvement Examinations

Students securing 'C' or 'D' grade in the course of a semester may be allowed to improve their marks in one course in a semester. Appearance at such an examination in the course will be allowed only once. No further chance will be given under any circumstances. The improvement examinations will be conducted along with the supplementary examinations within a week of the commencement of the teaching of the next semester or as per the schedule prescribed. For the purpose of determining the division, the better of the two performances in the examinations will be taken into consideration. The facility for improvement shall be open to all those who want to improve their grade irrespective of the GPA obtained by them in the examination concerned. However, one should clear all courses of a particular semester in which he/she intends to take an improvement examinations.

Summer Semester

Those students who have failed in certain courses, or who were unable to write the end semester exams or who did not have sufficient attendance for writing the exams can register themselves for the summer semester offered during May-June and make up their losses.

Readmission

Students who are not found eligible to take semester examinations and also those who are not promoted to the next semester of the course may be considered for readmission to the semester concerned of the immediately following academic year. Such students should seek readmission before the commencement of classes for the semester concerned or within a week of the commencement of the semester concerned, if they are appearing in the supplementary examinations. Such students are given an option either to undergo instruction for all the courses of the semester concerned or instruction in only such courses in which they have failed on the condition that the option once exercised will be binding on the student concerned.

Backlogs

No student of I.M.Sc. (5-year Integrated) courses shall be allowed to move to the next semester, if he/she has a backlog of more than 50% of the courses of that semester subject to a maximum of 5 backlogs at any given point of time including the backlogs of previous semester/s, if any.

Re-evaluation

Request from the students for re-evaluation should reach Head of the Department/Co-ordinator of the Centre within 15 days of the announcement of the results. On the basis of representation submitted by students every School/Department/Centre will constitute a Grievance Committee consisting of 3 or 4 teachers to examine the complaints received from the student regarding their assessment.

Lateral Entry

In the Fourth Year, students of the I.M.Sc. will be integrated with the students admitted for the regular M.Sc. courses conducted by the Departments.

REGULATIONS FOR THE MASTER OF PHILOSOPHY (M.PHIL.) PROGRAMMES UNDER THE VARIOUS FACULTIES OF THE UNIVERSITY.

1. Admission to the Programme

(i). Candidates seeking admission to the Master of Philosophy degree programme should have passed a Master's degree examination in the concerned subject of any of the Universities *approved by the University Grants Commission (UGC)* or an examination accepted by the Academic Council as equivalent thereto and have obtained a minimum of 55% aggregate marks (or equivalent grade) in the examination. ***Candidates who have passed the Master's degree examination in the Distance/Continuing Education mode are eligible for admission only if their degree is awarded by Indira Gandhi National Open University (IGNOU).***

A relaxation of 5% of marks shall be given to the SC/ST Candidates. Teachers of a University Department or Colleges recognized by or affiliated to a statutory or "Deemed" University having not less than three years of teaching experience will also be eligible for admission to the course. 50% of the seats of the course shall be reserved for University or College teachers. Priority shall be given to those coming under the Faculty Improvement Programme (FIP) of the UGC or Quality Improvement Programme (QIP) of AICTE. Reservation policy of the University shall be followed in the selection procedure for the course. ***In the case of candidates having Master Degree in interdisciplinary/multi-disciplinary areas, the M.Phil. Committee defined in (4) shall decide the suitability of the candidate for admission to the course, based on the subjects the candidate has studied for the Masters degree and the specified pre requisites of the course* .**

(ii). Admission will be based on the marks obtained in the qualifying examination, a written test and an interview conducted by the Department/School. Theweightage for these shall be 50%, 40% and 10% respectively. The Syllabus for the written test shall be of post-graduate level, and prepared by the Department/School. The interview shall be conducted by the M.Phil. Committee defined in (4) or a sub-committee nominated by the M.Phil. Committee.

(iii). If sufficient number of teacher candidates is not available, the corresponding vacancies shall be filled by candidates from the general quota.

(iv).Admission to the M.Phil. Programme shall be made on the recommendations of the admission committee consisting of (1) the Head of the Department, (2) Dean, (3) a senior Professor/Associate Professor and (4) the Registrar. In case, the Head of the Department and Dean are one and the same person, a senior teacher of the Department shall be nominated by the Head of the Department to the committee.

2. **Course of Study**

The *syllabi and* course work for M.Phil. Students shall be in accordance with the scheme recommended by the respective Board of Studies. The M.Phil. Committee may make proposals to the Board of Studies in respect of course work. ***The topic(s) for literature review shall be identified by the students with the help of M.Phil. Committee within one month from the commencement of the M.Phil. course.***

Duration – The duration of the M.Phil. Programme will be two semesters (one academic year).

Attendance – The minimum attendance required by a candidate will be 75% of the total number of working days in each semester.

3. **Eligibility for the degree**

No candidate is eligible for the degree of Master of Philosophy unless he/she has successfully undergone the prescribed courses of study in a Department/School of the University for not less than one academic year, and has acquired 36 credits and has fulfilled all other requirements prescribed in the regulations from time to time.

4. **M.Phil. Committee**

(i) The M.Phil. Programme shall be administered by the Department/School concerned through its M.Phil. Committee.

(ii). The M.Phil. Committee shall consist of all teachers who are recognized research guides of the Department/School. In Departments where there are less than three recognized Research Guides, the Vice-Chancellor may, on recommendation of the Dean of the relevant Faculty, nominate additional members from other relevant Departments/Recognized Institutions to the M.Phil. Committee. The Head of the Department will be the Chairman of the Committee.

(iii). The M.Phil. Committee will monitor the functioning of the course and

(a) assign courses to the concerned teachers of the Department

(b) organize seminars
(c) Evaluate performance of the M.Phil. students at the seminars
(d) guide the students in the selection of topic(s) for literature review,

(e) ***Help the students in the identification of topics for project work and if necessary, the Centres for doing the project outside the Department,*** and allot students to the recognized research supervisors ***The committee shall ensure that no research supervisor has been allotted more than 5 (five) students for guiding project work at a given time***.

5. Assessment

(i) The course work including tests, seminars, assignment etc. will be evaluated internally as a continuous process. Students will also be required to submit on completion of the academic programme, a dissertation/project report on a topic approved by the M.Phil. Committee of the Department and prepared under the guidance of a recognized supervising teacher of the University. The dissertation/project report shall be submitted normally on completion of the academic programme. On the specific recommendation of the supervising guide, the M.Phil. Committee may permit the dissertation to be submitted by the candidate within a maximum period of 18 months from the commencement of the course.

(ii) The dissertation submitted by the student at the end of the 2nd semester shall be evaluated by two examiners (1) internally by the supervising guide (or a teacher nominated by M.Phil. Committee) and (2) externally by an expert not below the rank of an Associate Professor in a University or an expert holding an equivalent post in a reputed organization. The external examiner shall be nominated by the M.Phil. Committee. The M.Phil. Committee along with the external experts will constitute the viva-voce board and evaluate the presentation of the dissertation.

(iii). Candidates will be allowed only one additional chance to appear for a written examination and resubmit the dissertation once, if so recommended by one or both the examiners evaluating the dissertation.

(iv). The candidate fails to submit the dissertation within the period of 18 months or discontinue after completing the I semester he/she shall be allowed to register for the II semester and complete the course with the approval of the M.Phil. Committee. However, the maximum period for completion of the course shall be two years from the date of admission.

6. Pass Minimum

A candidate who secures not less than 50% of the total marks separately for course work, dissertation and viva-voce shall be declared to have passed the examination.

7. Mode of Evaluation

(i) The student shall be evaluated continuously internally throughout the semesterand marks shall be awarded on the basis of tests and assignments as detailed below:

(a)	20 marks shall be awarded for assignments/seminars
(b)	There shall be two class tests and one end semester exam.
(c)	The first class test carries a maximum of 20 marks and is on portions of syllabi covered till then.
(d)	The second class test carries a maximum of 20 marks and is on portions covered till then from the first class test
(e)	The end semester examination is for maximum marks of 40 and carries questions from entire syllabi of the course.

(ii) There can be a supplementary examination for each subject, conducted within a month of the last examination of the end semester examination. This will be based on the

recommendations of the M.Phil. Committee, on receiving specific application from students and based on the merit of the case.

(iii) If a candidate fails to secure at least a Grade 'D' he/she has to repeat the subject in the next possible chance after taking readmission.

8. **Classification**- The following grading system be adopted for all the courses. The following grades will be awarded based on the overall performance in each subject.

Range of marks	Grades	Weightage
90% and above	S – Outstanding	10
(80 – 89)	A - Excellent	9
(70 – 79)	B - Very Good	8
(60 – 69)	C - Good	7
(50 – 59)	D - Satisfactory	6
Below 50**%**	**F – Failed**	**0**

Overall performance at the end of the semester will be indicated by Grade Point Average (GPA) calculated as follows:

$$GPA = \frac{G_1C_1 + G_2C_2 + G_3C_3 + \ldots\ldots\ldots.G_nC_n}{C_1 + C_2 + C_3 + \ldots\ldots\ldots\ldots\ldots C_n}$$

Where 'G' refers to the grade weightage and 'C' refers to the credit value of corresponding course undergone by the student.

At the end of the final semester Cumulative Grade Point Average (CGPA) will be calculated based on the above formula.

Classification for the Degree/Diploma will be given as follows:

Classification   **CGPA**
       First Class with distinction   8 and above
       First Class   7 and above
       Second Class   6 and above

9. **Passing Board**

The Passing Board shall consist of the Head of the Department as Chairman and two members of the M.Phil. Committee nominated by the Head of the Department as members.

10. **Declaration of Result**

The final marks and GPA are reported to the University for tabulation and declaration of results. The University shall issue grade card at the end of second semester.

11. **Review of Question Papers and Valuation of Answer Books**

At the end of each semester, question papers set for class tests and end semester examination and scheme of valuation of answer books be reviewed by the M.Phil. Committee.

12. **Grievance Cell**

The M.Phil. Committee will act as grievance cell where complaints from students on the conduct of class tests, semester examination and valuation methodology can be examined. The student shall make such complaints within a week after declaration of results to the Head of the Department/Director in writing for scrutiny by the grievance cell.

13. Evaluation of the Teachers by the Students

 For effectiveness and improvement in the delivery of the course, there shall be student evaluation of teachers. A format for evaluation may be prepared by the M.Phil. Committee, circulated among the students and shall be reviewed by the M.Phil. Committee.

14. Revision of Regulation and Curriculum - The University may, from time to time amend or change the Regulations, Schemes of Examinations and Syllabus. In case of students already undergoing the course, the change will take effective from the beginning of the following academic year after the changes are introduced.

These regulations take precedence over existing M.Phil. Regulations being offered in various Departments of Cochin University of Science and Technology. These regulations are effective from 2010 admission onwards

M.Phil. Course Structure

I SEMESTER

Course	Subject	Credits	Continuous Evaluation	End Semester Examination	Total
1	Core	5	60	40	100
2	Elective	5	60	40	100
3	Research Methodology &Quantitative Techniques	5	60	40	100
4	Literature Review& Seminar	3	100	-	100
	Total for I Semester	18			
II SEMESTER					
	Project Evaluation and Viva Voce	18	100	300*	400
	Total for the Course	36			

*Out of the 300 marks 200 shall be for the evaluation of dissertation and 100 shall be for Viva Voce examination. Both these evaluations shall be done by the internal and the external examiners.

REGULATIONS FOR M.VOC. IN TECHNOLOGY AND MANAGEMENT CONSULTING PROGRAM (OFFERED UNDER THE FACULTY OF SOCIAL SCIENCES).

(From 2018 admission onwards)

The **Master of Vocation (M. Voc)** program has been launched UGC to promote vocational education at higher level to produce industry ready, employable graduates under the National Skill Qualification Framework (NSQF) with multiple entry/exit options during the programme. The contents of the vocational courses are to be designed by providing a judicious mix of skill component relating to a profession (60%) and appropriate content of General education (40%) to ensure that the students are getting equipped in terms of knowledge and skills to be employable at each exit point of the programme.

M.Voc. in Technology and Management is a Masters level vocational programme designed to be offered under the DDU KAUSHAL Kendra, CUSAT and designed according to the UGC guide lines based on NSQF with multiple entry/exit options, leading to various job roles at each level of exit. Course contents shall be aligned with the norms of the concerned Sector Skill Councils for enabling the students to obtain skill certifications from SSC concerned at various exit points.

I. Duration and natural of the Course

M.Voc. in Technology and Management Consulting is a Masters level vocational program which spans over a period of four semesters (two years) with multiple entry and exit options. Multiple entry and exit options imply that students who successfully complete the first two semesters will be eligible for Post-graduate Diploma in Technology and Management Consulting if they wish to discontinue the program after the first year of this programme. Surch students with P.G. Diploma will be eligible for lateral entry to the third semester of M.Voc. Programme later if they wish to do so. In such cases of students must surrender their PG Diploma for obtaining the M.Voc. Degree certificate and such lateral entry shall be permitted only within five years of their original admission to the M.Voc. course. Students who successfully complete all four semesters will be eligible for Master of Vocation (M.Voc.) Degree in Technology and Management Consulting.

II. Central and Faculty

M.Voc. in Technology and Management Consulting shall be offered at DDU KAUSHAL KENDRA and the degree shall be awarded under the Faculty of Social Sciences.

III. Eligibility for Admission

3.1 Eligibility for academic year 2018-19 Admission

Graduates with 60% marks (or equivalent CGPA) in Engineering or Graduates with 60% marks (or equivalent CGPA) in Business Management/ Business Administration/ Commerce/ Economics or

B.Voc. graduates with 60% marks (or equivalent CGPA) in Technology/ Management related disciplines with Mathematics/ Statistics/ Accountancy as one of the subjects.

3.2 Eligibility for academic ear 2019-20 onwards

Graduates with 50% marks (or equivalent CGPA) in Engineering or Graduates with 60% marks (or equivalent CGPA) in Business Management/ Business Administration/ Commerce/ Economics or B.Voc. graduates with 60% marks (or equivalent CGPA) in Technology/ Management related disciplines with Mathematics/ Statistics/ Accountancy as one of the subjects.

IV. Selection and intake of the programme

4.1 Selection for academic year **2018- 19** admission will be based on the candidates score in CUSAT CAT Exam and interview. Weightage for test and interview shall be in the ratio of 80:20. Seats are reserved for SC/ ST and Other Backward Communities as per Government of Kerala rules in this regard.

4.2 Selection for academic year **2019- 20** onwards will be exclusively based on the candidates score in CUSAT CAT Exam. Seats are reserved for SC/ ST and Other Backward Communities as per Government of Kerala rules in this regard.

4.3 Intake of the programme shall be as per the decision of the university from time to time, taking into consideration the facilities available in the centre offering the programme.

V. Programme structure

5.1 The number of credits (total) in I, II, III, and IV semesters shall be 24, 36, 24 and 24 respectively. The total number of credits required for a pass in the programme shall be 108, in which minimum credit required for the core courses and electives shall be 96 and 12 respectively.

5.2 Since the Programme is vocational in character, the curriculum is designed in such a way that 60 per cent of the subjects are in the vocational domains (Technology and Management Consulting) and 40 per cent in the general domains such as communication skills, professional skills, and IT skills, entrepreneurship and functional management.

5.3 Students shall have the freedom to opt for four electives during semester 111 of which at least one shall be an Inter disciplinary Elective (IE) course from other Departments/ Schools

5.4 Students will have to undergo an internship training of minimum 40 working days at the end of semester II. Semester IV is fully devoted to a Major Project work of not less than 90 working days and the same will be on Technology or Management Consulting in a consulting organisation or any other business firm (where the student is required to work on a specific consulting assignment). Each student shall be assigned to a faculty guide for the internship and Major Project. A written report must be submitted at the end of the internship/ Major Project in a format prescribed by the Centre.

VI. Method of Teaching and Training.

The teaching and training for the M.Voc. Programme shall focus on developing skills and enhancing employability of the students so as to make them industry- ready graduates. Hence the teaching and training pedagogy of the programme will be mostly through "Activity oriented Class Room (AOC)", and the same will comprise of case studies, games, simulation techniques, presentations, Industry internships, training lab, both individual and group projects, interaction with industry experts, etc. Live Consulting projects and internship training in organisations shall also from part of the training for the programme.

VII. Mode of Evaluation and Eligibility for Pass .

7.1 Mode of Evaluation will be 100 per cent internal for all papers out of which 50% marks are for continuous assessment throughout the semester and 50% marks are for End-semester examination. In the case of following subjects namely Professional Skills Development (Semester 1) and case Development skills for Consultants (Semester II) the entire 100 marks will be awarded through continuous assessment by the teachers through case analysis, group discussion, team building tasks, leadership role, problem solving exercises, personal improvement, report writing, presentations etc. Evaluation for Business Analytics in semester II will be in practical mode.

7.2 For the internship in semester II, 50% marks are for continuous assessment as well as the written report and remaining 50% mark will be awarded through a give voce examination conducted by internal examiners. For the Main project in Semester IV, the maximum marks shall be 300, of which 100 marks each will be allotted on the basis of (I) continuous evaluation of the project work (ii) the project report submitted (III) Viva-voce examination carried out by board of examiners.

7.3 Marks obtained by the students in the continuous assessment shall be displayed on the Centre notice board and grievances if any may be addressed to the Head of the Centre/ Department. The Centre/ Department council shall finalise the marks of the continuous assessment of each course after addressing such grievances.

7.4 A minimum of 75% attendance is compulsory for each student to appear for End- Semester examination and also to progress to the subsequent semester. But the Vice- Chancellor shall have the power to condone the shortage of attendance up to 10% on medical grounds on the recommendations of the HOD. However, such condonation for shortage of attendance shall be given to a particular students only once during the entire programme of study.

7.5 Internal marks will be awarded on the basis of class tests, assignments, viva-voce, practical assignments, term- papers, mini- projects etc. as decided by the teacher concerned, considering the relevance of each component with respect to the paper he/ she handles. However, the student shall be evaluated continuously throughout the semester and; marks shall be awarded as per the following guidelines

a) A minimum of 50 per cent weightage shall be given for internal tests /lab exams/ practical assignments

b) A maximum of 20 per cent weightage shall be given for written assignments

c) A maximum of 20 per cent weightage shall be given for class room presentations, Viva- voce and mini projects

d) A maximum of 20 per cent weightage shall be given for other items such as attendance or activities that the teacher of the concerned course believes as relevant for the course and assigned to the students.   .
The total internal Marks awarded will be 50.

However, Department/ Centre council can change the guidelines for the distribution of internal marks given above, as and when required.

7.6 The question paper for the End-Semester examination shall be set by the concerned teacher in advance which shall be scrutinized by the respective Central/ Department council or by a committee consisting of the HOD and faculty members offering courses in that semester to ensure that questions are within the scope of the syllabus and that the entire syllabus of the course is fairly covered in the question papers. Modification can be suggested by the council if necessary and such suggestions shall be incorporated in the final version of the question paper.

There shall be only a single evaluation for the End- Semester examination. Immediately after the examination is over, the Head of the Department/ Centre shall make arrangements to complete the evaluation and finalise the results within 10 working days after the last examination. In case of Semester II   and Semester IV where internship/ Major Project is included, the results shall be finalised within five working days after the Viva voce examination.The marks and grade in all courses obtained by the students will be displayed in the notice board and the answer scripts can be shown to the students for scrutiny on written request by the student addressed to the Director of the Centre. (Viva-voce marks are exempted from this clause as it awarded by a board of examiners).

7.7 For each course there shall separate passing minimum of 45% marks for the End- Semester examination and the student has to secure an aggregate of 50% when End- Semester examination and internal marks are taken together for every course in all the semesters for passing the programme. In case of the course Professional Skills Development in Semester 11, students acquirere a minimum of 50% marks in Continuous Assessment.

Students have to acquire minimum of 50% marks for the Viva Voce examination of the Internship in Semester 11 and 50% marks in each one of the three components of Main Project in Semester 1V (The three components will be (I) continuous evaluation of the project work (ii) the project report submitted and (III) Viva-voce examination.)

7.8 The department shall publish the marks obtained by the students, in the continuous assessment and End-Semester examination. If the student has any grievance, he/ she can approach the

concerned teacher and submit his/her grievance with supporting documents/ arguments. The teacher and the HOD will examine the case and decide on his/her grievance. If the student is not convinced with the decision, he/she can approach the appellate authority, which is the department council, in writing and the council shall examine the same and take a final decision which has to be intimated to the student in writing. The decision of the appellate authority shall be final.

7.9 The final marks and grades obtained by the students shall be published in the notice board.Those who could not obtain at least Grade D in totall for a course will be declared as failed in that course. Those who fail in any core or elective course shall submit and application to the HOD within five working days if necessary for a re- examination of the End-Semester examination. Within ten days of the display of the results in the notice board, the department shall conduct an additional End- Semester examination for these candidates. This examination is only to provide the student a chance to complete the course successfully. If he/ she completes the course successfully making use of this additional chance, he/she will be awarded only Grade D irrespective of the marks scored.If he/she cannot secure the minimum, he/she may repeat the End-Semester examination of that course in the next available chance/s. In this case, he/she will be awarded whatever grade he/ she has secure.

7.10 For Semester 1V, the result of the examination will be finalized on published within 30 days from the last date of examinations by the centre/ department council, which will act as the passing board and the minutes shall be sent to the controller of Examinations of the university for the issue of grade cards. In case of Semester 11 and Semester 1Vwhere internship/ major Project is included, the results shall be finalized and published within 15 working days after the Viva- Voce examination.

7.11 A student shall complete his/her M. Voc programme within four years from the date of admission by acquiring the total credit requirements as specified for the award of the degree. In case of candidates who take lateral entry to Semester 111 of the course shall complete his/ her M.Voc. programme within three years from the date of admission to Semester 111.

7.12 For PG Diploma in Technology and Management Consulting, a student shall complete the passing requirements within three years of securing admission to the course.

VIII.   Grading and Classification

The following grading system is adopted for all the courses. The following grades will be awarded based on the overall performance in each course.

Range of marks	Grades	Weightage
90% and above	S-Outstanding	10
(80-89)	A-Excellent	9
(70-79)	B-Very Good	8
(60-69)	C-Good	7

(50-59)	D-Satisfactory	6
Below 50%	F-Failed	0

Decimal percentages shall be rounded to the next higher number if it is greater than or equal to 0.5.

Overall performance at the end of the semester will be indicated by Grade Point average (GPA) calculated as follows:

GPA = (G1IC1+G2C2+G3C3+.......+GnCn) / (C1+C2+C3+.....+Cn)

Where 'G' refers to the grade weightage and 'C' refers to the credit value of corresponding course undergone by the student.

At the end of the final semester, Cumulative Grade Point Average (CGPA) will be calculated based on the above formula.

Classification for the Degree diploma will be as follows:

Classification	CGPA
First Class with Distinction	8 and above
First Class	6.5 and above
Second Class	6 and above

IX.   Revision of Regulations and Curriculum.

The University may from time to time, revise, amend or change the Regulations, Schemes of Examinations and Syllabus. The date of effect of such changes will be as decided by the university.

X.   Structure of the Question Paper of End-Semester Examinations.

The End-Semester question paper shall have three parts (except for practical examinations), namely   Part -A, Part-B and Part C. The maximum marks for End-Semester Examinations will be 50.

In part A, there will be 10 compulsory questions which will be of the type *'Fill in the blanks/one word answer'*. Each question in Part A carries one Mark.

Part- B will consist of six questions out of which students must answer four questions. Each question will carry five marks in this part.

In part-C, student will answer two question of 10 marks each from a group of three questions. One case study would be preferred among the three questions in this section.

In case of practical exams this pattern need to be followed. The number of questions can be varied according to the nature of the subject and the same will be decided by the examiners concerned based on the norms set by the Centre/Department council.

REGULATIONS FOR B VOC IN BUSINESS PROCESS AND DATA ANALYTICS PROGRAMME OFFERED IN DDU KAUSHAL KENDRA UNDER THE FACULTY OF SOCIAL SCIENCES.

(From the academic year 2018-19)

I.   Introduction

The **Bachelor of Vocation (B.Voc.)** programme has been launched by the UGC to promote Vocational education at higher education institutions to produce industry ready, employabie graduates under the National Skill Qualification Framework (NSQF) with multiple entry/exit options during the programme. The contents of the vocational courses are to be designed by providing a judicious mix of skill component relating to a profession (60%) and appropriate content of General education (40%) to ensure that the students are getting equipped in terms of knowledge and skills to be employable at each exit point of the programme.

B.Voc. in Business Process and Data Analytics is a vocational graduate programme designed to be offered under the DDU KAUSHAL Kendra, CUSAT and designed according to the UGC guide lines based on NSQF with multiple entry/exit options, leading to various job roles at each level of exit. Course contents shall be aligned with the norms of the concerned Sector Skill Councils (SSC) for enabling the students to obtain skill certifications from SSC concerned at various exit points.

II.   Duration and Nature of the Course

B Voc in Business Process and Data Analytics is a Bachelor level vocational programme which spans over a period of six semesters (three years) with multiple entry and exit options. Multiple entry and exit options imply that the students have exit options at the end of each year of the course and are eligible for varying certifications as shown below and such candidates who exit the course can rejoin to the course on a later stage and can complete the course.

1. Students who successfully complete the first two semesters and take exit option will be eligible for **Diploma in Business Process and Data Analytics**

2. Students those who successfully complete the first four semesters and take exit option will be eligible for **Advanced Diploma in Business Process and Data Analytics** and

3. Students who successfully complete all six semesters will be eligible for Bachelor of Vocation (B. Voc**.**) **Degree in Business Process and Data Analytics.**

Such students with Diploma/Advanced Diploma will be eligible for lateral entry to the third/fifth semester of B Voc Programme later if they wish to do so. Students with Diploma in Business Process and Data Analytics will be eligible for lateral entry to third semester and those with Advanced Diploma in Business Process and Data Analytics will be eligible for lateral entry to the fifth semester of this course. In such cases the students must surrender their Diploma/Advanced Diploma for obtaining the Advance Diploma/B Voc Degree certificate as they are not eligible for multiple certifications and such lateral entry shall be permitted only within five years of their original admission to the B Voc programme.

III.   Centre and Faculty

B Voc in Business Process and Data Analytics shall be offered at DDU KAUSHAL KENDRA and the degree shall be awarded under the Faculty of Social Sciences.

IV.   Eligibility for Admission

For 2018 Admission

"Students with a total of 75% marks (or equivalent CGPA) in Plus Two or any equivalent examination conducted by recognised boards with Mathematics/Statistics as one of the subjects. Relaxation in percentage of marks shall be given to the candidates belonging to reservation communities as per rules".

For 2019 admission onwards

"Students with a total of 65% marks (or equivalent CGPA) in Plus Two or any equivalent examination conducted by recognised boards with Mathematics/Statistics as one of the subjects. Relaxation in percentage of marks shall be given to the candidates belonging to reservation communities as per rules".

While calculating the percentage of mark for plus two, the marks of mathematics/statistics

shall necessarily be included in case the student has studied additional subjects.

V.   Selection and Intake of the Programme

5.1   Selection of candidates will be based on the following criteria:

   For 2018 Admission

The eligible students shall be admitted to the course from a rank list prepared by the university based on the marks secured by candidate in an Aptitude Test (CAT) conducted by the university and the marks scored for the qualifying examination. 50% weightage shall be given for the marks scored in CAT and 50% weightage shall be given to the aggregate marks scored by the candidate for the qualifying examination plus the marks scored for the Mathematics or Statistics (If both subjects are studied, only marks for the mathematics will be considered).

   For 2019 admission onwards

The eligible students shall be admitted to the course from a rank list prepared by the university based on the marks secured by candidate in an Aptitude Test (CAT) conducted by the university.

5.2   Intake of the programme shall be as per the decision of the university from time to time, taking into consideration the facilities available in the centre offering the programme. Seats are reserved for SC/ST and Other Backward Communities as per Government of Kerala rules in this regard.

VI.   Programme structure

6.1   Since the Programme is vocational in character, the curriculum is designed in such a way that 60 per cent of the subjects are in the vocational domains (Business Process and Data Analytics) and 40 per cent in the general domains such as English language, communication skills, professional skills, IT skills, entrepreneurship and Functional Management. The curriculum has been designed to meet the requirements laid out in the UGC Guidelines for curriculum design for B Voc programmes under the National Skill Qualification Framework (NSQF). The total credit requirements for the course is 180 out of which skill components will carry 108 and general education components will carry 72 credits. The credit distribution will be in the following pattern:

	NSQF Level	Skill Component	General Education
Year I Diploma	5	36	24
Year II Advanced Diploma	6	36	24
Year III B Voc	7	36	24
Total		108	72

6.2 The number of credits (total) in L I L IV Vand VI semesters shall be 30, 30, 30, 30, 34 and 26 respectively. The total number of Credits required for a pass in the programme shall be 180, in which minimum credit required for the core courses and electives are 172 and 8 respectively.

6.3 Students shall have the freedom to ont for one elective each in semester IV and semester V of the programme.

6.4 Students will have to undertake an Organisational study of minimum 15 working days as part of their Project-I at the end of semester II. Project II at the end of Semester IV will be of 15 working days on Business Process Mapping. Semester VI is fully devoted for Project III – (Main Project) of not less than 80 working days and the same will be on a data analytics project in any organisation. Each student shall be assigned to a faculty guide for all the projects. A written report must be submitted at the end of the Project-I, II and III in a format prescribed by the Centre.

6.5 Students are required to attend single/multiple Training Programme/s with the total duration of which shall amount to 5 days each in Semester I and Semester III and 10 days in Semester VI. These training programmes shall be in the general domain to improve the personal effectiveness, professional skills and career planning of the students. The ten days workshop programme proposed in fourth semester will help students to build personal branding and to prepare career planning along with building awareness about current trends and developments in Industry and Economy. Students shall be encouraged to participate in training programmes organized by state/national level institutes/Centres or Departments of Universities including DDUKK/Professional bodies such as AIMA or ISTD, etc. to satisfy the requirements for acquiring credits for the aforementioned training programmes in various semesters.

In order to attend such training programmes, students have to obtain prior permission from the Centre by submitting the details of the institution offering the training programme and the proposed course. The credits for the participation in such training programme shall be awarded only based on the evaluation of the report submitted by the with the participation Certificates.

VII. **Method of Teaching and Training**

The teaching and training for the B Voc programme shall focus on developing skills and enhancing employability of the students so as to make them industry-ready graduates. Hence the teaching and training pedagogy of the programme will be mostly through "Activity oriented Class Room (AOC)", and the same will comprise of case studies, games, simulation techniques, presentations, Industry internships, training labs, both individual and group projects, interaction with industry experts, etc. Live analytics projects and internship training in organisations shall also form part of the training for the programme.

VIII.   <u>Mode of Evaluation and Eligibility for Pass</u>

8.1   Mode of Evaluation will be 100 per cent internal for all papers out of which 50 % marks are for continuous assessment throughout the semester and 50 % marks are for End semester examination. In the case of the following subject namely Managerial Skilis Development and Design Thinking (Semester III), the entire 100 marks will be awarded through continuous assessment by the teachers through case analysis, group discussion, team building tasks, leadership role, problem solving exercises, personal improvement, report writing, presentations etc.

For Project I and Project II, 50 % marks will be awarded through continuous assessment

and 50% marks will be awarded based on the evaluation of the report submitted by the student. In case of the Project III (Main Project) 100 marks each will be awarded for Continuous Assessment, Project Report and Viva Voce. Viva-Voce examination at the end of the sixth semester shall be carried out by a board with at least three examiners.

Evaluation for programming-based subjects in various semesters shall be in practical mode.

8.2   A minimum of 75% attendance is compulsory for each student to appear for End- Semester examination and also to progress to the subsequent semester. But the Vice- Chancellor shall have the power to condone the shortage of attendance up to 10% on medical grounds on the recommendations of the HOD. However, such condonation for shortage of attendance shall be given to a particular student only once during the entire programme of study.

8.3   Internal marks will be awarded on the basis of class tests, assignments, viva-voce, practical assignments, term-papers, mini-projects etc. as decided by the teacher concerned, considering the relevance of each component with respect to the paper he/she handles. However, the student shall be evaluated continuously throughout the semester and marks shall be awarded as per the following guidelines:

a)   A minimum of 50 per cent weightage shall be given for internal tests/lab exams/practical assignments

b)   A maximum of 20 per cent weightage shall be given for written assignments

c)   A maximum of 20 per cent weightage shall be given for class room presentations, Viva -voce and mini projects

d)   A maximum of 20 per cent weightage shall be given for other items such as attendance or activities that the teacher of the concerned course believes as relevant for the course and assigned to the students.

The total Internal Marks awarded will be 50.

However, Department/Centre Council can change the guidelines for the distribution of internal marks given above, as and when required.

8.4   The question paper for the End-Semester examination shall be set by the concerned teacher in advance which shall be scrutinized by the respective Centre/Department Council or by a committee consisting of the HOD and faculty members offering courses in that semester to ensure that questions are within the scope of the syllabus and that the entire syllabus of the course is fairly covered in the question papers.

Modifications can be suggested by the council if necessary and such suggestions shall be incorporated in the final version of the question paper.

There shall be only a single evaluation for the End-Semester examination. Immediately after the examination is over, the Head of the Department/Centre shall make arrangements to complete the evaluation and finalise the results within 10 working days after the last examination. In case of Semester II, Semester IV and Semester VI where Projects are included, the results shall be finalised within seven working days after the submission of the report/ conduct of Viva-Voce examination, which ever applicable as the case may be. The marks and grade in all courses obtained by the students will be displayed in the notice board and the answer scripts can be shown to the students for scrutiny on written request by the student addressed to the Director of the Centre. (Viva voce marks are exempted from this clause as it is awarded by a board of examiners).

8.5 For each course there shall be a separate passing minimum of 45% marks for the End Semester examination and the student bas to secure an aggregate of S0% when End Semester examination and Internal Marks are taken together for every course in an the semesters for passing the programme. In case of the course Managerial Skills Development and Design Thinking in Semester III, students should acquire a minimum of 50% marks in Continuous Assessment. In case of Projects, candidate has to acquire aggregate 50% marks in each projects- Project I, II and III, for the successful completion.

8.6 The department shall publish the marks obtained by the students, in the continuous assessment and End-Semester examination. If the student has any grievance, he/she can approach the concerned teacher and submit his/her grievance with supporting documents/arguments. The teacher and the HOD will examine the case and decide on his her grievance. If the student is not convinced with the decision, he/she can approach the appellate authority, which is the department council, in writing and the council shall examine the same and take a final decision which has to be intimated to the student. The decision of the appellate authority shall be final.

8.7 The final marks and grades obtained by the students shall be published in the notice board. Those who could not obtain at least Grade D in total for a course will be declared as failed in that course.

8.8 For Semester I, III, and V, the results of the examinations shall be finalized and published within 30 working days from the date of last end semester by the centre/department council, which will act as the passing board and the minutes shall be sent to the Controller of Examinations of the University for the Issue of grade cards. In case of Semester II, Semester IV and Semester VI where Project I, II and III are included respectively, the results shall be finalized and published within ten working days after the submission of the report/ conduct of Viva-Voce examination, which ever applicable as the case may be.

8.9 A student shall complete his/her B Voc programme within six years from the date of admission by acquiring the total credit requirements as specified for the award of the degree. In case of candidates who take lateral entry to Semester III or V of the course shall complete his/her B Voc programme within five years or four years respectively from the date of admission.

8.10 For Diploma in Business Process and Data Analytics, a student shall complete the passing requirements within three years of securing admission to the course. And the same will be four years in the case of Advanced Diploma.

8.11 For Advanced Diploma in Business Process and Data Analytics, a student shall complete the passing requirements within five years of securing admission to the course

IX. Grading and Classification

The following grading system is adopted for all the courses. The following grades will be awarded based on the overall performance in each course.

Range of marks	Grades	Weightage
90% and above	S-Outstanding	10
(80-89)	A-Excellent	9
(70-79)	B-Very Good	8
(60-69)	C-Good	7
(50-59)	D-Satisfactory	6
Below 50%	F-Failed	0

Decimal percentages shall be rounded to the next higher number if it is greater than or equal to 0.5.

Overall performance at the end of the semester will be indicated by Grade Point average (GPA) calculated as follows:

$$GPA = \frac{G1C1+G2C2+G3C3+\ldots\ldots\ldots +GnCn}{C1+C2+C3+\ldots\ldots\ldots\ldots\ldots+Cn}$$

Where 'G' refers to the grade weightage and C' refers to the credit value of corresponding

course undergone by the student.

At the end of the final semester, Cumulative Grade Point Average (CGPA) will be calculated

based on the above formula

Classification for the Degree diploma will be as follows:

Classification	CGPA
First Class with Distinction	8 and above
First Class	6.5 and above
Second Class	6 and above

X. Revision of Regulations and Curriculum

The University may from time to time, revise, amend or change the Regulations, Schemes of Examinations and Syllabus. The date of effect of such changes will be as decided by the university.

XI. Structure of the Question Paper of End-Semester Examinations

The End-Semester question paper shall have three parts (except for practical examinations). namely Part-A, Part-B and Part C. The maximum marks for End-Semester Examinations will be 50

In Part A, there will be 10 compulsory questions which will be of the type Fill in the blanks/one-word answer. Each question in Part A carries one mark.

Parn-B will consist of six questions out of which students must answer four questions. Each question will carry five marks in this part.

In Part-C, stadent will answer two questions of 10 marks each from a group of three questions. One case study would be preferred among the three questions in this section. In case of practical exams, this pattern need not be followed. The number of questions can be varied according to the nature of the subject and the same will be decided by the examiners concerned based on the norms set by the Centre/Department council.

REVISED REGULATIONS FOR M.VOC. IN MOBILE PHONE APPLICATION DEVELOPMENT COURSE OFFERED UNDER THE FACULTY OF TECHNOLOGY   - (from 2018 admission onwards)

The **Master of Vocation (M.Voc.)** programme has been launched by the UGC to promote vocational education at higher levels to produce industry ready, employable graduates under the National Skill Qualification Framework (NSQF) with multiple entry/exit options during the programme. The contents of the vocational courses are to be designed by providing a judicious mix of skill component relating to a profession (60%) and appropriate content ofGeneral education (40%) to ensure that the students are getting equipped in terms of knowledge and skills to be employable at each exit point of the programme.

M.Voc. in Mobile Phone Application Development is a Masters level vocational programme designed to be offered under the DDU KAUSHAL Kendra, CUSAT and designed according to the UGC guide lines based on NSQF with multiple entry/exit options, leading to various job roles at each level of exit. Course contents shall be aligned with the norms of the concerned Sector Skill Councils for enabling the students to obtain skill certifications from SSC concerned at various exit points.

I.   Duration and Nature of the Course

M.Voc. in Mobile Phone Application Development Course is a Masters level vocational course and will span over a period of four semesters (two years) with multiple entry and exit options. That is, the course is designed in such a way that students who successfully complete the first two semesters can discontinue the programme if they wish and can get a Post- graduate Diploma in Mobile Phone Application Development. Those who continue the course further and finish four semesters successfully will be eligible for M.Voc. Degree (Master of Vocation). Students who discontinue after second semester with P.G. Diploma can come back and opt for lateral entry to the third semester later if they wish to do so and can finish their M.Voc. Degree. In such cases they have to surrender their PG Diploma for obtaining the M.Voc. Degree certificate and such lateral entry shall be permitted only within five years of their original admission to M.Voc. course.

II.   Centre and Faculty

M.Voc. in Mobile Phone Application Development shall be offered under DDU KAUSHAL KENDRA and the degree shall be awarded under the Faculty of Technology.

III. **Eligibility for Admission**

3.1 Eligibility for academic year 2018-19 Admission

Engineering graduates with 60% marks (or equivalent CGPA) in the branches of Information Technology/Computer Science/Electronics & Communication or Graduates with 60% marks (or equivalent CGPA) in Computer Science/Computer Applications/ Information Technology / Electronics/Software Development or Graduates with B.Voc. degree in relevant disciplines with 60% marks (or equivalent CGPA).

3.2 **Eligibility for academic year 2019-20 onwards**

Engineering graduates with 50% marks (or equivalent CGPA) in the branches of Information Technology/Computer Science/Electronics & Communication or Graduates with 60% marks (or equivalent CGPA) in Computer Science/ Computer Applications/ Information Technology/ Electronics / Software Development or Graduates with B.Voc. degree in relevant disciplines with 60% marks (or equivalent CGPA).

IV. **Selection and Intake of the course**

4.1 Selection for academic year 2018-19 admission will be based on the candidates score in CUSAT CAT exam and interview. 80% weightage for Test score and 20% weightage for interview shall be given for selection. Ranking will be based on the aggregate score of Test and Interview. Seats are reserved for SC/ST and other backward communities as per Kerala Government rules.

4.2 Selection for academic year 2019-20 admission onwards will be exclusively based on the candidates score in CUSAT CAT exam. Seats are reserved for SC/ST and other backward communities as per Kerala Government rules.

4.3 Intake of the course shall be as per the decision of the university from time to time taking into consideration the facilities available in the centre offering the programme.

V. **Course structure**

5.1 The number of credits (total) in I, II, III and IV semesters shall be 24, 36, 24 and 24 respectively. The total number of credits required for a pass in the course shall be 108, in which minimum credit required for the core courses and electives shall be 96 and 12 respectively.

5.2 Since the Course is vocational in character, the curriulum is designed in such a way that 60 per cent of the subjects are in the vocational domain (Mobile Phone application Development) and 40 per cent in the General domain such as Communication skills, Professional Skills, Management and Entrepreneurship.

5.3 Students shall have the freedom to opt for two electives during II and IV semester of which at least one should be Interdisciplinary Elective (IE) course from other Departments/Schools.

5.4 Students will have to undergo for an internship training of minimum 40 working days at the end of second semester. Semester IV is fully devoted to a Major project work of not less than 90 working days and the same will be on mobile phone application development in an IT firm. Each student shall be assigned to a guide for the same and a report has to be submitted in a format prescribed by the Centre.

VI.   Method of Teaching and Training

The teaching and training of the M.Voc. course should focus on developing skills and enhancing employability of the students to make them industry ready graduates. Hence the teaching and training pedagogy of the course will be mostly through "Activity oriented Class room (AOC)", on the job training through live projects and the same will comprise of Case studies, games, simulation techniques, presentations, Industry internships, training labs, both individual and group projects, interaction with industry experts, etc.

VII.   Mode of Evaluation and Eligibility for pass

7.1   Mode of Evaluation will be 100 per cent internal for all papers out of which 50 % marks are for continuous assessment throughout the semester and 50 % marks are for End-semester examination. In case of the paper Professional Skills Development in second semester the entire 100 marks will be awarded through continuous assessment by the teachers through case analysis, Group discussion, Team Task, Leadership role, Problem solving exercises, Personal Improvement, All practical examinations will also be internally evaluated with both etc. continuous assessment and End-semester examinations as mentioned above.

7.2   For the Internship in second semester, 50% marks are for continuous assessment and the report submitted and remaining 50% marks will be awarded through a viva voce examination conducted by internal examiners. For the Main Project in fourth semester, the maximum marks shall be 300, of which 100 marks each will be allotted to (i) the continuous evaluation of the project work carried out by the student, (ii) the project report submitted (iii) Viva-voce examination carried out by a board of examiners.

7.3   Marks obtained by the students in the continuous assessment shall be displayed on the notice board and grievances if any may be addressed to the Head of the Centre/department. The department council shall finalise the marks of the continuous assessment of each course after addressing such grievances.

7.4   A minimum of 75% attendance is compulsory for each student to appear for End-semester examination and also to progress to the next subsequent semester. But the Vice-Chancellor shall have the power to condone the shortage of attendance up to 10% on medical grounds on the recommendations of the HOD. However such condonation for shortage of attendance shall be given only once during the entire programme of study.

7.5   Sessional marks will be awarded on the basis of class tests, assignments, viva-voce, practical assignments, term-paper, mini-project etc. as decided by the teacher concerned according to the relevance of the same with respect to the paper he/she handles. However, the student shall be evaluated continuously throughout the semester and marks shall be awarded as detailed below:

a)   A minimum of 50 per cent weightage shall be given for internal tests/lab exams/practical assignments

b)   A maximum of 20 per cent weightage shall be given for written assignments

c)   A maximum of 20 per cent weightage shall be given for class room presentations, Viva -voce and mini projects

d) A maximum of 20 per cent weightage shall be given for other items such as attendance or activities that the teacher of the concerned subject believes as relevant for the course and assigned to the students.

Department/Centre Council can change the criteria proposed above for the distribution of internal marks, as and when it required.

7.6 The question paper for the End-semester examination shall set by the concerned teacher in advance, which shall be scrutinized by the respective department council or by a committee consisting of the HOD and faculty members offering courses in that semester to ensure that questions are within the scope of the syllabus and that the entire syllabus of the course is fairly covered in the question paper. Modifications can be suggested by the council if necessary and such suggestions shall be incorporated in the final version of the question paper. There shall be only a single evaluation for the semester end examination. Immediately after the examination is over, the Head of the Department/Centre shall make arrangements to complete the evaluation and finalise the results within 10 working days after the last examination. In case of second semester and fourth semester where internships are there, the results shall be finalized within five working days after the Viva-Voce examination. The marks and grade in all the courses obtained by the students have to be displayed in the notice board and the answer scripts can be shown to the students for scrutiny (Viva-voce marks are exempted from this clause as it is awarded by a board of examiners) if requested.

7.7 For each course there shall be a separate minimum of 45% marks for the End- semester examination and the student has to secure aggregate 50% marks for every paper in all the semesters for passing the programme, In case of the paper Professional Skills Development in second semester, students should acquire a minimum of 45% marks in Continuous Assessment.

Students have to acquire a minimum of 50% marks for the Viva Voce examination of the Internship in second semester and 50% marks each for all the three components of the main project in fourth semester (three components: (i) the continuous evaluation of the project work (ii) the project report submitted (iii) Viva-voce examination.)

7.8 The department shall publish the marks obtained by the students, in the continuous assessment and End-semester examination. If the student has any grievance, he/she can approach the concerned teacher and submit his/her grievance with supporting documents/arguments. The teacher and the HOD will examine the case and decide on his/her grievance. If the student is not convinced with the decision, he/she can approach the appellate authority, which is the department council, in writing and the council shall examine the same and take a final decision which has to be intimated to the student in writing. The decision of the appellate authority shall be final.

7.9 The final marks and grades obtained by the students shall be published in the notice board. Those who could not obtain at least Grade D in total for a course will be declared as failed in that course. Those who fail in any core or elective course shall submit an application to the HOD

within five working days if necessary for a re-examination of the semester end examination. Within ten days

of the display of the results in the notice board, the department shall conduct an additional semester end examination for these candidates. This reexamination is only to provide the student a chance to complete the course successfully. If he/she completes the course successfully making use of this additional chance, he/she will be awarded only a D grade enabling the candidate to be declared successful in that course. If he/she cannot make it up, he/she may repeat the semester end examination of that course in the next available chance/s. In this case, he/she may be awarded whatever grade he/she has secured.

7.10 The result of the examinations will be finalized and published within 30 days from the last date of examinations by the department council, which will act as the passing board and the minutes shall be sent to the controller of examinations for the issues of grade card. In case of second semester and fourth semester where internships are there, the results shall be finalized and published within 15 working days after the Viva-Voce examination.

7.11 A student shall complete his/her M.Voc. program within four years from the date of admission by acquiring the total credit requirements as specified for the award of the degree. In case of candidates who take lateral entry during the third semester of the course shall complete his/her M.Voc. program within three years from the date of admission to the third semester.

VIII. Grading and Classification

The following grading system is adopted for all the courses. The following grades will be awarded based on the overall performance in each subject.

Range of marks	Grades	Weightage
90% and above	S-Outstanding	10
(80-89)	A-Excellent	9
(70-79)	B-Very Good	8
(60-69)	C-Good	7
(50-59)	D-Satisfactory	6
Below 50%	F-Failed	0

Decimal percentages shall be rounded to the next higher number if it is greater than or equal to 0.5.

Overall performance at the end of the semester will be indicated by Grade

Point average (GPA) calculated as follows:

$$GPA = \frac{G_1C_1+G_2C_2+G_3C_3+\ldots\ldots\ldots\ldots+G_nC_n}{C_1+C_2+C_3+\ldots\ldots\ldots\ldots\ldots+C_n}$$

Where G' refers to the grade weightage and C' refers to the credit value of corresponding course undergone by the student.

At the end of the final semester, Cumulative Grade Point Average (CGPA) will be calculated based on the above formula.

Classification for the Degree diploma will be as follows:

Classification	CGPA
First Class with Distinction	8 and above
First Class	6.5 and above
Second Class	6 and above

IX. Revision of Regulations and Curriculum

The University may from time to time, revise, amend or change the Regulations, Schemes or Examinations and Syllabus. The date of effect of such changes will be as decided by the university.

X. Structure of the Question Paper

The End-Semester question paper shall have three parts (except for computer lab/practical exams), namely Part-A, Part-B and Part C.

In Part A, there will be 10 compulsory questions which will be of the type Fill in the blanks/one-word answer/multiple choice'. Each question in Part A carries one mark.

Part-B will consist of six questions out of which students must answer four questions. Each question will carry five marks in this part.

In Part-C, student will answer two questions of 10 marks each from a group of three questions. One case study would be preferred among the three questions in this section.

In Part-C, student will answer two questions of 10 marks each from a group of three questions. One case study would be preferred among the three questions in this section.

In case of Software Lab/ Practical oriented papers, this pattern need not be followed. The number of questions or programmes be varied according to the nature of lab/practical and the same will be decided by the examiners concerned based on the norms set by the department council.

REGULATIONS FOR EXECUTIVE POST GRADUATE DIPLOMA IN ANDROID APPLICATION DEVELOPMENT COURSE
(OFFERED UNDER THE FACULTY OF TECHNOLOGY)

I. Nature and Duration of the Course

Executive P.G Diploma in Android Application Development Course is a Post Graduate level Diploma course and will span over a period of two semesters (one year). The course is designed to add value to the knowledge and skills of the professionals with experience in software development (Teaching/Research/Industry).

Candidates who successfully complete two semesters will get an Executive Post Graduate Diploma in Android Application Development.

The course is proposed to be offered as an evening programme on regular basis under DDUKK, CUSAT.

II.   Centre and Faculty

Executive P.G Diploma in Android Application Development shall be offered under DDU KAUSHAL KENDRA as a regular evening programme from 6.00 prn to 9.00 pm and the Diploma shall be awarded under the Faculty of Technology.

III.   Eligibility for Admission

Any graduate with a minimum of two years of experience in software development (Teaching/Research/Industry) shall be eligible for admission to the course.

IV.   Selection and Intake of the course

4.1 Intake of the course per batch shall be decided by the university from time to time, however the maximum intake shall be limited to 50 per batch.

4.2 Admissions to the course shall be done directly by the DDUKK obtaining permission from university for every batch.

4.3 If the numbers of applicants are more than the intake decided for the batch, the admission will be based on an entrance test conducted by DDUKK. Seats shall be reserved for SC/ST and other backward communities as per Kerala Government rules and lapsed seats from" the reservation category shall be filled with open candidates without further notification.

V.   Course structure

5.1 The course is of one year duration and split into two semesters. The number of credits (total) in semesters 1 and II shall be 15 and 21. The total number of credits **for** the **course** shall be 36.

5.2 Students **shall** have the freedom to opt for one elective during semester II. **Students will** have to undertake a Major Project work during semester II in **Android** application development, which can commence along with the semester and carried out parallel to the regular classes. However, the last four weeks of the semester will be exclusively for the project and internship, if required, as part of the same. Each student shall be assigned to a guide for the same and a report has to be submitted in a format prescribed by the Centre.

VI.   Method of Teaching and Training

The teaching and training of the Executive P.G Diploma course orient towards developing skills and enhancing employability of the candidates to make them more proficient and equipped for their current job as well as for higher jobs in IT industry. Hence the teaching and training pedagogy of the course will be mostly through lab oriented classroom sessions and the same will comprise of practical, simulation techniques, presentations, both individual and group projects, interaction with industry experts, etc.

VII. Mode of Evaluation and eligibility for pass

7.1 Mode of Evaluation will be 100 per cent internal for all except the **Viva-voce examination in semester II,** out of which 50 % marks are for continuous assessment throughout the semester and 50 % marks are for End-semester examination.

7.2 The total marks for the Project in second semester shall be 200 in which 50 marks each will be awarded for 1) continuous assessment, 2) App development and implementation, 3) Project report and 4) Viva voce examination.

7.3 A student would be considered to have progressed satisfactorily at the end of a semester if he/she has a minimum of 75% attendance aggregate for the semester.

7.4 Sessional marks will be awarded on the basis of class tests, assignments, viva-voce, practical assignments, term-papers, mini-projects etc. as decided by the teacher concerned according to the relevance of the same with respect to the paper he/she handles. However, the student shall be evaluated continuously throughout the semester and marks shall be awarded accordingly.

7.5 A candidate shall obtain a minimum of 45% in end semester examination and aggregate 50% marks for every paper in all the semesters to be eligible for the Diploma. Student has to acquire at least 50% marks for the Main project evaluation in semester II.

7.6 A student shall complete his/her Executive P.G Diploma program within two fears from the date of admission by acquiring the total credit requirements as specified for the award of the degree.

VIII. Grading and Classification

Range of marks	Grades	Weightage
90% and above	S-Outstanding	10
(80-89)	A-Excellent	9
(70-79)	B-Very Good	8
(60-69)	C-Good	7
(50-59)	D-Satisfactory	6
Below 50%	F-Failed	0

The following grading system is adopted for all the courses. The following grades will be awarded based on the overall performance in each subject.

Decimal percentages shall be rounded to the next higher number if it is greater than or equal to 0.5. Overall performance at the end of the semester will be indicated by Grade Point average (GPA) calculated as follows:

$$GPA = \frac{G1'C1+G2C2+G3C3+......+GnCn}{C1+C2+C3+......+Cn}$$

Where 'G' refers to the grade .weightage and 'C' refers to the credit value of corresponding course undergone by the student.

At the end of the final semester, Cumulative Grade Point Average (CGPA) will be calculated based on the above formula.
Classification for the Degree diploma will be as follows:

Classification	CGPA
First class with Distinction	8 and above
First class	6.5 and above
Second class	6 and above

IX. Revision of Regulations and Curriculum

The University may from time to time, revise, amend or change the Regulations, Schemes of Examinations and Syllabus. The date of effect of such changes will be as decided by the university.

X. Structure of the Question Paper

Considering the vocational nature of the course, evaluation of the students shall be based on practice-oriented Lab exams. The number of questions or programmes be varied according to the nature of lab and the same will be decided by the examiners concerned based on the norms set by the department/center council.

REGULATION FOR THE M.Sc. (FIVE YEAR INTEGRATED) DEGREE IN PHOTONICS OFFERED BY INTERNATIONAL SCHOOL OF PHOTONICS

1. SCOPE

1.1 These Regulations shall apply to the M.Sc. (Five Year Integrated) Degree in Photonics conducted by International School of Photonics of the Cochin University of Science and Technology.

1.2 The provisions herein supersede all other Regulations unless otherwise provided.

2. DEFINITIONS

2.1 Acadamic Committee means the committee constituted by the Vice-Chancellor under this regulation to monitor the running of the programme.

2.2 Core course means a course that the student admitted to a particular programme must successfully complete to receive the Degree and which cannot be substituted by any other course.

2.3 Elective course means a course, which can be substituted by equivalent courses from the same or other Departments/ Schools.

2.4 Audited course will not accrue any credit.

2.5 Department/School means Departments/ Schools instituted in the the University as per Statutes and Act.

2.6 Levels of courses in these Regulations will generally means:

First Level	:	Undergraduate programme (Semester 1 to Semester V1)
Second Level	:	Post graduate programme (Semester VII to Semester X)
Third Level	:	M.Tech. programmes

2.7 Choice Based Credit Semester (CB CS) System shall be followed.

3.   ELIGIBILITY FOR ADMISSION

As per the Regulations prescribed by the University from time to time.

4.   ADMISSIONS

As per the Regulations prescribed by the University from time to time.

After closing the admissions, each student will be assigned a unique registration number by the department which will be valid throughout his course in the University.

5   COURSE REGISTRATION

5.1   The School shall have Faculty Members as Student Advisors. Each student at the time of seeking admission will be assigned to an Advisor by the Department Council. She/ he will advise the student about the academic programme and counsel on, the choice of courses depending on the student's academic background and objective. The student will then register for the courses he plans to take for the semester before the classes begin.

The Department shall prescribe the maximum number of students that can be admitted taking into consideration the facilities available. Preference shall be given to those students for whom the course is core- course if the demand for registration is beyond the maximum prescribed. The student has to complete the prescribed prerequisites   for the course before registration and register before the last date prescribed by the university. The student can drop/re-register any elective/audit courses (s) within 15 working days after the commencement of the classes.

5.2   The University shall make available to all students a Bulletin listing all the courses offered in every semester specifying the credits, List of topics the course intends to cover, the instructor who is giving the courses, the time and place of the classes for the courses and examination schedule. Each course shall have a code consisting of three characters denoting the Department and four digits of which first digit indicating the level of the course, second indicating the Semester and third and fourth digits the   serial number of the course. However in such Departments having more than 1 Masters Programme of same level, the first 2 characters denote Department and the third, the course of study.

6   COURSE STRUCTURE

6.1   The CBCS system will be fully internal in all sense. There shall we three kinds of courses: Core, Electives and Audit courses. Core courses should generally be offered by the Department/. School concerned. Normally no course shall have more than four credits expect in case where only project/dessertation including seminars are involved in which cases the minimum credit shall be sixteen.

6.2 In the case of integrated MSc Photonics course, the minimum credit required to be awarded the BSc (photonics) degree is 115 and for MSc (photonics) degree is 187.

6.3 The Department Council shall make recommendations on the core and elective courses including the detailed syllabus for each programme offered by the Departments to the University and approved by the Board of Studies, Faculty and Academic Council. The Department Council shall have the freedom to design and introduce new electives and or audited courses, to modify/ redesign exisiting electives and to replace any existing electives with new or modified/ redesigned electives to facilitate better expose and training for the students. Prior approval from the Board of Studies and Academic Council is not required for such modifications in the electives, but shall be done only with the approval of the Academic Committee. Such changes shall be brought to the notice of the concerned bodies in the next meeting for ratification.

6.4 The general structure of the programme shall be as given below: A minimum 75% attendance is compulsory. But Vice- Chancellor shall have the power to condone shortage of attendance up to 10 percent on medical grounds on the recommendations of the Head of Department. However such con donation for shortage of attendance shall be given only twice during the entire course.

	Int. MSc Photonics
Programme duration	10 sem
Accumulated minimum credit required for	187
Minimum Attendance required	75%

Note: Each semester shall have a minimum of 90 working days and one credit shall be given for one hour lecture or 3 hours of practical work per week. Noi regular student shall register for more than 24 credits per semester and less than 16 credits per semester. The minimum credit required to continue to level 2 (Sem 7 to Sem 10) from level 1 (Sem 1 to Sem 6) shall be .90

The students should have a minimum of 75% attendance to appear for the internal examinations as well.

6.5 A student shall compulsorily register and complete at least one Interdisciplinary Elective (IE) course (one of the Electives) from other Departments/Schools before registering for the final semester of the Programme. For Int.MSc Photonics course, Interdisciplinary Elective (IE) need to be completed in level 2 only.

6.6 Each Department/School must announce at least one interdisciplinary course (Electives) to be offered by them, in the "E" slot of the Common Time-table.

6.7 This interdisciplinary course (Elective) shall not have any prerequisite.

7. EVALUATION

7.1 The entire system of evaluation is internal. The evaluation scheme for each semester contains two parts, a continuous assessment and an end semester examination. The continuous assessment shall consist of minimum of two tests of twenty marks each and ten marks for assignments/seminars/quizzes etc. which has to be intimated to the students at the beginning of the semester. Marks obtained in the continuous assessment shall be displayed on the notice board and grievances received if any through the Head of the Department. The Department Council shall finalise the marks of the continuous assessment of each course.

The semester end examination shall cover the entire syllabus of the course. Equal weightage shall be given for the continuous assessment and the semester end components. All practical examinations will be internally evaluated as per the procedures laid down by the Department Councils concerned.

7.2 Two distinct sets of question papers for the semester end examination are to be set by the concerned teacher in advance, which shall be scrutinized by the department council to ensure that questions are within the scope of the syllabus and also the entire syllabus of the course is fairly covered in the question paper. Modifications can be suggested by the council if necessary and the incorporation of such suggestions should reflect in the final question paper. Out of the two question papers prepared, one shall be selected by the director for conducting the end semester examination.

There shall be only a single internal evaluation for the end semester examination. Immediately after the examination is over, the Head of the Department shall arrange an internal valuation camp pertaining to all the end semester examinations conducted in the Department and the results shall be finalized within 10 working days after the examination is over. The marks and grade in all the subjects obtained by the students has to be displayed in the notice board and the answer scripts can be given back to the students for scrutiny if necessary.

7.3 **For each course there shall be a separate minimum of 45% marks for the semester end examlnations,**

7.4 The Department shall publish the marks obtained by the students, in the continuous assessment and semester end examination If the student has any grievance, he/she can approach the concerned teacher and submit his/her grievance with supporting documents/arguments within five working days of publication of the results. The teacher and the HOD will examine the case and decide on his/her grievance. If the student is not convinced with the decision, he/she can approach the appealing authority- the department council- in writing and the council shall examine the same and take a final decision which has to be intimated to the student in writing. The decision of the appealing committee shall be final.

7.5 The final marks and grades obtained by the students shall be published in the notice board. Those who could to obtain 50% marks (Grade D) in total for a course will be declared as failed in that course. Those who fail in any core or elective course shall approach the concerned teacher if necessary for a

re- examination of the semester end examination. Within one week of the display of the results in the notice board, the concerned teacher shall conduct an additional semester end examination for these candidates. This re- examination is only to enable the student to pass the examination so by completing the course successfully. If he/she completes the course successfully making use of this additional chance, he/she will be awarded only a D grade for that course. If he/she cannot make it up, he may repeat the semester end examination of that course in the next available chance. The maximum duration for completing the MSc degree programme will in any case be 9 years from the date of commencement of first semester A student will have additional two years to complete the first level and additional two years for completing the second level. Total additional years that can be availed is 4)

7.6 The result of the examinations will be declared by the department council within 30 days of the last examination of the semester and the minutes shall be sent to the controller of examinations to issue the mark list of that examination.

8. **GRADE CARD**

8.1 The University under its seal shall issue a Grade Card to the students on completion of each semester. The Grade card shall contain the following:

a. Title of the course taken as core, elective and audit. (An audit course shall be listed only if the student has secured a pass)

b. The credits associated with and the grades awarded for each course.

c. The number of credits (core and elective separately) earned by the student and the Grade point Average.

d. The total credits (core and elective) earned till that semester.

8.2 The following grading system be adopted for all the courses.

The following grades will be awarded based on the overall performance in each subject.

Range of marks	Grades	Weightage
90 and above	S-Outstanding	10
80 to 89	A-Excellent	9
70 to 79	B-Very good	8
60 to 69	C-Good	7
50 to 59	D-Satisfactory	6
Below 50%	F-Failed	0

Overall performance at the end of the semester will be indicated by Grade Point Average (GPA) calculated as follows,

$$GPA = \frac{G_1C_1+G_2C_2+G_3C_3+ \ldots\ldots\ldots\ldots G_nC_n}{C_1+C_2+C_3+ \ldots\ldots\ldots\ldots\ldots.C_n}$$

Where 'G' refers to the grade weightage and 'C' refers to the credit value of corresponding course undergone by the student. At the end of the final semester Cumulative Grade Point

Average (CGPA) will be calculated based on the above formula, considering the Credits and Grades earned during the entire course of study.

Classification for the Degree/Diploma will be given as follows:

First Class with distinction	8 and above
First Class	7 and above
Second Class	6 and above

8.3 The Grade Card issued at the end of the final semester shall contain the details of all the courses taken which shall include the titles of the courses, the credits associated with each course, the CGPA and the class. The rank shall be awarded based on CGPA corrected to the 2 Decimal.

9. MONITORING AND MANAGEMENT OF COURSES

9.1 Every post graduate programme conducted in the Departments shall be monitored by the Department Council subject to these regulations. The Department Council shall design courses, prescribe the mode of conducting the courses and monitor the evaluation of students.

10. ACADEMIC COMMITTEE

10.1 The Committee shall consist of:
   a. The Pro-Vice-Chancellor : Chairman
   b. The Registrar : Secretary
   c. The Controller of Examinations
   d. One Teacher from each Department

10.2 A Senior Professor nominated by the Vice-Chancellor from among the members of the Committee shall be the Vice-Chairman of the Committee.

10.3 The term of the office of the committee shall be two years, but the committee once constituted shall continue in office until a reconstituted committee assumes office.

11 TRANSITORY PROVISION

Notwithstanding anything contained in these regulations the Vice-Chancellor shall for a period of one year from the date of coming into force of these regulations, have the power to provide by order that these regulations shall be applied to any programme with such modifications as may be necessary.

12 REPEAL

The Regulations now in force, in so far as they are applicable to programmes offered in the University Departments and to the extent they are inconsistent with the existing regulations, and the regulations relating to the Credit and Semester System in their application to any course offered in a University Department, the latter shall prevail.

**ACADEMIC CALENDAR 2019-2020**
**JULY 2019**
Date	Day	Remarks
1	Monday	Commencement of all odd semester classes except M.Tech. I semester and B.Tech. I semester and CBCS Registration to continue, Commencement of Anti-ragging awareness programme
2	Tuesday	Last date for CBCS course Registration
3	Wednesday	
4	Thursday	
5	Friday	
6	Saturday	
7	Sunday	
8	Monday	
9	Tuesday	
10	Wednesday	
11	Thursday	
12	Friday	
13	Saturday	
14	Sunday	
15	Monday	
16	Tuesday	
17	Wednesday	UG classes commencement, M.Tech. , Integrated M.Sc. classes commencement
18	Thursday	
19	Friday	
20	Saturday	
21	Sunday	
22	Monday	
23	Tuesday	
24	Wednesday	
25	Thursday	
26	Friday	
27	Saturday	End of Anti –ragging awareness programmes
28	Sunday	
29	Monday	
30	Tuesday	Uploading of End –Semester question papers(B.Tech.s of CUSAT campuses)
31	Wednesday	Karkataka Vavu,Popular Science Lecture I&II

ACADEMIC CALENDAR 2019-2020		
AUGUST 2019		
Date	Day	Remarks
1	Thursday	
2	Friday	
3	Saturday	
4	Sunday	
5	Monday	
6	Tuesday	
7	Wednesday	
8	Thursday	
9	Friday	Commencement of Monsoon Madness: Experiencing Nature
10	Saturday	
11	Sunday	Bakrid
12	Monday	End of Monsoon Madness: Experiencing Nature
13	Tuesday	
14	Wednesday	Commencement of first internal series , submission of exam proposals, Commencement of Selection to Inter University Competitions-Music/Fine arts/Dance/Theatre/Literary Events (without affecting regular classes)
15	Thursday	Independence Day
16	Friday	
17	Saturday	Commencement of All India /South Zone Inter University selection trials
18	Sunday	End of All India /South Zone Inter University selection trials
19	Monday	
20	Tuesday	
21	Wednesday	
22	Thursday	
23	Friday	Sree Krishna Jayanthi/Commencement of Actor Training Workshop/Music Training Workshop
24	Saturday	
25	Sunday	End of Actor Training Workshop/Music Training Workshop
26	Monday	
27	Tuesday	
28	Wednesday	Ayyankali Jayanthi
29	Thursday	
30	Friday	
31	Saturday	End of Selection to Inter University Competitions-Music/Fine arts/Dance/Theatre/Literary Events (without affecting regular classes)

ACADEMIC CALENDAR 2019-2020		
SEPTEMBER 2019		
Date	Day	Remarks
1	Sunday	
2	Monday	
3	Tuesday	
4	Wednesday	
5	Thursday	Exam notification &start of online /offline registration for examination
6	Friday	Closing for Onam vacation –AN
7	Saturday	Word Camp Kochi 2019,Conference on Word Press
8	Sunday	
9	Monday	Muhram
10	Tuesday	First Onam
11	Wednesday	Thiruvonam
12	Thursday	Third Onam
13	Friday	Fourth Onam /Sree Narayana Guru Jayanthi
14	Saturday	
15	Sunday	
16	Monday	
17	Tuesday	Re opening after Onam vacation-FN
18	Wednesday	Last date for exam registration(without fine) Commencement of Second Internal series
19	Thursday	
20	Friday	Last date for exam registration(without fine) Commencement of 2nd CUSAT MUN(Model United Nations)
21	Saturday	Sree Narayana Guru Samadhi
22	Sunday	End of 2nd CUSAT MUN(Model United Nations)
23	Monday	
24	Tuesday	
25	Wednesday	Last date for exam registration (with fine)
26	Thursday	
27	Friday	Commencement of Back to Village :Education through experience, submission of DCB, matriculation , recognition applications and qualifying certificates of first semester to the University
28	Saturday	
29	Sunday	End of Back to Village :Education through experience
30	Monday	

**ACADEMIC CALENDAR 2019-2020**
**OCTOBER 2019**
Date	Day	Remarks
1	Tuesday	
2	Wednesday	Gandhi Jayanthi
3	Thursday	Publication of time table of odd semester examinations (All UG programmes and PG programmes of recognized institutions)
4	Friday	Submission of exam time table (PG programmes) by the University Departments
5	Saturday	Commencement of Adventure Sports –Boys
6	Sunday	Popular Science Lecture III&IV
7	Monday	Maha Navami
8	Tuesday	Vijaya Dashami, End of Adventure Sports –Boys
9	Wednesday	Appointment letters to examiners
10	Thursday	
11	Friday	Commencement of Literature Camp
12	Saturday	
13	Sunday	End of Literature Camp
14	Monday	Last date for submission of attendance as on date to the University (UG &PG)
15	Tuesday	
16	Wednesday	
17	Thursday	
18	Friday	
19	Saturday	Commencement of Film/Art Workshop
20	Sunday	End of Film/Art Workshop
21	Monday	Last date for submission of internal marks(UG), Issue of Nominal Roll & Hall ticket/submission of internal marks (UG programme)
22	Tuesday	
23	Wednesday	End of classes
24	Thursday	
25	Friday	
26	Saturday	
27	Sunday	Deepavali
28	Monday	
29	Tuesday	
30	Wednesday	
31	Thursday	

ACADEMIC CALENDAR 2019-2020		
NOVEMBER 2019		
Date	Day	Remarks
1	Friday	Commencement of Odd semester examinations (UG)
2	**Saturday**	
3	Sunday	**Commencement of Adventure sports –Girls**
4	Monday	
5	Tuesday	
6	Wednesday	End of adventure sports –Girls
7	Thursday	
8	Friday	
9	Saturday	Nabi Dinam
10	Sunday	
11	Monday	
12	Tuesday	Odd semester examinations (PG)
13	Wednesday	
14	Thursday	
15	Friday	
16	Saturday	
17	Sunday	
18	Monday	
19	Tuesday	
20	Wednesday	
21	Thursday	
22	Friday	
23	Saturday	
24	Sunday	
25	Monday	
26	Tuesday	
27	Wednesday	
28	Thursday	
29	Friday	
30	Saturday	End of odd semester examinations (for PG &UG)

	ACADEMIC CALENDAR 2019-2020	
	DECEMBER 2019	
Date	Day	Remarks
1	Sunday	
2	Monday	
3	Tuesday	Commencement of Even Semester classes &CBCS Registration
4	Wednesday	
5	Thursday	Camp preparation(Exam section)
6	Friday	
7	Saturday	
8	Sunday	
9	Monday	
10	Tuesday	
11	Wednesday	
12	Thursday	
13	Friday	
14	Saturday	
15	Sunday	
16	Monday	
17	Tuesday	Commencement of Valuation(Odd semester), Last date of submission of Lab marks (Odd semester) to the University
18	Wednesday	
19	Thursday	
20	Friday	Closing for Christmas vacation-AN
21	Saturday	
22	Sunday	
23	Monday	
24	Tuesday	
25	Wednesday	Christmas
26	Thursday	
27	Friday	
28	Saturday	
29	Sunday	
30	Monday	
31	Tuesday	Re opening after Christmas vacation –FN

		ACADEMIC CALENDAR 2019-2020		
		JANUARY 2020
Date	Day	Remarks
1	Wednesday	
2	Thursday	Mannam Jayanthy
3	Friday	
4	Saturday	Commencement of 37th Intercollegiate Sports and Games Meet
5	Sunday	
6	Monday	
7	Tuesday	
8	Wednesday	
9	Thursday	
10	Friday	Commencement of DOST 2020-Developing Opportunities through Skill Development and Training
11	Saturday	
12	Sunday	End of DOST 2020-Developing Opportunities through Skill Development and Training
13	Monday	
14	Tuesday	Publication of PG results (Odd semester)
15	Wednesday	
16	Thursday	Completion of valuation –UG programmes (Odd semester),last date for submission of exam proposal for even semester , End of 37th Intercollegiate Sports and Games Meet
17	Friday	
18	Saturday	
19	Sunday	
20	Monday	
21	Tuesday	Commencement of first internal series
22	Wednesday	
23	Thursday	
24	Friday	Commencement of Green Room :Cultivating Creativity
25	Saturday	
26	Sunday	Republic Day /End of Green Room :Cultivating Creativity
27	Monday	
28	Tuesday	Publication of results-UG programmes (Odd semester)
29	Wednesday	
30	Thursday	
31	Friday	

ACADEMIC CALENDAR 2019-2020		
FEBRUARY 2020		
DATE	Day	Remarks
1	Saturday	
2	Sunday	
3	Monday	
4	Tuesday	
5	Wednesday	
6	Thursday	
7	Friday	Last date for application for scrutiny (UG), Exam notification and start of online /offline examination registration for Even semester , Commencement of National Seminar on Youth Research
8	Saturday	
9	Sunday	End of National Seminar on Youth Research
10	Monday	
11	Tuesday	Commencement of second internal series (Even semester)
12	Wednesday	
13	Thursday	
14	Friday	Last date for application for Revaluation(UG) (Odd semester)
15	Saturday	
16	Sunday	
17	Monday	
18	Tuesday	
19	Wednesday	
20	Thursday	
21	Friday	Mahashivaratri /Commencement of Arts Workshop
22	Saturday	
23	Sunday	
24	Monday	
25	Tuesday	Last date for exam registration without fine (Even semester)
26	Wednesday	
27	Thursday	
28	Friday	
29	Saturday	Last date for exam registration with fine (Even semester)

ACADEMIC CALENDAR 2019-2020		
MARCH 2020		
DATE	Day	Remarks
1	Sunday	
2	Monday	
3	Tuesday	
4	Wednesday	
5	Thursday	Publication of time table of odd semester examinations (All UG programmes and PG programmes of recognized institutions)
6	Friday	
7	Saturday	Submission of exam time table (PG programmes) by the University Departments, Submission of DCB statement to University
8	Sunday	
9	Monday	
10	Tuesday	
11	Wednesday	
12	Thursday	
13	Friday	Appointment letter to examiners
14	Saturday	
15	Sunday	
16	Monday	
17	Tuesday	
18	Wednesday	Submission of attendance as on date to the University
19	Thursday	
20	Friday	
21	Saturday	
22	Sunday	
23	Monday	Issue of Nominal Roll &Hall ticket and submission of Internal marks (UG programmes)
24	Tuesday	
25	Wednesday	
26	Thursday	End of classes, Publication of Revaluation results (Odd semester)
27	Friday	
28	Saturday	
29	Sunday	
30	Monday	
31	Tuesday	

		ACADEMIC CALENDAR 2019-2020
		APRIL 2020

DATE	Day	Remarks
1	Wednesday	
2	Thursday ay	Commencement of Regular /Supplementary examinations
3	Friday	
4	Saturday	
5	Sunday	
6	Monday	
7	Tuesday	
8	Wednesday	
9	Thursday	Maundy Thursday
10	Friday	Good Friday
11	Saturday	
12	Sunday	Easter
13	Monday	
14	Tuesday	Dr.Ambedkar Jayanthy/Vishu
15	Wednesday	
16	Thursday	
17	Friday	
18	Saturday	
19	Sunday	
20	Monday	
21	Tuesday	
22	Wednesday	
23	Thursday	
24	Friday	
25	Saturday	
26	Sunday	
27	Monday	
28	Tuesday	
29	Wednesday	
30	Thursday	End of PG exams

ACADEMIC CALENDAR 2019-2020
MAY 2020

DATE	Day	Remarks
1	Friday	May Day /Commencement of Summer vacation
2	Saturday	
3	Sunday	
4	Monday	
5	Tuesday	
6	Wednesday	
7	Thursday	
8	Friday	
9	Saturday	
10	Sunday	
11	Monday	
12	Tuesday	
13	Wednesday	
14	Thursday	
15	Friday	Last date of submission of PG results to University
16	Saturday	
17	Sunday	
18	Monday	
19	Tuesday	
20	Wednesday	
21	Thursday	
22	Friday	
23	Saturday	
24	Sunday	
25	Monday	Publication of PG results
26	Tuesday	
27	Wednesday	Publication of UG final result
28	Thursday	
29	Friday	
30	Saturday	
31	Sunday	

	ACADEMIC CALENDAR 2019-2020	
	JUNE 2020	
DATE	Day	Remarks
1	Monday	End of UG exams & last date for submission of lab marks to the University(Even Semesters)
2.	Tuesday	
3	Wednesday	
4	Thursday	
5	Friday	
6	Saturday	
7	Sunday	
8	Monday	
9	Tuesday	
10	Wednesday	
11	Thursday	
12	Friday	
13	Saturday	
14	Sunday	
15	Monday	CBCS Registration to commence
16	Tuesday	
17	Wednesday	
18	Thursday	
19	Friday	
20	Saturday	
21	Sunday	
22	Monday	
23	Tuesday	
24	Wednesday	
25	Thursday	
26	Friday	
27	Saturday	
28	Sunday	
29	Monday	
30	Tuesday	

FACULTY OF ENGINEERING

Dean:

Dr.K.S.Beena.
Professor,
School of Engineering
Cochin University of Science and Technology

KUNJALI MARAKKAR SCHOOL OF MARINE ENGINEERING (UG)

REGULATIONS FOR B.TECH. MARINE ENGINEERING DEGREE COURSE OFFERED IN KUNJALI MARAKKAR SCHOOL OF MARINE ENGINEERING

(With effect from 2019 Admissions)

The following regulations are made applicable to B.Tech. programme in Marine Engineering in theUniversity under Faculty of Engineering with effect from the academic year 2019-20.

1. **B.Tech. Programme**

The duration of the B.Tech. course in Marine Engineering shall be eight semesters spanning over four Academic years. Each semester shall consist of 18 weeks except 7th semester. 7th semester consist of 26 weeks.

1.1 **Structure of the B.Tech. Programme**

1.1.1 The programme of instruction will consist of the following:

i) General (common) core courses comprising basic sciences, mathematics and basic engineering
ii) Engineering core courses introducing the student to the foundations of engineering in the Marine Engineering;
iii) Elective courses enabling the student to opt and undergo a set of courses of interest to him/ her;
iv) Professional practice including project, seminar, and industrial training and
v) Humanities courses on Communication Skills and Environmental Studies.

1.1.2. The B.Tech. Marine Engineering programme will have a curriculum and syllabus for the course approved by the Academic Council.

1.1.3. The B.Tech. Programme in Marine Engineering offered by the University shall follow the credit system.

1.1.4. The curriculum of any branch of the B.Tech. Marine Engineering shall have a minimum total of 172 credits.

1.2 **Course Registration**

It is mandatory for the students to register for the courses in each semester.
Before registration, the students should
a) Clear all dues including any fees to be paid and should not have any disciplinary issues pending.
b) Meet the requirements regarding the minimum number of credits for promotion stipulated in clause1.9.
The dates for registration will be announced by the School in the academic calendar. Late registration will be allowed up to 7 working days from the commencement of the semester with late registration fee.

1.3 **Mode of Evaluation**

1.3.1. The performance of the students in theory courses will be evaluated based on continuous assessment and semester end examination. In the case of practical courses, the evaluation will be based on continuous assessment and semester end assessment which will be carried out internally.

1.3.2. For theory courses, there will be 40% weightage for internal assessment and 60% weightage for semester end examination. For practical courses, continuous assessment and semester end assessment will carry 50% weightage each.

1.3.3. In theory courses, the assessment pattern will be as follows:
Continuous assessment:
1. I Periodical Test – Maximum marks: 12.5
2. II Periodical Test – Maximum marks: 12.5
3. Assignments – Maximum marks: 10
4. Attendance – Maximum marks: 5
The Semester End Examination shall be of 3 hours duration.
At the end of the semester, semester examination will be conducted in all the theory courses offered in the semester and it will be of three hours duration unless otherwise specified. The Controller of Examinations will make necessary arrangements for setting the question papers and valuation of answer books for the semester end examination of theory courses.
Each question will carry 15 marks and the student can attend 5 questions for 75 marks. *The maximum mark that can be awarded for a Semester End Examination (SEE) will be only 60, even though the questions are for 75 marks.*

1.3.4.   For each practical course, the assessment pattern will be as follows:
50% marks is earmarked for Continuous Evaluation, and 50% marks for Semester End Examination. The Semester End Examination to be conducted by a minimum of two examiners, one not below the rank of an Associate Professor. A candidate shall secure a minimum of 50% marks in the aggregate and 40% minimum in the Semester End Examination for a pass.
1. Continuous assessment: 25 marks
For continuous assessment, the marks may be awarded on the basis of the performance of the student in the laboratory sessions. The break-up of marks for continuous assessment of laboratory courses shall be:
a) Practical records/Outputs: 10 marks
b) Lab work: 10 marks
c) Attendance: 5 marks
2. Semester end assessment: 25 marks
The semester end assessment will consist of an examination and a viva voce.
The semester end assessment for the laboratory courses shall be conducted internally by the department with at least two faculty members as examiners. One of the examiners for conducting the semester end laboratory examination shall be at the level of Associate Professor or above in the regular cadre.
1.3.5.   In the case of project work, the project guide concerned shall make the continuous assessment. A committee consisting of the Project Coordinator (nominated by the Head of the Department / Division), project guide, and at least one senior faculty member at the level of Associate Professor or above will carry out the final review.
The weightages for the reviews shall be as follows:
Continuous assessment: 40 percent
Project Report: 20 percent
Final review: 40 percent

1.3.6. The Viva-voce examination at the end of VIII Semester will be conducted by a panel of three examiners consisting of the Head of the Department or his/her nominee and one senior faculty at the level of Associate Professor or above of the Department and one external expert.

1.3.7. A candidate shall not be allowed to improve the continuous assessment marks in theory / laboratory courses. A candidate who desires to improve his/her marks in the semester end examination in theory courses shall be permitted to do so in the next available chance. This facility will be available only once for a theory course.

1.4 <u>Course completion and earning of credits.</u>

Students registered for a course have to attend the course regularly and meet the attendance rules of the university and appear for all the internal evaluation procedures for the completion of the course. However, earning of credits is only on completion of the semester examination and on getting a pass grade. Students, who have completed a course, but could not write the semester examination for valid reasons, are permitted to write the semester examination at the next opportunity and earn the credits without undergoing the course again.

1.5 <u>Eligibility to appear for the Semester End Examination</u>

1.5.1 A candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirements for completion of a semester.
Ideally every student is expected to attend all classes and earn 100% attendance. However, in order to allow provision for certain unavoidable reasons such as medical / personal grounds / participation in sports, the student is expected to earn a minimum of 75% attendance. Therefore, he/she shall secure not less than 75% of overall attendance in that semester taking into account the total number of days in all courses attended by the candidate as against the total number of days in all courses offered during that particular semester.

1.5.2 The Head of the School shall have the power to condone shortage of attendance up to 5 percent (between less than 75% and 70%) in a particular semester due to medical reasons (hospitalization /accident / specific illness) duly verified and recommended by the Course in Charge and on production of medical certificate from a registered medical practitioner endorsed by the University Medical Officer and on payment of the required fee. However such condonation for shortage of attendance shall be given only twice during the entire duration of the B.Tech. programme.

1.5.3 The Vice Chancellor shall have the power to condone shortage of attendance up to 10 percent (between less than 70% and 65%) in a particular semester due to medical reasons (hospitalization /accident / specific illness) duly verified and recommended by the Head of the School and on production of Medical certificate from a registered medical practitioner endorsed by the University Medical Officer and on payment of the required fee. However such condonation for shortage of attendance shall be given only twice during the entire duration of the B.Tech. programme.

1.5.4 Candidates who secure less than 65% overall attendance will not be permitted to write the Semester End Examinations and are not permitted to go to next /subsequent semester. They are required to repeat the incomplete semester in the next academic year.

1.6 <u>Eligibility to write the Supplementary examination</u>

Supplementary examinations for a particular semester will be conducted along with the regular examination of the next semester.
Failed candidates and those who could not write the semester examination due to health reasons or other contingencies that are approved by the Head of the School can register for the supplementary examination. Those who wish to improve their performance in the semester end examinations can also register for the same, subject to the provisions of clause 1.3.7. Grades awarded in the supplementary examination will be taken as semester grades in these subjects and will be based on the semester examination grading pattern in that subject. In the case of candidates appearing for improvement of marks, the higher mark obtained will be considered for the purpose of grading.

1.7. <u>Revaluation</u>

A candidate can apply for revaluation of his/her semester end examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee along with

prescribed application to the Controller of Examinations through the Head of School. The Controller of
Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Head of the School. Revaluation is not permitted for practical courses, seminar and project work.

1.8. Pass requirements

A candidate has to obtain a minimum of 50 percent marks for continuous assessment and semester end examination put together with a minimum of 40 percent marks in the semester end examination for a pass in theory and laboratory courses.

1.9 Promotion to Higher Semesters

Promotion to the Vth semester and VIIth semester shall be subject to the following conditions:
Promotion to Minimum number of credits to be earned
V Semester 30 out of 60 credits of Semesters I, II, &III
VII Semester 55 out of 106 credits of Semesters I to V
A student will be given one regular chance and one supplementary chance for the semester end examination of I^{st} and IInd semesters for considering the promotion to V^{th} semester and one regular chance and one supplementary chance for semester end examinations of IIIrd and IVth semesters for considering the promotion to the VIIth semester.

1.10 Grading

1.10.1. Grades shall be awarded to the students in each course based on the total marks obtained in continuous assessment and the semester end examination and as per the provisions of clause 1.3.1.
The grading pattern shall be as follows:

Marks obtained (Percentage)	Grade	Grade points
90 to 100	S	10
80-90	A	9
70-80	B	8
60-70	C	7
50-60	D	6
Less than 50	F	0

Note: - Where X-Y range denotes 'X' inclusive and 'Y' exclusive.

1.10.2. A student is considered to have credited a course or earned credits in respect of a course if he/she secures a grade other than F for that course.

1.10.3. Grade Point Average.

The academic performance of a student in a semester is indicated by the Semester Grade Point Average (SGPA).
$$SGPA = \frac{G1C1 + G2C2 + G3C3 + ----------+GnCn}{C1+ C2 + C3 + ------------------+Cn}$$
Where 'G' refers to the grade point and 'C' refers to the credit value of corresponding course undergone by the student.

1.10.4. Grade Card

The Grade Card issued at the end of the semester to each student by the Controller of Examinations, will contain the following:
a) The code, title, number of credits of each course registered in the semester,
b) The letter grade obtained,
c) The total number of credits earned by the student upto the end of that semester and
d) SGPA & CGPA.

1.10.5 .Classification

The classification based on CGPA is as follows:
CGPA 8 and above: First Class with distinction
CGPA 6.5 and above, but less than 8: First Class
CGPA 6 and above, but less than 6.5: Second Class.

1.10.6. Conversion of CGPA to Percentage marks

The following formula shall be used to convert the SGPA/CGPA obtained by a student to percentage marks.
Percentage marks = (SGPA/CGPA – 0.5) 10

1.11 <u>Faculty Advisor</u>

To help the students in planning their courses of study and for general advice on the academic programme, the Head of the Department of the student will attach a certain number of students to a teacher of the Department who shall function as Faculty Advisor for those students throughout their period of study. Such Faculty Advisor shall advise the students and monitor the courses taken by the students, check the attendance and progress of the students attached to him / her and counsel them periodically. If necessary, the Faculty Advisor may also discuss with or inform the parents about the progress / performance of the students concerned.

1.12 <u>Class Committee</u>

A class committee consists of teachers of the class concerned, student representatives and a chairperson who does not handle any subject for the class. It is like the 'Quality Circle' more commonly used in industries), with the overall goal of improving the teaching-learning process. The functions of the class committee include:
• Solving problems experienced by students in the classroom and in the laboratories in consultation with the Course in Charge/ Director.
• Clarifying the Regulations of the degree programme and the details of rules therein.
• Informing the student representatives the academic schedule including the dates of assessments and the syllabus coverage for each assessment.
• Informing the student representatives the details of Regulations regarding weightage used for each assessment.
• Discussing in the class committee meeting the breakup of marks for each experiment / exercise / module of work, in case of practical course (laboratory / drawing / project work / seminar, etc.) and informing the students.
• Analysing the performance of the students of the class after each test and finding ways and means of improving the performance of the students.
• Identifying the students who are low achievers or weak in their subjects if any, and requesting the teachers concerned to provide some additional help or guidance or coaching to such students.
The class committee is normally constituted by the Head of the Department. The class committee shall be constituted within a week from the date of commencement of a semester. At least 3 student

representatives from the respective class (usually 3 boys and 1 girl) shall be included in the class committee. The student representatives shall be nominated on the basis of their academic performance since the First Semester of the B.Tech. programme. In the case of First and Second semesters, the rank obtained in the Common Admission Test (CAT) shall be the criterion for nominating the student representatives. The Chairperson of the class committee may invite the Faculty Advisor(s), Course in Charge and the Head of the Department to the meeting of the class committee. The chairperson of the class committee is required to prepare the minutes of every meeting, submit the same to the Head of the Division within two days of the meeting and arrange to circulate the same among students concerned and teachers. If there are some points in the minutes requiring action by the University the same shall be brought to the attention of the Director and the Registrar.

The first meeting of the class committee shall be held within fifteen days from the date of commencement of the semester. The nature and weightage of internal assessments shall be discussed in the first meeting, within the framework of the Regulations and the same shall be communicated to the students. Two or three subsequent meetings in a semester may be held at suitable intervals. During these meetings the student members representing the entire class, shall meaningfully interact and express their opinions and suggestions of the class students to improve the effectiveness of the teaching-learning process.

1.13 Discipline

Every student is required to observe discipline and decorous behaviour both inside and outside the campus and refrain from any activity which may tarnish the image of the university. Any act of indiscipline, misbehaviour including unfair practice in examinations will be referred to the authorities of the University that will make a detailed enquiry on the matter and decide on the course of action to be taken.

1.14 Amendment to Regulations

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

Scheme of Examination

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B.TECH. MARINE ENGINEERING

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Scheme of Examinations (2019 admission) – SEMESTER I

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0101	Mathematics-I	4	1	0	3	40	60	100
19-208-0102	Engineering Physics	4	0	0	3	40	60	100

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0103	Engineering Chemistry	4	0	0	3	40	60	100
19-208-0104	Engineering Mechanics	4	1	0	3	40	60	100
19-208-0105	Basic Electrical Engineering	4	0	0	3	40	60	100
19-208-0106	Environmental studies and Technical Communication	4	1	0	3	40	60	100
19-208-0107	Electrical Engineering Workshop	0	0	3	1	25	25	50
19-208-0108	Language Lab	0	0	0	1	25	25	50
19-208-0109	NSS / Nature Conservation Activity	0	0	1	0	-	-	-
-	**TOTAL**	24	3	6	20	-	-	-

CA- Continuous Assessment, **SEE** – Semester End Examination

SEMESTER II

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0201	Mathematics-II	4	1	-	3	40	60	100
19-208-0202	Applied Thermodynamics	4	1	-	3	40	60	100
19-208-0203	Engineering Graphics	3	1	-	3	40	60	100
19-208-0204	Basic Electronics and measurements	4	0	-	3	40	60	100
19-208-0205	Computer Programming	4	0	-	3	40	60	100
19-208-0206	Mechanics of solids	4	1	-	3	40	60	100
19-208-0207	Mechanical Engineering Workshop	-	-	3	1	25	25	50
19-208-0208	Computer Programming Laboratory	-	-	3	1	25	25	50
-	**TOTAL**	23	4	6	20	-	-	-

CA- Continuous Assessment , **SEE** – Semester End Examination

SEMESTER III

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0301	Mathematics-III	4	1	0	3	40	60	100
19-208-0302	Electrical Technology	4	1	0	3	40	60	100
19-208-0303	Production Technology	3	1	0	3	40	60	100
19-208-0304	Marine Electronics	3	1	0	3	40	60	100
19-208-0305	Fluid Mechanics	4	1	0	3	40	60	100
19-208-0306	Machine Drawing	3	1	0	3	40	60	100
19-208-0307	Strength of Materials Lab	0	0	3	1	25	25	50
19-208-0308	Workshop Practices	0	0	3	1	25	25	50
	TOTAL	21	6	6	20	-	-	-

CA- Continuous Assessment , **SEE** – Semester End Examination

SEMESTER IV

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0401	Mechanics of Machinery	3	1	0	3	40	60	100
19-208-0402	Thermal Engineering & Heat Transfer	3	1	0	3	40	60	100
19-208-0403	Metallurgy & Materials Science	4	0	0	3	40	60	100
19-208-0404	Marine Auxiliary Machinery-I	4	-	0	3	40	60	100
19-208-0405	Hydraulic Machinery	3	1	0	3	40	60	100
19-208-0406	Seamanship and Navigation	3	0	0	3	40	60	100
19-208-0407	Ship Technology	4	0	-	3	40	60	100
19-208-0408	Electrical Machines Lab	0	0	3	1	25	25	50
19-208-0409	Boiler Chemistry & Heat Engines Lab	0	0	3	1	25	25	50
-	**TOTAL**	24	3	6	23	-	-	-

CA- Continuous Assessment , **SEE** – Semester End Examination

SEMESTER V

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0501	Dynamics of Machinery	3	1	0	3	40	60	100
19-208-0502	Marine Boiler and Steam Engineering	3	1	0	3	40	60	100
19-208-0503	Marine Economics and Commercial Geography	3	1	0	3	40	60	100
19-208-0504	Marine Auxiliary Machinery-II	3	1	0	3	40	60	100
19-208-0505	Marine Internal Combustian Engine — I	3	1	0	3	40	60	100
19-208-0506	Marine Engineering Drawing	2	1	3	3	40	60	100
19-208-0507	Naval Architecture — I	3	1	0	3	40	60	100
19-208-0508	Fluid Mechanics & Hydraulic Machinery Lab	0	0	3	1	25	25	50
19-208-0509	Electronics Lab	0	0	3	1	25	25	50
-	**TOTAL**	20	7	9	23	-	-	-

CA- Continuous Assessment , **SEE** – Semester End Examination

SEMESTER VI

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0601	Management Science	3	1	0	3	40	60	100
19-208-0602	Marine Electrical Technology	3	1	0	3	40	60	100
19-208-0603	Ship fire Prevention and Control	3	1	0	3	40	60	100
19-208-0604	Marine Refrigeration and Air Conditioning	3	1	0	3	40	60	100
19-208-0605	Marine Internal Combustion Engines — II	3	1	0	3	40	60	100
19-208-0606	Machine Design	3	1	0	3	40	60	100
19-208-0607	Naval Architecture — I	3	1	0	3	40	60	100
19-208-0608	Fire Control Engineering Lab	0	0	3	1	25	25	50
19-208-0609	Mechanical Lab	0	0	3	1	25	25	50
-	**TOTAL**	21	7	6	23	-	-	-

CA- Continuous Assessment , **SEE** – Semester End Examination

SEMESTER VII

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0701	Ship in Campus — I	0	0	3	1	50	-	50
19-208-0702	Ship in Campus — II	0	0	8	4	50	-	50
19-208-0703	Ship in Campus — III	0	0	4	2	50	-	50
19-208-0704	Ship in Campus — IV	0	0	6	3	50	-	50
19-208-0705	Ship in Campus — V	0	0	11	5	50	-	50
19-208-0706	Ship in Campus — VI	0	0	7	4	50	-	50
19-208-0707	Ship in Campus — VII	0	0	3	1	50	-	50
-	**TOTAL**	0	0	42	20	-	-	-

CA- Continuous Assessment, **SEE** – Semester End Examination

SEMESTER VIII

Code No	Subject	L Hrs/Wk	T Hrs/Wk	PD Hrs/Wk	C	CA	SEE	Total
19-208-0801	Safe Watch Keeping and Engine Resource Management	4	-	0	3	40	60	100
19-208-0802	Ship Operation and Management	4	-	0	3	40	60	100
19-208-0803	Maritime Statutory Regulations	4	-	-	3	40	60	100
19-208-08**	Elective — I	3	1	0	3	40	60	100
19-208-08**	Elective — II	3	1	0	3	40	60	100
19-208-0812	Simulation and Control Lab	-	-	3	1	25	25	50
19-208-0813	Seminar	3	-	-	2	50	-	50
19-208-0814	Project	-	-	10	4	200	-	200
19-208-0815	Viva-voce	-	-	0	1	-	50	50
-	**TOTAL**	21	2	13	23	-	-	-

CA- Continuous Assessment , **SEE** – Semester End Examination

Details of Faculty

Sl. No.	Name and Designation	Communication
1.	Prof. M.P.John, Director	2862719,2576606 9447190644 johnmukkadayil@gmail.com
2.	Prof. N.G. Nair, Course in-Charge	0478-2813617/9349409700 (Res./Mob.) 2575225/2862721,2721 (Office and Intercom) Ngnair2008@gmail.com
3.	Sri. Roy V. Paul, Associate Professor & Course Co-ordinator	2575224,9605781266 (Res./Mob.) roypaulmar@gmail.com
4.	Sri. R. Venugopal Professor	9961000760 Venulatha2@rediffmail.com
5.	Sri. Jis George Associate Professor	9895485037 mailjisgeorge@gmail.com
6.	Sri. Ayyappankutty K.M. Assistant Professor	9961949280
7.	Smt. Misha K.M. Assistant Professor	9567913675
8.	Ms. Chinchu Varghese Assistant Professor	9496464138
9.	Ms. Aathira M.J. Assistant Professor	9446805156
10.	Sri. Anoop Mathew Kurian Assistant Professor	80897955028
11.	Sri. Bijoydas U.R. Assistant Professor	9744584852

KUNJALI MARAKKAR SCHOOL OF MARINE ENGINEERING (PG)

M.TECH. DEGREE IN MARINE ENGINEERING

SEMESTER I

Course Code	Subject	L Hrs/Wk	T Hrs/Wk	P Hrs/Wk	No.of Credits
18-438-0101	Marine Diesel Engines-Design &Performance	3	1	0	4
18-438-0102	Ship Dynamics & Marine Machinery System Installation	3	1	0	4
18-438-01**	Elective-I	3	1	0	3
18-438-01**	Elective-II	3	1	0	3
18-438-0109	CAD/Computer	0	0	3	1
18-438-0110	Seminar I	0	0	3	1
18-438-0111	Research Methodology and IPR TOTAL	2	1	0	2
.	TOTAL	14	5	6	18

Total Credits of the M.Tech. programme =72

SEMESTER II

Course Code	Subject	L Hrs/Wk	T Hrs/Wk	P Hrs/Wk	No.of Credits
18-438-0201	Advanced Welding Technology	3	1	0	4
18-438-0202	Ship Design and Economics	3	1	0	4
18-438-02**	Elective-III	3	1	0	3
18-438-02**	Elective-IV	3	1	0	3
18-438-0209	Metallurgy Lab	0	0	3	1
18-438-0210	Seminar II	0	0	3	1
18-438-0211	Mini Project / Internship	0	0	3	2
.	TOTAL	12	4	9	18

Total Credits of the M.Tech. programme =72

SEMESTER III

Course Code	Subject	L Hrs/Wk	T Hrs/Wk	P Hrs/Wk	No.of Credits
18-438-03**	Elective-V	3	1	0	3
18-438-03**	Elective-VI	3	1	0	3
18-438-0307	Dissertation (Phase –I)	0	0	20	12
	TOTAL	6	2	20	18

Total Credits of the M.Tech. programme =72

SEMESTER IV

Course Code	Subject	L Hrs/Wk	T Hrs/Wk	P Hrs/Wk	No.of Credits
18-438-0401	Dissertation(Phase-II)	0	0	30	18
.	TOTAL	0	0	30	18

Total Credits of the M.Tech. Programme =72

LIST OF ELECTIVES

ELECTIVES I & II (Semester I)

18-438-0103 Advanced Theory of Vibrations
18-438-0104 Maritime Safety and Environment
18-438-0105 Computational Methods in Engineering
18-438-0106 Gas Turbines
18-438-0107 Port Logistics and Planning
18-438-0108 Optimization Techniques

ELECTIVES III & IV (Semester II)

18-438-0203 Combustion and Pollution
18-438-0204 Finite Element Analysis
18-438-0205 Energy Conservation & Management
18-438-0206 Quantitative techniques for managerial Decisions
18-438-0207 Numerical Methods in Thermal Engineering
18-438-0208 System Simulation and Modeling

ELECTIVES V & VI (Semester III)

18-438-0301 Marine Corrosion & Prevention
18-438-0302 Plant Maintenance & Safety
18-438-0303 CFD and its Application
18-438-0304 Marine Transportation and Economics
18-438-0305 Automatic Control Systems
18-438-0306 Diagnostic Methods in Combustion Systems

<u>Details of Faculty</u>

Sl. No.	Name & Designation	Communication
1.	Sri.Roy V. Paul Course in-charge	2575224, 9605781266 (Res./Mob.) roypaulmar@gmail.com
2.	Sri. R. Venugopal Course Co-ordinator	9961000760 veniulatha2@rediffmail.com
3.	Sri.Jis George Associate Professor	9895485037 mailjisgeorge@gmail.com

REGULATIONS FOR THE B.TECH. DEGREE PROGRAMMES
(Except Marine Engineering) Offered under Faculty of Engineering

(With effect from 2019 Admissions)

REGULATIONS FOR B.Tech. DEGREE PROGRAMMES UNDER FACULTY OF ENGINEERING

The following regulations are made applicable to all the B.Tech. programmes offered by the University under Faculty of Engineering except Marine Engineering with effect from the academic year 2019-20.

1. B.Tech. Programme

The duration of the B.Tech. programme shall be eight semesters spanning over four academic years. Each semester shall consist of 15 weeks.

1.1 Branch

  a) Civil Engineering
  b) Computer Science and Engineering
  c) Electrical and Electronics Engineering
  d) Electronics and Communication Engineering
  e) Information Technology
  f) Mechanical Engineering
  g) Safety and Fire Engineering

1.2 Structure of the B.Tech. Programme

1.2.1 The programme of instruction will consist of the following:

  a) General (common) core courses comprising basic sciences, mathematics, and basic engineering;
  b) Engineering core courses introducing the student to the foundations of engineering in the respective branch;
  c) Elective courses enabling the student to opt and undergo a set of courses of interest to him/her;
  d) Professional practice including project, seminar, and industrial training; and
  e) Humanities courses on soft skills.

1.2.2. Every branch of the B.Tech. programme will have a curriculum and syllabus for the courses approved by the Academic Council.

1.2.3. The B.Tech. programmes offered by the University Departments/Schools/Cochin University College of Engineering, Kuttanad shall follow the credit system.

1.2.4. The curriculum of any branch of the B.Tech.. programme shall have a total of 160 credits as minimum.

1.3 Course Registration

It is mandatory for the students to register for the courses in each semester.

Before registration, the students should

  a) Clear all dues including any fees to be paid and should not have any disciplinary issues pending.

b) Meet the requirements regarding the minimum number of credits for promotion stipulated in clause 1.10.

The dates for registration will be announced by the School/College in their academic calendar. Late registration will be allowed up to 7 working days from the commencement of the semester with late registration fee.

1.4 Mode of Evaluation

1.4.1. The performance of the students in theory courses will be evaluated based on continuous assessment and semester end examination. In the case of laboratory courses, the evaluation will be based on continuous assessment and semester end assessment which will be carried out internally.

1.4.2. For theory courses, there will be 40% weightage for internal assessment and 60% weightage for semester end examination. For practical courses, continuous assessment and semester end assessment will carry 50% weightage each.

1.4.3. For theory courses, the assessment pattern will be as follows:

Continuous Assessment:

   a)   First Periodical Test   - Maximum marks: 12.5
   b)   Second Periodical Test - Maximum marks: 12.5
   c)   Assignments   - Maximum marks: 10
   d)   Attendance   - Maximum marks: 5

Semester End Examination

   a)   Exam shall be shall be of 3 hours duration.
   b)   Maximum marks: 60

1.4.4. For laboratory courses, the assessment pattern will be as follows:

Continuous Assessment:

The marks may be awarded on the basis of the performance of the student in the laboratory sessions. The break-up of marks for continuous assessment of laboratory courses shall be:

   a) Practical records/Outputs - Maximum marks: 10
   b) Lab work   - Maximum marks: 10
   c) Attendance   - Maximum marks: 5

Semester End Assessment:

The semester end assessment will consist of an examination and a viva voce.
Maximum marks for semester end examination: **25**

1.4.5. At the end of the semester, semester examination will be conducted in all the theory courses offered in the semester and they will be of three hours duration unless otherwise specified. The Controller of Examinations will make necessary arrangements for setting the question papers and valuation of answer books for the semester end examination of theory courses.

1.4.6. The semester end assessment for the laboratory courses shall be conducted internally by the respective department / division with at least two faculty members as examiners. One of the examiners for conducting the semester end laboratory examination shall be at the level of Associate Professor or above in the regular cadre.

1.4.7. In the case of project work, the project guide concerned shall make the continuous assessment. A committee consisting of the Project Coordinator (nominated by the Head of the Department / Division),

project guide, and at least one senior faculty member at the level of Associate Professor or above will carry out the final review.

The weightages for the assessment of project work shall be as follows:

Continuous assessment : 40 percent
Project Report : 20 percent
Final review : 40 percent

1.4.8. The Viva-voce examination at the end of VIII semester will be conducted by a panel of three examiners consisting of the Head of the Department/Division or his/her nominee and one senior faculty at the level of Associate Professor or above of the Department/Division and preferably, one external expert.

1.4.9. A candidate shall not be allowed to improve the continuous assessment marks in theory/laboratory courses. A candidate who desires to improve his/her marks in the semester end examination in theory courses shall be permitted to do so in the next available chance. This facility will be available only once for a theory course.

1.5 Course Completion and Earning of Credits.

Students registered for a course have to attend the course regularly and meet the attendance rules of the University and appear for all the internal evaluation procedures for the completion of the course. However, credits can be earned only on completion of the semester end examination and on getting a pass grade. Students, who have completed a course, but could not write the semester end examination for valid reasons, are permitted to write the examination at the next available chance and earn the credits without undergoing the course again.

1.6 Eligibility to Appear for the Semester End Examination

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

A student shall secure not less than 75% of overall attendance in a semester taking into account the total number of periods in all courses attended by the candidate as against the total number of periods in all courses offered during that particular semester.

1.6.2 The Principal/Head of the School/College shall have the power to condone shortage of attendance up to 5% (between less than 75% and 70%) in a particular semester due to medical reasons (hospitalization/accident/specific illness) duly verified and recommended by the Head of the Division/Department and on production of medical certificate from a registered medical practitioner endorsed by the University Medical Officer and on payment of the required fee. However, such condonation for shortage of attendance shall be given only twice during the entire duration of the B.Tech.. programme.

1.6.3 The Vice Chancellor shall have the power to condone shortage of attendance up to additional 5% (between less than 70% and 65%) in a particular semester due to medical reasons (hospitalization/accident/specific illness) duly verified and recommended by the Principal/Head of the School/College and on production of Medical certificate from a registered medical practitioner endorsed by the University Medical Officer and on payment of the required fee. However, such condonation for shortage of attendance shall be given only twice during the entire duration of the B.Tech.. programme.

1.6.4 Candidates who secure overall attendance of less than 65% (subject to clauses 1.6.2 and 1.6.3 above) will not be permitted to write the semester end examinations and will not be permitted to go to next/subsequent semester. They are required to repeat the incomplete semester in the next academic year.

1.7 Eligibility to Write the Supplementary Examination

Failed candidates and those who could not write the semester end examination due to health reasons or other contingencies that are approved by the Head of the School/College can register for the supplementary examination. Those who wish to improve their performance in the semester end examinations can also register for the same, subject to the provisions of clause 1.4.9. Grades awarded in the supplementary examination will be taken as semester grades in these subjects and will be based on the semester examination grading pattern in that subject. In the case of candidates appearing for improvement of marks, the higher mark obtained will be considered for the purpose of grading.

A candidate who fails to obtain a pass in courses having only continuous assessment will be permitted to repeat the course along with the junior batches.

1.8. Revaluation

A candidate can apply for revaluation of his/her semester end examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee along with prescribed application to the Controller of Examinations through the Head of Department/School/College. The Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Head of the Department/School/College. Revaluation is not permitted for laboratory courses, courses having only continuous assessment, seminar and project work.

1.9. Pass Requirements

A candidate has to obtain a minimum of 50% marks for continuous assessment and semester end examination put together with a minimum of 40% marks in the semester end examination for a pass in theory and laboratory courses.
In the case of theory/laboratory courses having only continuous assessment, a candidate has to obtain a minimum of 50% marks in continuous assessment for a pass.

1.10 Promotion to Higher Semesters

A student will be given at least one regular chance and one supplementary chance for the semester end examination of a particular semester in both theory and practical courses to obtain a pass grade before he/she is assessed for promotion to higher semesters.

Promotion to III, V and VII semesters shall be subject to the following conditions:

Promotion to	Minimum number of credits to be earned
III Semester	10 out of 20 credits of Semester I
V Semester	30 out of 60 credits of Semesters I, II, &III
VII Semester	50 out of 100 credits of Semesters I to V

1.11 Grading

1.11.1. Grades shall be awarded to the students in each course based on the total marks obtained in continuous assessment and at the end semester examination and as per the provisions of clause 1.4.1.

The grading pattern shall be as follows:

Marks obtained (Percentage)	Grade	Grade points
90 to 100	S	10
80 – 90	A	9
70 – 80	B	8
60 – 70	C	7
50 – 60	D	6
< 50	F	0

Note: Where X – Y range denotes 'X' inclusive and 'Y' exclusive

1.11.2. A student is considered to have credited a course or earned credits in respect of a course if he/she secures a grade other than F for that course.

1.11.3. Grade Point Average.

 The academic performance of a student in a semester is indicated by the Grade Point Average (GPA).

$$GPA = \frac{G_1C_1 + G_2C_2 + G_3C_3 + \text{----------}G_nC_n}{C_1 + C_2 + C_3 + \text{-----------------}C_n}$$

Where 'G' refers to the grade point and 'C' refers to the credit value of the corresponding course undergone by the student.

The Grade Point Average (GPA) for each semester will be calculated only for those students who have passed all the registered courses of that semester. Similarly, Cumulative Grade Point Average (CGPA) up to any semester will be calculated only for those students who have passed all the courses up to that semester.

1.11.4. Grade Card

The Grade Card issued at the end of the semester to each student by the Controller of Examinations, will contain the following:

a) The code, title, number of credits of each course registered in the semester,
b) The letter grade obtained,
c) The total number of credits earned by the student upto the end of that semester and
d) GPA & CGPA.

1.11.5. Classification

On successful completion of the programme, CGPA will be calculated as follows:

$$CGPA = \frac{C_1 GP_1 + C_2GP_2 + C_3 GP_3 + \text{----------}C_nGP_n}{C_1 + C_2 + C_3 + \text{-----------------}C_n}$$

Where 'GP' refers to the grade point average (GPA) and 'C' refers to the total number of credits obtained by a student in a particular semester.

The classification based on CGPA is as follows:

CGPA 8 and above   : First Class with distinction
CGPA 6.5 and above, but less than 8   : First Class
CGPA 6 and above, but less than 6.5   : Second Class.

1.11.6. Conversion of GPA/CGPA to Percentage marks

The following formula shall be used to convert the SGPA/CGPA obtained by a student to percentage marks.

Percentage marks = (GPA/CGPA – 0.5) 10

1.12 Electives

The curriculum for each programme consists of four Professional Electives and two Open Electives. The students shall select one Open Elective from among the courses offered in that particular semester by a Division/Department other than his/her Division/Department.

1.13 Faculty Advisor

To help the students in planning their courses of study and for general advice on the academic programme, the Head of the Department will attach a certain number of students to a teacher of the Department who shall function as Faculty Advisor for these students throughout their period of study. Such Faculty Advisor shall advise the students and monitor the courses taken by the students, check the attendance and progress of the students attached to him/her and counsel them periodically. If necessary, the Faculty Advisor may also discuss with or inform the parents about the progress/performance of the students concerned.

1.14 Class Committee

A class committee consists of teachers of the class concerned, student representatives and a chairperson who does not handle any subject for the class. It is like the 'Quality Circle' (more commonly used in industries), with the overall goal of improving the teaching-learning process. The functions of the class committee include:

   a. Solving problems experienced by students in the classroom and in the laboratories in consultation with Head of the Division/Principal/Director.
   b. Clarifying the regulations of the degree programme and the details of rules therein.
   c. Informing the student representatives, the academic schedule including the dates of assessments and the syllabus coverage for each assessment.
   d. Informing the student representatives, the details of regulations regarding weightage used for each assessment.
   e. Discussing in the class committee meeting the breakup of marks for each experiment/exercise/module of work, in case of practical course (laboratory/ drawing/project work/seminar etc.) and informing the students.
   f. Analysing the performance of the students of the class after each test and finding ways and means of improving the performance of the students.
   g. Identifying the students who are low achievers or weak in their subjects if any, and requesting the teachers concerned to provide some additional help or guidance or coaching to such students.

The class committee is normally constituted by the Head of the Division. However, if the students of different branches are mixed in each class the class committee is to be constituted by the Principal/Director. The class committee shall be constituted within a week from the date of commencement of a semester. At least 4 student representatives from the respective class (usually 2 boys and 2 girls) shall be included in the class committee. The student representatives shall be nominated on the basis of their academic performance since the first semester of the B.Tech. programme. In the case of first and second semesters, the rank obtained in the Common Admission Test (CAT) shall be the criterion for nominating the student representatives. The Chairperson of the class committee may invite the Faculty Advisor(s) and the Head of the Division to the meeting of the class committee. The Chairperson of the class committee is required to prepare the minutes of every meeting, submit the same to the Head of the Division within two days of the meeting and arrange to circulate the same among students concerned and teachers. If there are some points in the minutes requiring action by the University, the same shall be brought to the attention of the Principal/Director and the Registrar.

The first meeting of the class committee shall be held within fifteen days from the date of commencement of the semester. The nature and weightage of internal assessments shall be decided in the first meeting, within the framework of the regulations and the same shall be communicated to the students. Two or three subsequent meetings in a semester may be held at suitable intervals. During these meetings the student members representing the entire class, shall meaningfully interact and express their opinions and suggestions of the class to improve the effectiveness of the teaching-learning process.

1.15. Course Committee for Common Courses

Each common theory course offered to more than one discipline or group of disciplines shall have a "Common Course Committee" comprising all the teachers teaching the common course with one of them nominated as Common Course Coordinator. The nomination of the Course Coordinator shall be made by the

Principal/Director in consultation with Heads of Divisions from among the teachers teaching the common courses. The "Common Course Committee" shall meet as often as possible and ensure uniform evaluation of internal assessments after arriving at a common scheme of evaluation for the tests. Wherever feasible, the common course committee shall prepare a common questionpaper for the test(s).

1.16 Discipline

Every student is required to observe discipline and decorous 102otmail102e both inside and outside the campus and refrain from any activity which may tarnish the image of the University as per the provisions of the Cochin University Students' (Conduct and Disciplinary) Code – 2005. Any act of indiscipline, 102otmail102ed102r including unfair practice in examinations will be referred to the authorities of the University that will make a detailed enquiry on the matter and decide on the course of action to be taken.

1.17 Amendment to Regulations

Notwithstanding all that has been stated above, the University has the right to modify any of the above regulations from time to time.
(Amendment –pattern of QP-U O No.CUSAT/CEO.A1/597/2019 dated 19.11.2019) .

B.TECH. DEGREE PROGRAMME

Scheme of Examinations for Semesters I and II (2019 admission onwards)

SEMESTER I [Stream A]

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-200-0101A	Computer Programming	3	1	0	3	40	60	100
19-200-0102A	Engineering Chemistry	3	1	0	3	40	60	100
19-200-0103A	Engineering Graphics	2	1	3	3	40	60	100
19-200-0104A	Basic Electrical Engineering	3	0	0	3	40	60	100
19-200-0105A	Basic Electronics Engineering	3	0	0	3	40	60	100
19-200-0106A	Environmental Studies	3	1	0	3	40	60	100
19-200-0107A	Electrical Engineering Workshop	0	0	3	1	25	25	50
19-200-0108A	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**20**			

CA – Continuous Assessment, SEE – Semester End Examination

Stream A: Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering and Safety and Fire Engineering.

SEMESTER II [Stream A]

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D HrsWk	C	CA	SEE	Total
19-200-0201A	Calculus	3	1	0	3	40	60	100
19-200-0202A	Engineering Physics	3	1	0	3	40	60	100
19-200-0203A	Engineering Mechanics	4	1	0	3	40	60	100
19-200-0204A	Basic Civil Engineering	3	0	0	3	40	60	100
19-200-0205A	Basic Mechanical Engineering	3	0	0	3	40	60	100
19-200-0206A	Soft Skills Development	2	1	0	2	50	-	50
19-200-0207A	Civil Engineering Workshop	0	0	3	1	25	25	50
19-200-0208A	Mechanical Engineering Workshop	0	0	3	1	25	25	50
19-200-0209A	Language Lab	0	0	1	1	25	25	50
19-200-0210A	NSS/Nature conservation Activities	0	0	1	0	-	-	-
	TOTAL	**18**	**4**	**8**	**20**			

SEMESTER I [Stream B]

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	CA	SEE	Total
19-200-0101B	Calculus	3	1	0	3	40	60	100
19-200-0102B	Engineering Physics	3	1	0	3	40	60	100
19-200-0103B	Engineering Mechanics	4	1	0	3	40	60	100
19-200-0104B	Basic Civil Engineering	3	0	0	3	40	60	100
19-200-0105B	Basic Mechanical Engineering	3	0	0	3	40	60	100
19-200-0106B	Soft Skills Development	2	1	0	2	50	-	50
19-200-0107B	Civil Engineering Workshop	0	0	3	1	25	25	50
19-200-0108B	Mechanical Engineering Workshop	0	0	3	1	25	25	50
19-200-0109B	Language Lab	0	0	1	1	25	25	50
19-200-0110B	NSS/Nature conservation Activities	0	0	1	0	-	-	-
	TOTAL	**18**	**4**	**8**	**20**			

CA – Continuous Assessment, SEE – Semester End Examination

Stream B: Computer Science and Engineering, Electronics and Communication Engineering and Information Technology

SEMESTER II (STREAM B)

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks CA	SEE	Total
19-200-0201B	Computer Programming	3	1	0	3	40	60	100
19-200-0202B	Engineering Chemistry	3	1	0	3	40	60	100
19-200-0203B	Engineering Graphics	2	1	3	3	40	60	100
19-200-0204B	Basic Electrical Engineering	3	0	0	3	40	60	100
19-200-0205B	Basic Electronics Engineering	3	0	0	3	40	60	100
19-200-0206B	Environmental Studies	3	1	0	3	40	60	100
19-200-0207B	Electrical Engineering Workshop	0	0	3	1	25	25	50
19-200-0208B	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**20**			

Evaluation Pattern for Theory and Practical courses
   1. Theory courses

Type of Questions for Semester End Examination (SEE)
PART – A (8 x 4 = 32 marks)
Question No. I (a) to (h) – Eight short answer questions of 4 marks each with twoquestions from each of the four modules.
PART – B (4 x 10 = 40 marks)
Question nos. II, III with sub sections (a), (b) ---- 10 marks each with option toanswer either II or III from Module I.
Question nos. IV, V with sub sections (a), (b) ---- 10 marks each with option toanswer either IV or V from Module II.
Question nos. VI, VII with sub sections (a), (b) ---- 10 marks each with option toanswer either VI or VII from Module III.
Question nos. VIII, IX with sub sections (a), (b) ---- 10 marks each with option toanswer either VIII or IX from Module IV.
The maximum marks that can be awarded for the Semester End Examination (SEE) will be only 60, even though the questions are for 72 marks.
   2. Practical courses

50% marks is earmarked for Continuous Evaluation, and 50% marks for Semester End Examination. The Semester End Examination to be conducted by a minimum of two examiners – one, not below the rank of an Associate Professor. A candidate shall secure a minimum of 50% marks in the aggregate and 40% minimum in the Semester End Examination for a pass.

In the case of courses having only continuous assessment, a minimum of 50% marks in the assessment is required for a pass.

B.TECH. DEGREE COURSE IN INFORMATION TECHNOLOGY
(2019 Admissions)
SCHEME OF EXAMINATIONS

SEMESTER III

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-200-0301	* Linear Algebra and TransforM.Tech.niques	3	1	0	3	40	60	100
19-204-0302	Digital Electronic	3	1	0	3	40	60	100
19-204-0303	**Discrete Computational Structures	3	1	0	3	40	60	100
19-204-0304	Data Base Management Systems	3	1	0	3	40	60	100
19-204-0305	Data structures and Algorithms in C	3	1	0	3	40	60	100
19-204-0306	Computer Organization & Architecture	3	1	0	3	40	60	100
19-204-0307	Hardware Design Laboratory	0	0	3	1	25	25	50
19-204-0308	Data structures Laboratory in C	0	0	3	1	25	25	50
	TOTAL	18	6	6	20			

* Common for CE/CS/EC/EE/IT/ME/SE
** Common for CS/IT

SEMESTER IV

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-200-0401	* Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
19-204-0402	Data Communication & Networking	3	1	0	3	40	60	100
19-204-0403	Operating Systems	3	1	0	3	40	60	100
19-204-0404	Software Engineering	3	1	0	3	40	60	100
19-204-0405	Internet Programming	3	1	0	3	40	60	100
19-204-0406	Object Oriented Programming in c++	3	1	0	3	40	60	100
19-204-0407	Object Oriented Programming Laboratory in C++	0	0	3	1	25	25	50
19-204-0408	Mini Project– RDBMS based	0	0	3	1	50	-	50
	TOTAL	18	6	6	20			

* Common for CE/CS/EC/EE/IT/ME/SE

SEMESTER V

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-200-0501	* Numerical and Statistical Methods	3	1	0	3	40	60	100
19-204-0502	Computational Intelligence	3	1	0	3	40	60	100
19-204-0503	Object Oriented Modeling & Design	3	1	0	3	40	60	100
19-204-0504	Design and Analysis of Algorithms	3	1	0	3	40	60	100
19-204-0505	Big Data Analytics	3	1	0	3	40	60	100
19-204-0506	Formal Languages and Automata Theory	3	1	0	3	40	60	100
19-204-0507	Software Systems Lab	0	0	3	1	25	25	50
19-204-0508	Software Engineering Lab	0	0	3	1	25	25	50
	TOTAL	18	6	6	20			

* Common for CE/CS/EC/EE/IT/ME/SE

SEMESTER VI

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-204-0601	Financial Management & E-banking	3	1	0	3	40	60	100
19-204-0602	*Compiler Design	3	1	0	3	40	60	100
19-204-0603	Deep Learning	3	1	0	3	40	60	100
19-204-0604	Cloud Computing	3	1	0	3	40	60	100
19-204-0605	Android Programming	3	1	0	3	40	60	100
19-204-06**	Professional Elective – I	3	1	0	3	40	60	100
19-204-0610	Cloud and Data Analytics Laboratory	0	0	3	1	25	25	50
19-204-0611	Mini Project – Android based Internet Project	0	0	3	1	50	-	50
	TOTAL	18	6	6	20			

* Common for CS/IT

19-204-0606 to 0609: PROFESSIONAL ELECTIVE – I

19-204-0606: Mobile computing

19-204-0607: .Wireless networking

19-204-0608: Soft Computing

19-204-0609: Recommender System

SEMESTER VII

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-204-0701	*Principles of Management	3	1	0	3	40	60	100
19-204-0702	Data Security and Cryptography	3	1	0	3	40	60	100
19-204-0703	Computer Graphics and Visual Computing	3	1	0	3	40	60	100
19-204-07**	Professional Elective – II	3	1	0	3	40	60	100
19-204-07**	Open Elective – I	3	1	0	3	40	60	100
19-204-0712	Computer Graphics Laboratory	0	0	3	1	25	25	50
19-204-0713	Mini Project – Multimedia Project	0	0	3	1	50	-	50
19-204-0714	Entrepreneurship Development	0	0	2	1	50	-	50
19-204-0715	Project Phase I	0	0	1	1	50	-	50
19-204-0716	Industrial Internship	0	0	1	1	50	-	50
	TOTAL	15	5	10	20			

* Common for CS/EC/EE/IT

19-204-0704 to 0707: PROFESSIONAL ELECTIVE – II   19-204-0708 to 0711: OPEN ELECTIVE – I

19-204-0704: Ethical Hacking

19-204-0708: Information Storage & Management

19-204-0705: Quantum Computing

19-204-0709: Game Design

19-204-0706: High Performance Computing Architecture

19-204-0710 : Multimedia Computing

19-204-0707: Cyber Physical Systems

19-204-0711: Mobile Data Management

SEMESTER VIII

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks		Total
						CA	SEE	
19-204-0801	Internet of Things	3	1	0	3	40	60	100
19-204-08**	Professional Elective – III	3	1	0	3	40	60	100
19-204-08**	Professional Elective – IV	3	1	0	3	40	60	100
19-204-08**	Open Elective – II	3	1	0	3	40	60	100
19-204-0814	Seminar	0	0	3	1	50	-	50
19-204-0815	Project Phase – II	0	0	11	6	200	-	200
19-204-0816	Comprehensive Viva Voce	0	0	0	1	-	50	50
	TOTAL	12	4	14	20			

19-204-0802 to 0805: PROFESSIONAL ELECTIVE – III PROFESSIONAL   19-204-0806 to 0809:

ELECTIVE – IV

19-204-0802: Robotic Process Automation Testing

19-204-0806 : Software Quality and

19-204-0803: Software Project Management

19-204-0807: Electronic Business and Services

19-204-0804: Service Oriented Architecture

19-204-0808: Randomized Algorithms

19-204-0805: Cognitive Computing

19-204-0809: Cyber Laws and Information Security

19-204-0810 to 0813 OPEN ELECTIVE II

19-204-0810: Design Thinking
19-204-0811: Soft skills & Integral Development
19-204-0812: Social Computing
19-204-0813: Research Methodology

B.TECH. DEGREE PROGRAMME IN SAFETY & FIRE ENGINEERING
Scheme of Examinations (2019   admissions)

SEMESTER III

Code No.	Subject	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	CA	SEE	Total
19-200-0301	Linear Algebra & TransforM.Tech.niques*	3	1	0	3	40	60	100
19-206-0302	Chemical Process Principles	3	1	0	3	40	60	100
19-206-0303	Engineering Fluid Mechanics and Machinery	3	1	0	3	40	60	100
19-206-0304	Fire Engineering Fundamentals	3	1	0	3	40	60	100
19-206-0305	Elements of Machine Drawing	1	0	3	3	40	60	100
19-206-0306	Principles of Safety Management	3	1	0	3	40	60	100
19-206-0307	Fluid Mechanics and Machinery Laboratory	0	0	3	1	25	25	50
19-206-0308	Safety Engineering Laboratory	0	0	3	1	25	25	50
	TOTAL	**16**	**5**	**9**	**20**			

Common to CE/CS/EC/EE/IT/ME/SE

SEMESTER IV

Code No.	Subject	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	CA	SEE	Total
19-200-0401	Complex Variables and Partial Differential Equations*	3	1	0	3	40	60	100
19-206-0402	Heat and Mass Transfer Operations	3	1	0	3	40	60	100
19-206-0403	Strength of Materials	3	1	0	3	40	60	100
19-206-0404	Planning and Design of Fire Protection Systems	3	1	0	3	40	60	100
19-206-0405	Electrical Technology and Safety	3	1	0	3	40	60	100
19-206-0406	Occupational Health and First Aid	3	1	0	3	40	60	100
19-206-0407	Strength of Materials Laboratory	0	0	3	1	25	25	50
19-206-0408	Electrical Technology Laboratory	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

* Common to CE/CS/EC/EE/IT/ME/SE*

SEMESTER V

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P Hrs/Wk	C	CA	SEE	Total
19-200-0501	Numerical and Statistical Methods*	3	1	0	3	40	60	100
19-206-0502	Chemical Technology and Reaction Engineering	3	1	0	3	40	60	100
19-206-0503	Principles of Engineering Design	3	1	0	3	40	60	100
19-206-0504	Structural Fire Safety	3	1	0	3	40	60	100
19-206-0505	Manufacturing Processes	3	1	0	3	40	60	100
19-206-0506	Chemical Process Safety	3	1	0	3	40	60	100
19-206-0507	Chemical Engineering Laboratory	0	0	3	1	25	25	50
19-206-0508	Fire Safety Training	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

* Common to CE/CS/EC/EE/IT/ME/SE

SEMESTER VI

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P Hrs/Wk	C	CA	SEE	Total
19-206-0601	Legal Aspects of HSE	3	1	0	3	40	60	100
19-206-0602	Process Instrumentation and Control	3	1	0	3	40	60	100
19-206-0603	Hazard Control in Manufacturing	3	1	0	3	40	60	100
19-206-0604	Life Safety in Building Fire	3	1	0	3	40	60	100
19-206-0605	Environmental Engineering and Management	3	1	0	3	40	60	100
19-206-06**	Professional Elective I	3	1	0	3	40	60	100
19-206-0610	Machine Shop	0	0	3	1	25	25	50
19-206-0611	Computational Laboratory	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

**Professional Elective I
19-206-0606 Power Plant Engineering
19-206-0607 Safety in Petroleum and Petrochemical Industries
19-206-0608 Food and Biosafety
19-206-0609 Fault Detection and Diagnosis

SEMESTER VII

Code No.	Subject	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	CA	SEE	Total
19-206-0701	Hazard Identification and Risk Assessment	3	1	0	3	40	60	100
19-206-0702	Transportation Systems and Safety	3	1	0	3	40	60	100
19-206-0703	Safety in Construction	3	1	0	3	40	60	100
19-206-07**	Professional Elective II	3	1	0	3	40	60	100
19-206-07***	Open Elective I	3	1	0	3	40	60	100
19-206-0712	Fire Engineering Laboratory	0	0	3	1	25	25	50
19-206-0713	Industrial Hygiene Laboratory	0	0	3	1	25	25	50
19-206-0714	Entrepreneurship Development	0	0	2	1	50	-	50
19-206-0715	Project Phase – I	0	0	1	1	50	-	50
19-206-0716	Industrial Internship*	0	0	1	1	50	-	50
	TOTAL	**15**	**5**	**10**	**20**			

Industrial Internship of a minimum duration of two weeks during May-June vacation period before the commencement of 7th Semester classes is mandatory.

**Professional Elective II

19-206-0704 Principles of Industrial Management

19-206-0705 Reliability Engineering
19-206-0706 Automobile Engineering and Safety
19-206-0707 Industrial Ecology

***Open Elective I
19-206-0708 Industrial Psychology
19-206-0709 Entrepreneurship and Small Business Enterprises
19-206-0710 Science and Technology of Nano Materials
19-206-0711 Energy Management and Conservatio

SEMESTER VIII

Code No.	Subject	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	CA	SEE	Total
19-206-0801	Advanced Safety Engineering and Management	3	1	0	3	40	60	100
19-206-08**	Professional Elective III	3	1	0	3	40	60	100
19-206-08**	Professional Elective IV	3	1	0	3	40	60	100
19-206-08**	Open Elective II	3	1	0	3	40	60	100
19-206-0814	Seminar	0	0	3	1	50	-	50
19-206-0815	Project Phase II	0	0	11	6	200	-	200
19-206-0816	Comprehensive Viva Voce	0	0	0	1	-	50	50
	TOTAL	**12**	**4**	**14**	**20**			

**Professional Elective III
19-206-0802 Total Quality Management
19-206-0803 Introductory Design of Structures
19-206-0804 Computational Fluid Dynamics
19-206-0805 Intellectual Property Rights

**Professional Elective IV
19-206-0806 Human Factors Engineering
19-206-0807 Statistical Methods for Engineers
19-206-0808 Fluid Power Safety
19-206-0809 Explosives Technology and Safety

**Open Elective II
19-206-0810 Disaster Management
19-206-0811 History and Philosophy of Science
19-206-0812 Non-destructive Testing Methods
19-206-0813 Environmental Economics.

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SEMESTER I [Stream A]

Code No.	Subject	L Hrs /Wk	T Hrs /Wk	P/D Hrs/Wk	C	Marks CA	Marks SEE	Total
19-200-0101A	Computer Programming	3	1	0	3	40	60	100
19-200-0102A	Engineering Chemistry	3	1	0	3	40	60	100
19-200-0103A	Engineering Graphics	2	1	3	3	40	60	100
19-200-0104A	Basic Electrical Engineering	3	0	0	3	40	60	100
19-200-0105A	Basic Electronics Engineering	3	0	0	3	40	60	100
19-200-0106A	Environmental Studies	3	1	0	3	40	60	100
19-200-0107A	Electrical Engineering Workshop	0	0	3	1	25	25	50
19-200-0108A	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**20**			

CA – Continuous Assessment, SEE – Semester End Examination

*Stream A***:** Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering and Safety and Fire Engineering.

SEMESTER II [Stream A]

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	C	Marks CA	Marks SEE	Total
19-200-0201A	Calculus	3	1	0	3	40	60	100
19-200-0202A	Engineering Physics	3	1	0	3	40	60	100
19-200-0203A	Engineering Mechanics	4	1	0	3	40	60	100
19-200-0204A	Basic Civil Engineering	3	0	0	3	40	60	100
19-200-0205A	Basic Mechanical Engineering	3	0	0	3	40	60	100
19-200-0206A	Soft Skills Development	2	1	0	2	50	-	50
19-200-0207A	Civil Engineering Workshop	0	0	3	1	25	25	50
19-200-0208A	Mechanical Engineering Workshop	0	0	3	1	25	25	50
19-200-0209A	Language Lab	0	0	1	1	25	25	50
19-200-0210A	NSS/Nature conservation Activities	0	0	1	0	-	-	-
	TOTAL	**18**	**4**	**8**	**20**			

SEMESTER III

Code No.	Subject	Hrs/week L	Hrs/week T/D/P	C	Marks CA	Marks SEE	Total
19-200-0301*	Linear Algebra and Transform Techniques	3	1	3	40	60	100
19-201-0302	Surveying –I	3	1	3	40	60	100
19-201-0303	Strength of Materials	3	1	3	40	60	100
19-201-0304	Concrete Technology	3	1	3	40	60	100
19-201-0305	Fluid Mechanics –I	3	1	3	40	60	100
19-201-0306	Engineering Geology and Seismology	4	-	3	40	60	100
19-201-0307	Strength of Materials Lab	-	3	1	25	25	50
19-201-0308	Concrete Lab	-	3	1	25	25	50
	TOTAL	**17**	**13**	**20**			

*Common to all branches

SEMESTER IV

Code No.	Subject	L	T/D/P	C	CA	SEE	Total
		Hrs/week		C	Marks		Total
19-200-0401*	Complex Variables and Partial Differential Equations	3	1	3	40	60	100
19-201-0402	Surveying –II	3	1	3	40	60	100
19-201-0403	Analysis of Determinate Structures	3	1	3	40	60	100
19-201-0404	Transportation Engineering –I	4		3	40	60	100
19-201-0405	Fluid Mechanics II	3	1	3	40	60	100
19-201-0406	Building Technology and Planning	3	1	3	40	60	100
19-201-0407	Survey Practicals	-	3	1	25	25	50
19-201-0408	Fluid Mechanics Lab	-	3	1	25	25	50
	TOTAL	**19**	**11**	**20**			

*Common to all branches

SEMESTER V

Code No.	Subject	L	T/D/P	C	CA	SEE	Total
		Hrs/week		C	Marks		Total
19-200-0501*	Numerical and Statistical Methods	3	1	3	40	60	100
19-201-0502	Design of Concrete Structures-I	3	1	3	40	60	100
19-201-0503	Analysis of Indeterminate Structures	3	1	3	40	60	100
19-201-0504	Geotechnical Engineering –I	3	1	3	40	60	100
19-201-0505	Transportation Engineering –II	4		3	40	60	100
19-201-0506	Water Resources and Irrigation Engineering	4		3	40	60	100
19-201-0507	Geotechnical Engineering Lab	-	3	1	25	25	50
19-201-0508	Transportation Engineering Lab	-	3	1	25	25	50
	TOTAL	**20**	**10**	**20**			

*Common to all branches

SEMESTER VI

Code No	Subject	L	T/D/P	C	CA	SEE	Total
		Hrs/week		C	Marks		Total
19-201-0601	Environmental Engineering –I	3	1	3	40	60	100
19-201-0602	Design of Steel Structures	3	1	3	40	60	100
19-201-0603	Advanced Method of Structural Analysis	3	1	3	40	60	100
19-201-0604	Geotechnical Engineering –II	3	1	3	40	60	100
19-201-0605	Construction Management	4		3	40	60	100

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19-201-06**	Professional Elective- I	3	1	3	40	60	100
19-201-0610	Environmental Engineering Lab	-	3	1	25	25	50
19-201-0611	Computer Applications in Civil Engineering – I	-	3	1	25	25	50
	TOTAL	19	11	20			

19-201-0606 to 0609 Professional Elective – I	
Code	Name of Subject
19-201-0606	Sustainable Construction Techniques
19-201-0607	Traffic Engineering and Management
19-201-0608	Air Pollution Control and Management
19-201-0609	Ground Water Engineering

SEMESTER VII

Code No.	Subject	Hrs/week		C	Marks		Total
		L	T/D/P		CA	SEE	
19-201-0701	Environmental Engineering – II	3	1	3	40	60	100
19-201-0702	Quantity Surveying and Valuation	3	1	3	40	60	100
19-201-0703	Design of Concrete Structures – II	3	1	3	40	60	100
19-201-07**	Professional Elective- II	3	1	3	40	60	100
19-201-07**	Open Elective – I	3	1	3	40	60	100
19-201-0712	Computer Applications in Civil Engineering – II		3	1	25	25	50
19-201-0713	Seminar	-	3	1	50		50
19-201-0714	Entrepreneurship Development	-	1	1	50		50
19-201-0715	Industrial Training		2	1	50		50
19-201-0716	Project – Phase I		1	1	50		50
	TOTAL	**15**	**15**	**20**			

19-201-0704 to 0707 Professional Elective – II	
Code	Name of Subject
19-201-0704	Bridge Engineering
19-201-0705	Pavement Analysis and Design
19-201-0706	Ground Improvement Techniques
19-201-0707	Architecture and Town Planning

19-201-0708 to 0711 Open Elective – I	
Code	Name of Subject
19-201-0708	Finite Element method
19-201-0709	Principles of Management
19-201-0710	Industrial Waste Engineering and Management
19-201-0711	Introduction to Aquaculture Engineering

SEMESTER VIII

Code No.	Subject	Hrs/week		C	Marks		Total
		L	T/D/P		CA	SEE	
19-201-0801	Earthquake Engineering	4		3	40	60	100
19-201-08**	Professional Elective –III	3	1	3	40	60	100
19-201-08**	Professional Elective –IV	3	1	3	40	60	100
19-201-08**	Open Elective –II	3	1	3	40	60	100
19-201-0814	Structural Engineering and Building Technology Lab	-	3	1	25	25	50
19-201-0815	Project – Phase II		11	6	200		200
19-201-0816	Comprehensive Viva Voce			1		50	50
	TOTAL	13	17	20			

19-201-0802 to 0805 Professional Elective – III	
Code	Name of Subject
19-201-0802	Design of special Structures
19-201-0803	Solid Waste Management
19-201-0804	Construction Safety and Fire Engineering
19-201-0805	Remote Sensing and GIS

19-201-0806 to 0809 Professional Elective – IV	
Code	Name of Subject
19-201-0806	Retrofitting and Rehabilitation of Structures
19-201-0807	Construction Engineering and Materials Management
19-201-0808	Geoenvironmental Engineering
19-201-0809	Design of Hydraulic Structures

19-201-0810 to 0813 Open Elective – II	
Code	Name of Subject
19-201-0810	Building Services Engineering
19-201-0811	Environmental Impact Assessment
19-201-0812	Sustainable Built Environment
19-201-0813	Aquaculture Engineering in Practice

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SEMESTER III

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-200-0301	Linear Algebra & Transformation Techniques	3	1	0	3	40	60	100
19-203-0302	Computational Techniques for Electronics & Communication Engineering	3	1	0	3	40	60	100
19-203-0303	Network Theory	3	1	0	3	40	60	100
19-203-0304	Digital Electronics	3	1	0	3	40	60	100
19-203-0305	Solid State Electronics	3	1	0	3	40	60	100
19-203-0306	Electronic Circuits I	3	1	0	3	40	60	100
19-203-0307	Basic Electronics Lab	0	0	3	1	25	25	50
19-203-0308	Digital Electronics Lab	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

SEMESTER IV

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-200-0401	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
19-203-0402	Microprocessor Architecture	3	1	0	3	40	60	100
19-203-0403	Signals & Systems	3	1	0	3	40	60	100
19-203-0404	Digital System Design	3	1	0	3	40	60	100
19-203-0405	Communication Engineering I	3	1	0	3	40	60	100
19-203-0406	Electronic Circuits II	3	1	0	3	40	60	100
19-203-0407	Digital Systems & Programming Lab	0	0	3	1	25	25	50
19-203-0408	Electronic Circuits Lab I	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

SEMESTER V

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-200-0501	Numerical and Statistical Methods	3	1	0	3	40	60	100
19-203-0502	Electromagnetic Theory	3	1	0	3	40	60	100
19-203-0503	Embedded Systems	3	1	0	3	40	60	100
19-203-0504	Communication Engineering II	3	1	0	3	40	60	100
19-203-0505	Analog & Integrated Circuits	3	1	0	3	40	60	100
19-203-0506	Digital Signal Processing	3	1	0	3	40	60	100
19-203-0507	Digital Signal Processing Lab	0	0	3	1	25	25	50
19-203-0508	Electronic Circuits Lab II	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

SEMESTER VI

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-203-0601	Control Systems Engineering	3	1	0	3	40	60	100
19-203-0602	Microwave Techniques & Devices	3	1	0	3	40	60	100
19-203-0603	VLSI Design	3	1	0	3	40	60	100
19-203-0604	Information Theory & Coding	3	1	0	3	40	60	100
19-203-0605	Power Electronics	3	1	0	3	40	60	100
19-203-06**	Professional Elective – I	3	1	0	3	40	60	100
19-203-0610	Electronic Product Design Project	0	0	3	1	25	25	50
19-203-0611	Communication Lab I	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

19-203-0606 to 19-203-0609 Professional Elective – I	
Code No.	**Subject**
19-203-0606	Probability and Random Process
19-203-0607	Optical Fibre Communication
19-203-0608	FPGA based System Design
19-203-0609	Object Oriented Programming

SEMESTER VII

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-203-0701*	Principles of Management	3	1	0	3	40	60	100
19-203-0702	Antennas & Propagation	3	1	0	3	40	60	100
19-203-07**	Professional Elective II	3	1	0	3	40	60	100
19-203-07**	Open Elective I	3	1	0	3	40	60	100
19-203-0711	Microwave Engineering Lab	0	0	3	1	25	25	50
19-203-0712	Entrepreneurship Development	0	0	2	1	50	-	50
19-203-0713	Industrial Internship	0	0	0	1	50	-	50
19-203-0714	Seminar	0	3	0	1	50		50
19-203-0715	Project Phase I			6	4	100	-	100
	TOTAL	**12**	**7**	**11**	**20**			

*common for CS/EC/EE/IT

19-203-0704 to 19-203-0707 Professional Elective – II	
Code No.	Subject
19-203-0703	Satellite Communication
19-203-0704	Adaptive Signal Processing
19-203-0705	Digital Integrated Circuit Design
19-203-0706	Digital Image Processing

19-203-0708 to 19-203-0711 Open Elective – I	
Code No.	Subject
19-203-0707	Self awareness and Integral Management
19-203-0708	Advanced Computer Architecture
19-203-0709	Mechatronics
19-203-0710	Intellectual Property Rights

SEMESTER VIII

Code No.	Subject	L H/W	T H/W	P/D H/W	C	CA	SEE	Total
19-203-0801	Wireless Communication	3	1	0	3	40	60	100
19-203-0802	Electronic Measurements & Instrumentation	3	1	0	3	40	60	100
19-203-08**	Professional Elective III	3	1	0	3	40	60	100
19-203-08**	Professional Elective IV	3	1	0	3	40	60	100
19-203-08**	Open Elective II	3	1	0	3	40	60	100
19-203-0815	Project Phase II			10	6	200	-	200
19-203-0816	Comprehensive Viva Voce			0	1	-	50	50
	TOTAL	**15**	**5**	**10**	**20**			

19-203-0802 to 19-203-0805 Professional Elective – III	
Code No.	Subject
19-203-0803	Computer Communication and Networking
19-203-0804	Radar Systems
19-203-0805	Neuro-Fuzzy Systems
19-203-0806	Low Power VLSI Design

19-203-0806 to 19-203-0809 Professional Elective – IV	
Code No.	Subject
19-203-0807	Multimedia Communication System
19-203-0808	Electromagnetic Interference and Compatibility
19-203-0809	ASIC Design
19-203-0810	Advanced Digital System Design

19-203-0810 to 19-203-0813 Open Elective – II	
Code No.	Subject
19-203-0811	Industrial Electronics
19-203-0812	Memory and interconnects
19-203-0813	Introduction To Machine Learning
19-203-0814	Non-Conventional Sources of Energy

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SEMESTER III

Code No.	Subject	L H/ W	T H/ W	P/D H/ W	C	CA	SEE	Total
19-200-0301	*Linear Algebra & TransforM.Tech.niques	3	1	0	3	40	60	100
19-205-0302	Electrical Technology	3	1	0	3	40	60	100
19-205-0303	Mechanics of Solids	3	1	0	3	40	60	100
19-205-0304	Fluid Mechanics	3	1	0	3	40	60	100
19-205-0305	Metallurgy & Materials Science	3	1	0	3	40	60	100

Code No.	Subject	L H/W	T H/W	P/D H/W	C	CA	SEE	Total
19-205-0306	Machine Drawing	3	1	0	3	40	60	100
19-205-0307	Strength of Materials Lab	0	0	3	1	25	25	50
19-205-0308	Fluid Mechanics Lab	0	0	3	1	25	25	50
	TOTAL	18	6	6	20			

* Common for CE/CS/EC/EE/IT/ME/SE

CA – Continuous Assessment, SEE – Semester End Examination

SEMESTER IV

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks CA	SEE	Total
19-200-0401	*Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
19-205-0402	Metrology & Instrumentation	3	1	0	3	40	60	100
19-205-0403	Mechatronics	3	1	0	3	40	60	100
19-205-0404	Applied Thermodynamics	3	1	0	3	40	60	100
19-205-0405	Hydraulic Machinery	3	1	0	3	40	60	100
19-205-0406	Manufacturing Processes	3	1	0	3	40	60	100
19-205-0407	Metrology Lab	0	0	3	1	25	25	50
19-205-0408	Hydraulic Machinery Lab	0	0	3	1	25	25	50
	TOTAL	18	6	6	20			

* Common for CE/CS/EC/EE/IT/ME/SE

SEMESTER V

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks CA	SEE	Total
19-200-0501	*Numerical and Statistical Methods	3	1	0	3	40	60	100
19-205-0502	Mechanics of Machinery	3	1	0	3	40	60	100
19-205-0503	Machining Science & Machine Tools	3	1	0	3	40	60	100
19-205-0504	Thermal Engineering	3	1	0	3	40	60	100
19-205-0505	Industrial Management	3	1	0	3	40	60	100
19-205-0506	Power Plant Engineering	3	1	0	3	40	60	100
19-205-0507	Computational Methods Lab	0	0	3	1	25	25	50
19-205-0508	Machine Shop	0	0	3	1	25	25	50
	TOTAL	18	6	6	20			

* Common for CE/CS/EC/EE/IT/ME/SE

SEMESTER VI

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks CA	SEE	Total
19-205-0601	Dynamics of Machinery	3	1	0	3	40	60	100
19-205-0602	Machine Design – I	3	1	0	3	40	60	100
19-205-0603	Operations Management	3	1	0	3	40	60	100
19-205-0604	Heat and Mass Transfer	3	1	0	3	40	60	100
19-205-0605	CAD/CAM	3	1	0	3	40	60	100
19-205-06**	Professional Elective – I	3	1	0	3	40	60	100
19-205-0610	CAD/CAM Lab	0	0	3	1	25	25	50
19-205-0611	Heat and Mass Transfer Lab	0	0	3	1	25	25	50
	TOTAL	18	6	6	20			

19-205-0606 to 0609: **PROFESSIONAL ELECTIVE – I**
19-205-0606: Advanced Engineering Materials
19-205-0607: Energy Conservation and Environment Protection
19-205-0608: Advanced Mechanics of Solids
19-205-0609: Fundamentals of Combustion & Pollution

SEMESTER VII

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-205-0701	Refrigeration & Air Conditioning	3	1	0	3	40	60	100
19-205-0702	Vibration & Noise Control	3	1	0	3	40	60	100
19-205-0703	Machine Design – II	3	1	0	3	40	60	100
19-205-07**	Professional Elective – II	3	1	0	3	40	60	100
19-205-07**	Open Elective – I	3	1	0	3	40	60	100
19-205-0712	Thermal Engineering Lab	0	0	3	1	25	25	50
19-205-0713	Automation Lab	0	0	3	1	25	25	50
19-205-0714	Entrepreneurship Development	0	0	2	1	50	-	50
19-205-0715	Project Phase I	0	0	1	1	50	-	50
19-205-0716	Industrial Internship	0	0	1	1	50	-	50
	TOTAL	**15**	**5**	**10**	**20**			

19-205-0704 to 0707: **PROFESSIONAL ELECTIVE – II**   19-205-0708 to 0711: **OPEN ELECTIVE – I**

19-205-0704: Automobile Engineering   19-205-0708: Quality Engineering
19-205-0705: Supply Chain Management   19-205-0709: HRD and Organisational Behaviour
19-205-0706: Robotics & Artificial Intelligence   19-205-0710: Computational Methods for Engineers
19-205-0707: Aerospace Engineering   19-205-0711: Finite Element Method

SEMESTER VIII

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-205-0801	Compressible Fluid Flow	3	1	0	3	40	60	100
19-205-08**	Professional Elective – III	3	1	0	3	40	60	100
19-205-08**	Professional Elective – IV	3	1	0	3	40	60	100
19-205-08**	Open Elective – II	3	1	0	3	40	60	100
19-205-0814	Seminar			3	1	50	-	50
19-205-0815	Project Phase – II			11	6	200	-	200
19-205-0816	Comprehensive Viva Voce			0	1	-	50	50
	TOTAL	**12**	**4**	**14**	**20**			

19-205-0802 to 0805: **PROFESSIONAL ELECTIVE – III**   19-205-0806 to 0809:
PROFESSIONAL ELECTIVE – IV

19-205-0802: Materials Management   19-205-0806: Production Technology
19-205-0803: Hydraulic and Pneumatic drives   19-205-0807: Mechanical Behaviour of
                                                                    Materials
19-205-0804: Computational Fluid Dynamics   19-205-0808: Theory of Plates and Shells
19-205-0805: Cryogenic Engineering   19-205-0809: Propulsion Engineering

19-205-0810 to 0813: **OPEN ELECTIVE – II**
19-205-0810: Operations Research
19-205-0811: Nano Technology
and Surface Engineering
19-205-0812:Computational
      Statistics for Engineers
19-205-0813: Engineering Economics, Estimation and Costing.

B.TECH.. DEGREE COURSE IN
COMPUTER SCIENCE & ENGINEERING

Scheme of Examinations (2019 Admissions)

SEMESTER III

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks CA	Marks SEE	Total
19-200-0301	*Linear Algebra and TransformTechniques	3	1	0	3	40	60	100
19-202-0302	Logic Design	3	1	0	3	40	60	100
19-202-0303	**Discrete Computational Structures	3	1	0	3	40	60	100
19-202-0304	Object Oriented Programming	3	1	0	3	40	60	100
19-202-0305	Principles of Programming Languages	3	1	0	3	40	60	100
19-202-0306	Data and Computer Communication	3	1	0	3	40	60	100
19-202-0307	Digital Electronics Laboratory	0	0	3	1	25	25	50
19-202-0308	Object Oriented Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

* Common for CE/CS/EC/EE/IT/ME/SE
** Common for CS/IT

SEMESTER IV

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks CA	Marks SEE	Total
19-200-0401	*Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
19-202-0402	Microprocessors	3	1	0	3	40	60	100

19-202-0403	Computer Architecture and Organization	3	1	0	3	40	60	100
19-202-0404	Automata Languages and Computations	3	1	0	3	40	60	100
19-202-0405	Data Structures and Algorithms	3	1	0	3	40	60	100
19-202-0406	Database Management Systems	3	1	0	3	40	60	100
19-202-0407	Database Management Systems Laboratory	0	0	3	1	25	25	50
19-202-0408	Data Structures Laboratory	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

* Common for CE/CS/EC/EE/IT/ME/SE

SEMESTER V

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-200-0501	*Numerical and Statistical Methods	3	1	0	3	40	60	100
19-202-0502	System Programming	3	1	0	3	40	60	100
19-202-0503	Object Oriented Software Engineering	3	1	0	3	40	60	100
19-202-0504	Operating System	3	1	0	3	40	60	100
19-202-0505	Advanced Microprocessors and Microcontrollers	3	1	0	3	40	60	100
19-202-0506	Computer Graphics	3	1	0	3	40	60	100
19-202-0507	Computer Graphics Laboratory	0	0	3	1	25	25	50
19-202-0508	Microprocessors Laboratory	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

* Common for CE/CS/EC/EE/IT/ME/SE

SEMESTER VI

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-202-0601	Computer Networks	3	1	0	3	40	60	100
19-202-0602	*Compiler Construction	3	1	0	3	40	60	100
19-202-0603	Analysis and Design of Algorithms	3	1	0	3	40	60	100
19-202-0604	Data Mining	3	1	0	3	40	60	100
19-202-0605	Artificial Intelligence	3	1	0	3	40	60	100
19-202-06**	Professional Elective I	3	1	0	3	40	60	100
19-202-0610	Operating System Laboratory	0	0	3	1	25	25	50
19-202-0611	Mini Project	0	0	3	1	50	-	50
	TOTAL	**18**	**6**	**6**	**20**			

19-202-0606 to 0609: PROFESSIONAL ELECTIVE I

19-202-0606 WeB.Tech..nologies

19-202-0607 Software Project Management

19-202-0608 Digital Image Processing

19-202-0609 Bioinformatics

SEMESTER VII

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-202-0701	*Principles of Management	3	1	0	3	40	60	100
19-202-0702	Advanced Computer Networks	3	1	0	3	40	60	100
19-202-0703	Cryptography and Network Security	3	1	0	3	40	60	100
19-202-07**	Professional Elective II	3	1	0	3	40	60	100
19-202-07**	Open Elective I	3	1	0	3	40	60	100
19-202-0712	Language Processors Laboratory	0	0	3	1	25	25	50
19-202-0713	Networks Laboratory	0	0	3	1	25	25	50
19-202-0714	Entrepreneurship Development	0	0	2	1	50	-	50
19-202-0715	Project Phase I	0	0	1	1	50	-	50
19-202-0716	Industrial Internship	0	0	1	1	50	-	50
	TOTAL	**15**	**5**	**10**	**20**			

* **Common for CS/EC/EE/IT**

19-202-0704 to 0707:PROFESSIONAL ELECTIVE II
19-202-0704 Artificial Neural Network
19-202-0705 Advanced Mobile Communications
19-202-0706 Embedded System Design
19-202-0707 Computer Vision

19-202-0708 to 0711:OPEN ELECTIVE I
19-202-0708 Mobile Application Development
19-202-0709 System Modeling and Simulation
19-202-0710 Cyber Law and Ethics
19-202-0711 Business Intelligence and Analytics

SEMESTER VIII

Code No.	Subject	L H/W	T H/W	P/D H/W	C	Marks		Total
						CA	SEE	
19-202-0801	Advanced Architecture and Parallel Processing	3	1	0	3	40	60	100
19-202-08**	Professional Elective III	3	1	0	3	40	60	100
19-202-08**	Professional Elective IV	3	1	0	3	40	60	100
19-202-08**	Open Elective II	3	1	0	3	40	60	100
19-202-0814	Seminar	0	0	3	1	50	-	50
19-202-0815	Project Phase II	0	0	11	6	200	-	200
19-202-0816	Comprehensive Viva Voce	0	0	0	1	-	50	50
	TOTAL	**12**	**4**	**14**	**20**			

19-202-0802 to 0805:PROFESSIONAL ELECTIVE III

19-202-0802 Big Data Analytics
 19-202-0803 Cloud Computing
19-202-0804 Computational Linguistics
19-202-0805 High Performance Computing

19-202-0806 to 0809: PROFESSIONAL ELECTIVE IV

19-202-0806 Machine learning
19-202-0807 Agent Based Intelligent System
19-202-0808 Augmented Reality
19-202-0809 Ethical Hacking

19-202-0810 to 0813: OPEN ELECTIVE II

19-202-0810 High Performance Embedded Computing
19-202-0811 Cyberspace and Information System Security
19-202-0812 Soft Computing
19-202-0813 Internet of Things

B.TECH. ELECTRICAL & ELECTRONICS ENGINEERING

(2019 Admission onwards)

SEMESTER III

Course Code	Subject	L H/W	T H/W	P/D H/W	Credits	Marks		Total
						CA	SEE	
19-200-0301	Linear Algebra & Transform Techniques	3	1	0	3	40	60	100
19-209-0302	Electrical Machines I	3	1	0	3	40	60	100
19-209-0303	Circuits And Networks	3	1	0	3	40	60	100
19-209-0304	Electrical Measurements & Measuring Instruments	3	1	0	3	40	60	100
19-209-0305	Electronic Devices and Circuits	3	1	0	3	40	60	100
19-209-0306	Electrical Engineering Materials	3	1	0	3	40	60	100
19-209-0307	Electronics Circuits Lab	0	0	3	1	25	25	50
19-209-0308	Electrical Measurements Lab	0	0	3	1	25	25	50
TOTAL		**18**	**6**	**6**	**20**			

SEMESTER IV

Course Code	Subject	L H/W	T H/W	P/D H/W	Credit	Marks		Total
						CA	SEE	
19-200-0401	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
19-209-0402	Circuits, Signals & Systems	3	1	0	3	40	60	100

Course Code	Subject	L H/W	T H/W	P/D H/W	Credit	CA	SEE	Total
19-209-0403	Electrical Machines II	3	1	0	3	40	60	100
19-209-0404	Field Theory	3	1	0	3	40	60	100
19-209-0405	Digital Electronics	3	1	0	3	40	60	100
19-209-0406	Communication Engineering	3	1	0	3	40	60	100
19-209-0407	Digital Electronics Lab	0	0	3	1	25	25	50
19-209-0408	Electrical Machines Lab I	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

SEMESTER V

Course Code	Subject	L H/W	T H/W	P/D H/W	Credit	Marks		Total
						CA	SEE	
19-200-0501	Numerical and Statistical Methods	3	1	0	3	40	60	100
19-209-0502	Control System I	3	1	0	3	40	60	100
19-209-0503	Power Electronics	3	1	0	3	40	60	100
19-209-0504	Microprocessor & Microcontroller Based Systems	3	1	0	3	40	60	100
19-209-0505	Power Systems I	3	1	0	3	40	60	100
19-209-0506	Linear Integrated Circuits	3	1	0	3	40	60	100
19-209-0507	Electrical Machines Lab II	0	0	3	1	25	25	50
19-209-0508	Microprocessor & Microcontroller Lab	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

SEMESTER VI

Course Code	Subject	L H/W	T H/W	P/D H/W	Credit	Marks		Total
						CA	SEE	
19-209-0601	New and Renewable Sources of Energy	3	1	0	3	40	60	100
19-209-0602	Digital Signal Processing	3	1	0	3	40	60	100
19-209-0603	Power Systems II	3	1	0	3	40	60	100
19-209-0604	Electrical Drawing	3	1	0	3	40	60	100
19-209-0605	Control Systems II	3	1	0	3	40	60	100
19-209-06**	Professional Elective I	3	1	0	3	40	60	100
19-209-0610	Linear Integrated Circuits Lab	0	0	3	1	25	25	50
19-209-0611	Mini Project	0	0	3	1	25	25	50
	TOTAL	**18**	**6**	**6**	**20**			

19-209-0606 to 0609: **PROFESSIONAL ELECTIVE – I**

19-209-0606: Artificial Intelligence
19-209-0607: Advanced Microprocessors
19-209-0608: Advanced Power Electronics
19-209-0609: Modern Communication Engineering

SEMESTER VII

Course Code	Subject	L H/W	T H/W	P/D HW	Credit	Marks		Total
						CA	SEE	
19-209-0701	Principles of Management	3	1	0	3	40	60	100
19-209-0702	Electrical System Design	3	1	0	3	40	60	100
19-209-0703	Electric Drives	3	1	0	3	40	60	100
19-209-07**	Professional Elective II	3	1	0	3	40	60	100
19-209-07**	Open Elective I	3	1	0	3	40	60	100
19-209-0712	Power Electronics Lab	0	0	3	1	25	25	50
19-209-0713	Advanced Electrical Engineering Lab	0	0	3	1	25	25	50
19-209-0714	Entrepreneurship Development	0	0	2	1	50	-	50
19-209-0715	Project Phase I and Industrial Internship **	0	0	2	2	50	-	50
	TOTAL	**15**	**5**	**10**	**20**			

19-209-0704 to 0707:**PROFESSIONAL ELECTIVE – II**
19-209-0704: Solar Photo Voltaic energy Systems
19-209-0705: Digital Control System
19-209-0706: Image Processing
19-209-0707: Electrical Machine Design

19-209-0708 to 0711: **OPEN ELECTIVE – I**
19-209-0708: Soft Computing
19-209-0709: Optimization techniques and algorithm
19-209-0710: Energy Auditing & Analysis
19-209-0711: Guidance, Navigation and control

** Industrial internship of a minimum duration of 2 weeks during May-June vacation before the commencement of 7th Semester classes is desirable.

SEMESTER VIII

Course Code	Subject	L H/W	T H/W	P/D H/W	Credit	Marks		Total
						CA	SEE	
19-209-0801	Power Systems III	3	1	0	3	40	60	100
19-209-08**	Professional Elective III	3	1	0	3	40	60	100
19-209-08**	Professional Elective IV	3	1	0	3	40	60	100
19-209-08**	Open Elective II	3	1	0	3	40	60	100
19-209-0814	Seminar	0	0	3	1	50	-	50
19-209-0815	Project Phase II	0	0	11	6	200	-	200
19-209-0816	Comprehensive Viva-voce	0	0	0	1	-	50	50
	TOTAL	**12**	**4**	**14**	**20**			

19-209-0802 to 0805:**PROFESSIONAL ELECTIVE – III**
19-209-0802:Electronic Instrumentation
19-209-0803:Power Quality
19-209-0804: Process control and automation
19-209-0805: Special Electric machines

19-209-0806 to 0809:**PROFESSIONAL ELECTIVE – IV**
19-209-0806: Utilization of Electrical Power
19-209-0807: Power system operation and control
19-209-0808: Digital Simulations of Power Electronic System
19-209-0809:Smart grid technologies and applications

19-209-0810 to 0813: **OPEN ELECTIVE – II**
19-209-0810: Statistical Methods for Engineering
19-209-0811: Hybrid and Electric vehicles
19-209-0812: Electrical Safety
19-209-0813: Sustainability Engineering

2015 Scheme

B.Tech. CIVIL ENGINEERING

Semester I (Stream A)

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1101A	Calculus	3	1	0	3	40	60	100
AS 15-1102A	Engineering Physics	3	1	0	3	40	60	100
GE 15-1103A	Engineering Mechanics	4	1	0	4	40	60	100
GE 15-1104A	Basic Civil Engineering	3	0	0	3	40	60	100
GE 15-1105A	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS 15-1106A	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE 15-11L1A	Civil Engineering Workshop	0	0	3	1	25	25	50
GE 15-11L2A	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS 15-11L3A	Language Lab	0	0	1	1	25	25	50
HS 15-11L4A	NSS/Nature conservation	0	0	1	1	50	-	50
	Total	**18**	**4**	**8**	**22**			

Semester II

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
GE 15-1201A	Computer Programming	3	1	0	3	40	60	100
AS 15-1202A	Engineering Chemistry	3	1	0	3	40	60	100
GE 15-1203A	Engineering Graphics	2	1	3	5	40	60	100
GE 15-1104A	Basic Electrical Engineering	3	0	0	3	40	60	100
GE 15-1205A	Basic Electronics Engineering	3	0	0	3	40	60	100
AS 15-1206A	Environmental Studies	3	1	0	3	40	60	100
GE 15-12L1A	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE 15-12L2A	Computer Programming Laboratory	0	0	3	1	25	25	50
	Total	**17**	**4**	**9**	**22**			

Semester III

Course Code	Course	Hrs/Week		Credit	Marks		Total
		L	T/D/P		CA	ESE	
AS 15-1301*	Linear Algebra and TransforM.Tech.niques	3	1	3	40	60	100
CE 15-1302	Surveying – I	3	1	3	40	60	100
CE 15-1303	Strength of Materials	3	1	3	40	60	100
CE 15-1304	Concrete Technology	3	1	3	40	60	100
CE 15-1305	Fluid Mechanics – I	3	1	3	40	60	100
CE 15-1306	Building Technology	4	-	3	40	60	100
CE 15-13L1	Concrete Lab	0	3	2	25	25	50
CE 15-13L2	Strength of Materials Lab	0	3	2	25	25	50
	Total	**19**	**11**	**22**			

*Common to all branches

Semester IV

Course Code	Course	Hrs/Week		Credit	Marks		Total
		L	T/D/P		CA	ESE	
AS 15-1401*	Complex Variables and Partial Differential Equations	3	1	3	40	60	100
CE 15-1402	Surveying – II	3	1	3	40	60	100
CE 15-1403	Analysis of Determinate Structures	3	1	3	40	60	100
CE 15-1404	Engineering Geology and Seismology	4		3	40	60	100
CE 15-1405	Fluid Mechanics – II	3	1	3	40	60	100
CE 15-1406	Building Planning and Drawing	1	3	3	40	60	100
CE 15-14L1	Survey Practical	0	3	2	25	25	50
CE 15-14L2	Fluid Mechanics Lab	0	3	2	25	25	50
	Total	**17**	**13**	**22**			

*Common to all branches

Semester V

Course Code	Course	Hrs/Week		Credit	Marks		Total
		L	T/D/P		CA	ESE	
AS 15-1501*	Numerical and Statistical Methods	3	1	3	40	60	100
CE 15-1502	Design of Concrete Structures – I	3	1	3	40	60	100
CE 15-1503	Analysis of Indeterminate Structures	3	1	3	40	60	100
CE 15-1504	Geotechnical Engineering – I	3	1	3	40	60	100
CE 15-1505	Transportation Engineering – I	4		3	40	60	100
CE 15-1506	Water Resources and irrigation Engineering	4	-	3	40	60	100
CE 15-15L1	Geotechnical Engineering Lab	0	3	2	25	25	50
CE 15-15L2	Transportation Engineering Lab	0	3	2	25	25	50
	Total	**20**	**10**	**22**			

*Common to all branches

Semester VI

Course Code	Course	Hrs/Week		Credit	Marks		Total
		L	T/D/P		CA	ESE	
CE 15-1601	Environmental Engineering – I	3	1	3	40	60	100
CE 15-1602	Design Steel Structures	3	1	3	40	60	100
CE 15-1603	Matrix Methods of Structures Analysis	3	1	3	40	60	100
CE 15-1604	Geotechnical Engineering – II	3	1	3	40	60	100
CE 15-1605	Transportation Engineering – II	4		3	40	60	100
CE 15-1606	Elective – I	3	1	3	40	60	100
CE 15-16L1	Environmental Engineering Lab	0	3	2	25	25	50
CE 15-16L2	Computer Application in Civil Engineering – I	0	3	2	25	25	50
	Total	**19**	**11**	**22**			

CE 15 – 1606 Elective	
Course Code	**Name of Course**
E1	Retrofitting and Rehabilitation of Structures
E2	Disaster Management
E3	Traffic Engineering and Management
E4	Air Pollution Control and Management
E5	Ground Water Engineering
E6	Principles of Management

One or more optional subjects may be offered in any semester outside regular teaching hours and the students may opt to study them if they wish. The course may be conducted by using experts from inside or outside the University on Self Supporting manner. The Fee may be fixed based on the expenses in a non-profit manner with the students of the department given a 129otmail129ed rate of fee and those from outside may also be allowed at a higher fee. The regular students may be issued the mark list with the optional subject included in current semester and the outsiders may be issued a certificate separately.

SEMESTER VII

Code No.	Subject	Hrs/week		C	Marks		Total
		L	T/D/ P		CA	ESE	
CE15-1701	Environmental Engineering – 11	3	1	3	40	60	100
CE15-1702	Design of Concrete Structures-II	3	1	3	40	60	100
CE 15-1703	Construction Management	3	1	3	40	60	100
CE15-1704	Quantity Surveying and Valuation	3	1	3	40	60	100
CE 15- 1705	Elective –II .	3	1	3	40	60	100
CE15-17L1	Computer Applications in Civil Engineering – II		3	2	25	25	50
CE15-17L2	Structural Engineering and NDT Lab	-	3	2	25	25	50
GE15-17L3	Entrepreneurship Development		1	1	50		50
CE15-17L4	Industrial Training		2	1	50		50
CE15-17L5	Project – Phase I		1	1	50		50
	TOTAL	15	15	22			

CE15 – 1705 Elective – II	
Code	Name of Subject
El	Finite Element Method

E2	Ground Improvement Techniques
E3	Pavement Analysis and Design
E4	Solid Waste Management
E5	Remote Sensing and GIS
E6	Design of special Structures

SEMESTER VIII

Code No.	Subject	Hrs/week		C	Marks		Total
		L	T/D/P		CA	ESE	
CE15-1801	Architecture and Town Planning	4		3	40	60	100
CE15-1802	Earthquake Engineering	3	1	3	40	60	100
CE15-1803	Construction Safety and Fire Engineering	4		3	40	60	100
CE15-1804	Elective –III	3	1	3	40	60	100
CE15-18L1	Seminar	-	3	2	50		50
CE15-18L2	Project – Phase II		11	6	200		200
CE15-18L3	Comprehensive Viva Voce			2		50	50
	TOTAL	14	16	22			

CE15 – 1804 Elective – III	
Code	Name of Subject
El	Bridge Engineering
E2	Environmental Geotechnics
E3	Construction Engineering and Materials Management
E4	Industrial Waste Engineering and Management
E5	Environmental Impact Assessment
E6	Sustainable Construction Techniques

LIST OF OPTIONAL SUBJECTS

SI. No:	Subject	L	T	P	No: of Hours/Semester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
7	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

B.Tech.. COMPUTER SCIENCE AND ENGINEERING

Semester I [Stream B]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
GE15-1101B	Computer Programming	3	1	0	3	40	60	100
AS15-1102B	Engineering Chemistry	3	1	0	3	40	60	100
GE15-1103B	Engineering Graphics	2	1	3	5	40	60	100
GE15-1104B	Basic Electrical Engineering	3	0	0	3	40	60	100
GE15-1105B	Basic Electronics Engineering	3	0	0	3	40	60	100

AS15-1106B	Environmental Studies	3	1	0	3	40	60	100
GE15-11L1B	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE15-11L2B	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

Semester II [Stream B]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1201B	Calculus	3	1	0	3	40	60	100
AS15-1202B	Engineering Physics	3	1	0	3	40	60	100
GE15-1203B	Engineering Mechanics	4	1	0	4	40	60	100
GE15-1204B	Basic Civil Engineering	3	0	0	3	40	60	100
GE15-1205B	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS15-1206B	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE15-12L1B	Civil Engineering Workshop	0	0	3	1	25	25	50
GE15-12L2B	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS15-12L3B	Language Lab	0	0	1	1	25	25	50
HS15-12L4B	NSS / Nature conservation	0	0	1	1	50	-	50
	TOTAL	**18**	**4**	**8**	**22**			

Semester III

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1301*	Linear Algebra and TransforM.Tech.niques	3	1	0	3	40	60	100
CS15-1302	Logic Design	3	1	0	3	40	60	100
CS15/ IT15-1303	Discrete Computational Structures	3	1	0	3	40	60	100
CS15/ IT15-1304	Object Oriented Programming	3	1	0	3	40	60	100
CS15-1305	Principles of Programming Languages	3	1	0	3	40	60	100
CS15-1306	Data and Computer Communication	3	1	0	3	40	60	100
CS15-13L1	Digital Electronics Laboratory	0	0	3	2	25	25	50
CS15/ IT15-13L2	Object Oriented Programming Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE

Semester IV

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1401*	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
CS15-1402	Microprocessors	3	1	0	3	40	60	100
CS15-1403	Computer Architecture and Organization	3	1	0	3	40	60	100
CS15-1404	Automata Languages and Computations	3	1	0	3	40	60	100
CS/IT15-1405	Data Structures and Algorithms	3	1	0	3	40	60	100
CS/IT15-1406	Database Management Systems	3	1	0	3	40	60	100
CS15-14L1	Database Management Systems Laboratory	0	0	3	2	25	25	50
CS/IT15-14L2	Data Structures Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE

Semester V

Course Code	Course	L Hrs/Wk	T Hrs/ Wk	P/D Hrs/Wk	Credit	Marks		Total
						CA	ESE	
AS15-1501*	Numerical and Statistical Methods	3	1	0	3	40	60	100
CS15-1502	System Programming	3	1	0	3	40	60	100
CS15-1503	Object Oriented Software Engineering	3	1	0	3	40	60	100
CS15/ IT15-1504	Operating System	3	1	0	3	40	60	100
CS15-1505	Advanced Microprocessors and Microcontrollers	3	1	0	3	40	60	100
CS15-1506	Computer Graphics	3	1	0	3	40	60	100
CS15-15L1	Computer Graphics Laboratory	0	0	3	2	25	25	50
CS15-15L2	Microprocessors Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE

Semester VI

Course Code	Course	L Hrs/Wk	T Hrs/ Wk	P/D Hrs/Wk	Credit	Marks		Total
						CA	ESE	
CS15-1601	Computer Networks	3	1	0	3	40	60	100
CS15/ IT15-1602	Compiler Construction	3	1	0	3	40	60	100
CS15-1603	Cryptography and Network Security	3	1	0	3	40	60	100
CS15-1604	Data Mining	3	1	0	3	40	60	100
CS15-1605	Embedded System Design	3	1	0	3	40	60	100
CS15-1606	Elective I	3	1	0	3	40	60	100

CS15-16L1	Operating System Laboratory	0	0	3	2	25	25	50
CS15-16L2	Mini Project	0	0	3	2	50	-	50
	TOTAL	**18**	**6**	**6**	**22**			

Elective I:

CS15-1606 E1	Ethical Hacking and Computer Forensics
CS15-1606 E2	System Modeling and Simulations
CS15-1606 E3	Computational Linguistics
CS15-1606 E4	Bioinformatics
CS15-1606 E5	Digital Image Processing

Semester VII

Course Code	Course	LHrs /Wk	THrs /Wk	PHrs /Wk	C	Marks		Total
						CA	ESE	
GE 15-1701*	Principles of Management	3	1	0	3	40	60	100
CS 15- 1702	Advanced Computer Networks	3	1	0	3	40	60	100
CS 15- 1703	Analysis and Design of Algorithms	3	1	0	3	40	60	100
CS 15-1704	WeB.Tech..nologies	3	1	0	3	40	60	100
CS 15-1705	Elective II	3	1	0	3	40	60	100
CS 15-17L1	Language Processors Laboratory	0	0	3	2	25	25	50
CS 15- 17L2	Networks Laboratory	0	0	3	2	25	25	50
GE 15- 17L3	Entrepreneurship Development	0	0	2	1	50	-	50
CS 15-17L4	Project Phase I and Industrial Internship**	0	0	2	2	50	-	50
	Total	**15**	**5**	**10**	**22**			

*CS/EC/EE/IT
**Industrial internship for a minimum duration of two weeks during May-June vacation before the commencement of 7th semester classes is desirable.

Elective II

Course Code	Course
CS 15- 1705 E1	Software Project Management
CS 15-1705 E2	Artificial Neural Networks
CS 15-1705 E3	High Performance Embedded Computing
CS 15- 1705 E4	Advanced Mobile Communications
CS 15-1705 E5	Network Programming

Semester VIII

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	Marks		Total
						CA	ESE	
CS 15-1801	Advanced Architecture and Parallel Processing	3	1	0	3	40	60	100
CS 15-1802	Artificial Intelligence	3	1	0	3	40	60	100
CS 15-1803	Distributed Computing	3	1	0	3	0	60	100
CS 15- 1804	Elective III	3	1	0	3	40	60	100
CS 15-18L1	Seminar	0	0	3	2	50	-	50
CS 15-18L2	Project Phase II	0	0	11	6	200	-	200

CS 15-18L3	Comprehensive Viva Voce	0	0	0	2	-	50	50
	Total	**12**	**4**	**14**	**22**			

Elective III

Course Code	Course
CS 15-1804 E1	Software Testing
CS 15-1804 E2	Big Data Analytics
CS 15-1804 E3	Cloud Computing
CS 15-1804 E4	Agent Based Intelligent Systems
CS 15-1804 E5	Real Time Systems

LIST OF OPTIONAL SUBJECTS

Sl. No:	Subject	L	T	P	No: of Hours/Semester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
7	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

One or more optional subjects may be offered in any semester outside regular teaching hours and the students may opt to study them if they wish. The course may be conducted by using experts from inside or outside the University on Self Supporting manner. The Fee may be fixed based on the expenses in a non-profit manner with the students of the department given a subsidised rate of fee and those from outside may also be allowed at a higher fee. The regular students may be issued the mark list with the optional subject included in current semester and the outsiders may be issued a certificate separately.

B.Tech.. ELECTRICAL & ELECTRONICS ENGINEERING

Semester I [Stream A]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1101A	Calculus	3	1	0	3	40	60	100
AS 15-1102A	Engineering Physics	3	1	0	3	40	60	100
GE 15-1103A	Engineering Mechanics	4	1	0	4	40	60	100
GE 15-1104A	Basic Civil Engineering	3	0	0	3	40	60	100
GE 15-1105A	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS 15-1106A	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE 15-11L1A	Civil Engineering Workshop	0	0	3	1	25	25	50
GE 15-11L2A	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS 15-11L3A	Language Lab	0	0	1	1	25	25	50
HS 15-11L4A	NSS/Nature conservation	0	0	1	1	50	-	50
	Total	**18**	**4**	**8**	**22**			

Semester II

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
GE 15-1201A	Computer Programming	3	1	0	3	40	60	100
AS 15-1202A	Engineering Chemistry	3	1	0	3	40	60	100
GE 15-1203A	Engineering Graphics	2	1	3	5	40	60	100
GE 15-1104A	Basic Electrical Engineering	3	0	0	3	40	60	100
GE 15-1205A	Basic Electronics Engineering	3	0	0	3	40	60	100
AS 15-1206A	Environmental Studies	3	1	0	3	40	60	100
GE 15-12L1A	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE 15-12L2A	Computer Programming Laboratory	0	0	3	1	25	25	50
	Total	**17**	**4**	**9**	**22**			

Semester III

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15- 1301*	Linear Algebra & TransforM.Tech.niques	3	1	0	3	40	60	100
EE15-1302	Fluid Machinery & Heat Engines	3	1	0	3	40	60	100
EE15-1303	Circuits And Networks	3	1	0	3	40	60	100
EE15-1304	Electrical Measurements & Measuring Instruments	3	1	0	3	40	60	100
EE15-1305	Electronic Devices and Circuits	3	1	0	3	40	60	100
EE15-1306	Electrical Machines I	3	1	0	3	40	60	100
EE15-13L1	Electronic Circuits Lab	0	0	3	2	25	25	50
EE15-13L2	Electrical Measurements Lab	0	0	3	2	25	25	50
TOTAL		**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE

CA – Continuous Assessment, ESE – End Semester Examination

Semester IV

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15- 1401*	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
EE15-1402	Circuits, Signals & Systems	3	1	0	3	40	60	100
EE15-1403	Electrical Machines II	3	1	0	3	40	60	100
EE15-1404	Electrical Engineering Materials	3	1	0	3	40	60	100
EE15-1405	Digital Electronics	3	1	0	3	40	60	100
EE15-1406	Power Electronics	3	1	0	3	40	60	100
EE15-14L1	Digital Electronics Lab	0	0	3	2	25	25	50
EE15-14L2	Electrical Machines Lab I	0	0	3	2	25	25	50
TOTAL		**18**	**6**	**6**	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

Semester V

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15- 1501*	Numerical and Statistical Methods	3	1	0	3	40	60	100
EE15-1502	Linear Integrated Circuits	3	1	0	3	40	60	100
EE15-1503	Field Theory	3	1	0	3	40	60	100
EE15-1504	Microprocessor & Microcontroller Based Systems	3	1	0	3	40	60	100
EE15-1505	Electrical Drawing	3	1	0	3	40	60	100
EE15-1506	Power Systems I	3	1	0	3	40	60	100
EE15-15L1	Electrical Machines Lab II	0	0	3	2	25	25	50
EE15-15L2	Microprocessor & Microcontroller Lab	0	0	3	2	25	25	50
TOTAL		**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE
CA – Continuous Assessment, ESE – End Semester Examination

Semester VI

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
EE15-1601	Electronic Communication	3	1	0	3	40	60	100
EE15-1602	Digital Signal Processing	3	1	0	3	40	60	100
EE15-1603	Power Systems II	3	1	0	3	40	60	100
EE15-1604	Electric Drives	3	1	0	3	40	60	100
EE15-1605	Control System I	3	1	0	3	40	60	100
EE15-1606	Elective I	3	1	0	3	40	60	100
EE15-16L1	Linear Integrated Circuits Lab	0	0	3	2	25	25	50
EE15-16L2	Mini Project	0	0	3	2	0	50	50
TOTAL		**18**	**6**	**6**	**22**			

EE15-1606 ELECTIVE-I

E1	Advanced Microprocessors
E2	Optimization Techniques & Algorithm
E3	Image Processing
E4	Advanced Power Electronics
E5	Modern Communication Engg.

Semester VII

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	Marks		Total
						CA	ESE	
GE 15-1701	Principles of Management	3	1	0	3	40	60	100
EE 15- 1702	Electrical System Design	3	1	0	3	40	60	100
EE 15-1703	New and Renewable Sources of Energy	3	1	0	3	40	60	100
EE 15-1704	Control System II	3	1	0	3	40	60	100

EE 15-1705	Elective II	3	1	0	3	40	60	100
EE 15-17L1	Power Electronics Lab	0	0	3	2	25	25	50
EE 15-17L2	Advanced Electrical Engineering Lab	0	0	3	2	25	25	50
EE 15-17L3	Entrepreneurship and Development	0	0	2	1	50	-	50
EE 15-17L4	Project phase I and Industrial Internship**	0	0	2	2	50	-	50
	Total	**15**	**5**	**10**	**22**			

**Industrial internship for a minimum duration of two weeks during May-June vacation before the commencement of 7th semester classes is desirable.

Electives II

Course Code	Course
EE 15-1705 E1	Wireless Communications
EE 15-1705 E2	Digital Control System
EE 15-1705 E3	Soft Computing
EE 15-1705 E4	Energy Auditing & Analysis
EE 15-1705 E5	Electrical Machine Design

Semester VIII

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	Marks		Total
						CA	ESE	
EE 15-1801	Electronic Instrumentation	3	1	0	3	40	60	100
EE 15-1802	Utilization of Electrical Power	3	1	0	3	40	60	100
EE 15-1803	Power Systems III	3	1	0	3	40	60	100
EE 15-1804	Elective III	3	1	0	3	40	60	100
EE 15-18L1	Seminar	0	0	3	2	50	-	50
EE 15-18L2	Project Phase II	0	0	11	6	200	-	200
EE 15-18L3	Comprehensive Viva Voce	0	0	0	2	-	50	50
	Total	**12**	**4**	**14**	**22**			

Electives III

Course Code	Course
EE 15-1804 E1	Mechatronics
EE 15-1804 E2	Dynamics of Electrical Machines
EE 15-1804 E3	Power Quality
EE 15-1804 E4	HVDC&FACTS
EE 15-1804 E5	Smart Grid

LIST OF OPTIONAL SUBJECTS

Sl. No:	Subject	L	T	P	No: of Hours/Semester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50

6	Theatre Arts	1		2	30		50	
7	Imaging Devices	1		2	30		50	
8	Disaster Management	1		2	30		50	

One or more optional subjects may be offered in any semester outside regular teaching hours and the students may opt to study them if they wish. The course may be conducted by using experts from inside or outside the University on Self Supporting manner. The Fee may be fixed based on the expenses in a non-profit manner with the students of the department given a 138otmail138ed rate of fee and those from outside may also be allowed at a higher fee. The regular students may be issued the mark list with the optional subject included in current semester and the outsiders may be issued a certificate separately.

B.Tech.. ELECTRONICS & COMMUNICATION ENGINEERING

Semester I [Stream B]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
GE 15-1101B	Computer Programming	3	1	0	3	40	60	100
AS 15-1102B	Engineering Chemistry	3	1	0	3	40	60	100
GE 15-1103B	Engineering Graphics	2	1	3	5	40	60	100
GE 15-1104B	Basic Electrical Engineering	3	0	0	3	40	60	100
GE 15-1105B	Basic Electronics Engineering	3	0	0	3	40	60	100
AS 15-1106B	Environmental Studies	3	1	0	3	40	60	100
GE 15-11L1B	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE 15-11L2B	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**22**			

CA – Continuous Assessment, **ESE** – End Semester Examination

Semester II [Stream B]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1201B	Calculus	3	1	0	3	40	60	100
AS 15-1202B	Engineering Physics	3	1	0	3	40	60	100
GE 15-1203B	Engineering Mechanics	4	1	0	4	40	60	100
GE 15-1204B	Basic Civil Engineering	3	0	0	3	40	60	100
GE 15-1205B	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS 15-1206B	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE 15-12L1B	Civil Engineering Workshop	0	0	3	1	25	25	50
GE 15-12L2B	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS15-12L3B	Language Lab	0	0	1	1	25	25	50
HS 15-12L4B	NSS/Nature Conservation	0	0	1	1	50	-	50
	TOTAL	**18**	**4**	**8**	**22**			

Stream B: Computer Science & Engg., Electronics and Communication Engg., Information Technology

Semester III

Course Code	Course	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1301	Linear Algebra & TransforM.Tech.niques	3	1	0	3	40	60	100
EC 15-1302	Discrete Computational structures	3	1	0	3	40	60	100
EC 15-1303	Network Theory	3	1	0	3	40	60	100
EC 15-1304	Digital Electronics	3	1	0	3	40	60	100
EC 15-1305	Solid State Electronics	3	1	0	3	40	60	100
EC 15-1306	Electronic Circuits I	3	1	0	3	40	60	100
EC 15-13L1	Basic Electronics Lab	0	0	3	2	25	25	50
EC 15-13L2	Digital Electronics Lab	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Semester IV

Course Code	Course	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1401	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
EC 15-1402	Microprocessor Architectures & Programming	3	1	0	3	40	60	100
EC 15-1403	Electronic Circuits II	3	1	0	3	40	60	100
EC 15-1404	Signals & Systems	3	1	0	3	40	60	100
EC 15-1405	Communication Engineering I	3	1	0	3	40	60	100
EC 15-1406	Digital System Design	3	1	0	3	40	60	100
EC 15-14L1	Digital Programming Lab	0	0	3	2	25	25	50
EC 15-14L2	Electronic Circuits Lab I	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Semester V

Course Code	Course	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1501	Numerical and Statistical Methods	3	1	0	3	40	60	100
EC 15-1502	Electromagnetic Theory	3	1	0	3	40	60	100
EC 15-1503	Embedded Systems	3	1	0	3	40	60	100
EC 15-1504	Communication Engineering II	3	1	0	3	40	60	100
EC 15-1505	Analog & Integrated Circuits	3	1	0	3	40	60	100
EC 15-1506	Digital Signal Processing	3	1	0	3	40	60	100
EC 15-15L1	Mini Project	0	0	3	2	0	50	50
EC 15-15L2	Electronic Circuits Lab II	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Semester VI

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks CA	Marks ESE	Total
EC 15-1601	Electronic Measurements & Instrumentation	3	1	0	3	40	60	100
EC 15-1602	Microwave Techniques & Devices	3	1	0	3	40	60	100
EC 15-1603	VLSI Design	3	1	0	3	40	60	100
EC 15-1604	Information Theory & Coding	3	1	0	3	40	60	100
EC 15-1605	Power Electronics	3	1	0	3	40	60	100
EC 15-1606*	Elective – I	3	1	0	3	40	60	100
EC 15-16L1	Digital Signal Processing Lab	0	0	3	2	25	25	50
EC 15-16L2	Communication Lab I	0	0	3	2	25	25	50
	TOTAL	18	6	6	22			

*Electives

EC15-1606A:	Advanced Digital System Design
EC15-1606B:	Computational Electromagnetics
EC15-1606C:	Adaptive Signal Processing
EC15-1606D:	Object Oriented Programming
EC15-1606E:	Probability and Random Process
EC15-1606F:	Finite Element Methods

Semester VII

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	Marks CA	Marks ESE	Total
GE 15- 1701	Principles of Management	3	1	0	3	40	60	100
EC 15-1702	Antennas and Propagation	3	1	0	3	40	60	100
EC 15-1703	Digital Image Processing	3	1	0	3	40	60	100
EC 15-1704	Control Systems Engineering	3	1	0	3	40	60	100
EC 15-1705 E	Elective II*	3	1	0	3	40	60	100
EC 15-17L1	Embedded Systems Lab	0	0	3	2	25	25	50
EC 15-17L2	Communication Lab II	0	0	3	2	25	25	50
GE15-17L3	Entrepreneurship and Development	0	0	2	1	50	-	50
EC 15- 17L4	Project phase I and Industrial Internship**	0	0	2	2	50	-	50
	Total	15	5	10	22			

**Industrial internship for a minimum duration of two weeks during May-June vacation before the commencement of 7th semester classes is desirable.

*Elective II

Course Code	Course
EC 15-1705 E1	Digital Integrated Circuit Design
EC 15-1705 E2	EMI/EMC
EC 15-1705 E3	Neuro–Fuzzy Systems
EC 15- 1705 E4	Computer Organisation and Architecture
EC 15-1705 E5	Optical Fiber Communication
Ec 15-1705 E6	Nano Electronics

Semester VIII

Course Code	Course	L Hrs /Wk	T Hrs/ Wk	P Hrs /Wk	C	CA	ESE	Total
						Marks		
EC 15-1801	Electronic Product Design	3	1	0	3	40	60	100
EC 15-1802	Wireless Communication	3	1	0	3	40	60	100
EC 15-1803	Computer Communication & Networking	3	1	0	3	40	60	100
EC 15-1804 E	Elective III*	3	1	0	3	40	60	100
EC 15-18L1	Seminar	0	0	3	2	50	-	50
EC 15-18L2	Project Phase II	0	0	11	6	200	-	200
EC 15-18L3	Comprehensive Viva Voce	0		0	2		50	50
	Total	**12**	**4**	**14**	**22**			

*Elective III

Course Code	Course
EC 15-1804 E1	ASIC Design
EC 15- 1804 E2	Radar & Navigation
EC 15-1804 E3	Mechatronics
EC 15- 1804 E4	Bio Informatics
EC 15-1804 E5	Multimedia Communication Systems
EC 15-1804E6	RF Circuit Design

PART A
Question No.I (a) to (j)- Ten short answer questions of 2 marks each with at least two questions from each of the four modules (10*2=20Marks)

PART B
Question Nos.II,III,with subsections (a),(b) (10 marks each with options to answer either II or III) from module I
Question Nos.IV,V,with subsections (a),(b) (10 marks each with options to answer either IV or V) from module II
Question Nos.VI,VII,with subsections (a),(b) (10 marks each with options to answer either VI or VII) from module III
Question Nos.VIII,IX,with subsections (a),(b) (10 marks each with options to answer either VIII or IX) from module IV

LIST OF OPTIONAL SUBJECTS

Sl. No:	Subject	L	T	P	No: of Hours/Se mester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
7	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

One or more optional subjects may be offered in any semester outside regular teaching hours and the students may opt to study them if they wish. The course may be conducted by using experts from inside or outside the University on Self Supporting manner. The Fee may be fixed based on the expenses in a non-profit manner with the students of the department given a 142otmail142ed rate of fee and those from outside may also be allowed at a higher fee. The regular students may be issued the mark list with the optional subject included in current semester and the outsiders may be issued a certificate separately.

B.TECH. INFORMATION TEHNOLOGY

Semester I [Stream B]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
GE15-1101B	Computer Programming	3	1	0	3	40	60	100
AS15-1102B	Engineering Chemistry	3	1	0	3	40	60	100
GE15-1103B	Engineering Graphics	2	1	3	5	40	60	100
GE15-1104B	Basic Electrical Engineering	3	0	0	3	40	60	100
GE15-1105B	Basic Electronics Engineering	3	0	0	3	40	60	100
AS15-1106B	Environmental Studies	3	1	0	3	40	60	100
GE15-11L1B	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE15-11L2B	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

Semester II [Stream B]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1201B	Calculus	3	1	0	3	40	60	100
AS15-1202B	Engineering Physics	3	1	0	3	40	60	100
GE15-1203B	Engineering Mechanics	4	1	0	4	40	60	100
GE15-1204B	Basic Civil Engineering	3	0	0	3	40	60	100
GE15-1205B	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS15-1206B	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE15-12L1B	Civil Engineering Workshop	0	0	3	1	25	25	50
GE15-12L2B	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS15-12L3B	Language Lab	0	0	1	1	25	25	50
HS15-12L4B	NSS / Nature conservation	0	0	1	1	50	-	50
	TOTAL	**18**	**4**	**8**	**22**			

Semester III

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1301*	Linear Algebra and TransforM.Tech.niques	3	1	0	3	40	60	100
IT15-1302	Logic Design and Electronic Circuits	3	1	0	3	40	60	100
CS/IT15-1303	Discrete Computational Structures	3	1	0	3	40	60	100
CS/IT15-1304	Object Oriented Programming	3	1	0	3	40	60	100
IT15-1305	Computer Organization	3	1	0	3	40	60	100
IT15-1306	Data Communication & Networking	3	1	0	3	40	60	100
IT15-13L1	Logic Design and Electronic Circuits Laboratory	0	0	3	2	25	25	50
CS/IT15-13L2	Object Oriented Programming Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

*Common for all branches

Semester IV

Course Code	Course	L Hrs/Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1401*	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
IT 15-1402	Formal Languages, Automata and Computation	3	1	0	3	40	60	100
IT 15-1403	System Programming	3	1	0	3	40	60	100
IT 15-1404	Microprocessor and Microcontroller Architecture	3	1	0	3	40	60	100
CS/IT 15-1405	Data Structures and Algorithms	3	1	0	3	40	60	100
IT 15-1406	Database Management Systems	3	1	0	3	40	60	100
IT 15-14L1	PC Hardware & Microprocessor Lab	0	0	3	2	25	25	50
CS/IT 15-14L2	Data Structures Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

*Common for all branches

Semester V

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1501*	Numerical and Statistical Methods	3	1	0	3	40	60	100
CS/IT 15-1502	Operating Systems	3	1	0	3	40	60	100
IT 15-1503	Knowledge Engineering	3	1	0	3	40	60	100
IT 15-1504	Design and Analysis of Algorithms	3	1	0	3	40	60	100

IT 15-1505	Software Engineering	3	1	0	3	40	60	100
IT 15-1506	Internet Programming	3	1	0	3	40	60	100
IT 15-15L1	Operating System & Network Programming Lab	0	0	3	2	25	25	50
IT 15-15L2	Mini Project – RDBMS based	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Semester VI

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
IT15-1601	Financial Management & E-banking	3	1	0	3	40	60	100
CS/IT 15-1602	Compiler Construction	3	1	0	3	40	60	100
IT 15-1603	Object Oriented Modeling & Design	3	1	0	3	40	60	100
IT 15-1604	Cloud Computing	3	1	0	3	40	60	100
IT 15-1605	Big Data Analytics	3	1	0	3	40	60	100
IT 15-1606	Elective I	3	1	0	3	40	60	100
IT 15-16L1	Cloud and Distributed Computing Laboratory	0	0	3	2	25	25	50
IT 15-16L2	Mini Project – Android based Internet Project	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Elective I

IT 15-1606 E1	Multimedia Computing
IT 15-1606 E2	Wireless Networking
IT 15-1606 E3	Soft Computing
IT 15-1606 E4	Software Quality & Testing
IT 15-1606 E5	Advanced Computer Architectue

Semester VII (2015 Scheme)

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P /D Hrs/ Wk	C	Marks		Total
						CA	ESE	
GE 15-1701	Principles of Management	3	1	0	3	40	60	100
IT 15-1702	Operations Research	3	1	0	3	40	60	100
IT 15-1703	Computer Graphics	3	1	0	3	40	60	100
IT 15-1704	Internet of Things	3	1	0	3	40	60	100
IT 15-1705	Elective II	3	1	0	3	40	60	100
IT 15-17L1	Computer Graphics Laboratory	0	0	3	2	25	25	50
IT 15-17L2	Mini Project – Multimedia project	0	0	3	2	50	-	50
IT 15-17L3	Entrepreneurship Development	0	0	2	2	50	-	50
IT 15-17L4	Project Phase I& Industrial Internship**	0	0	2	1	50	-	50
	Total	**15**	**5**	**10**	**22**			

**Industrial internship for a minimum duration of two weeks during May-June vacation before the commencement of 7th semester classes is desirable.

Elective II

Course Code	Course
IT 15-1705 E1	Game Design
IT 15-1705 E2	Mobile Computing
IT 15-1705 E3	Agile Project Management
IT 15-1705 E4	Data Mining
IT 15-1705 E5	Human Computer Interaction

Semester VIII

Course Code	Course	L Hrs/ Wk	T Hrs /W k	P Hrs/ Wk	Cred it	Inter nal	Unive rsity	Total
IT 15-1801	Electronic Business and Services	3	1	0	3	40	60	100
IT 15-1802	Real Time Systems	3	1	0	3	40	60	100
IT 15- 1803	Security &Cyber Laws	3	1	0	3	40	60	100
IT 15-1804	Elective III	3	1	0	3	40	60	100
IT 15-18L1	Seminar	0	0	3	2	50	-	50
IT 15-18L2	Project Phase II	0	0	12	6	200	-	200
IT 15-18L3	Comprehensive Viva-Voce	0		0	2		50	50
	Total	**12**	**4**	**14**	**22**			

Elective III

Course Code	Course
IT 15-1804E1	Social Computing
IT 15-1804E2	Service Oriented Architecture
IT 15-1804E3	Recommender System
IT 15-1804E4	Randomized Algorithms
IT 15-1804 E5	Bio Computing

LIST OF OPTIONAL SUBJECTS

Sl. No:	Subject	L	T	P	No: of Hours/Semester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
7	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

One or more optional subjects may be offered in any semester outside regular teaching hours and the students may opt to study them if they wish. The course may be conducted by using experts from inside or outside the University on Self Supporting manner. The Fee may be fixed based on the expenses in a non-profit manner with the students of the department given a 145otmail145ed rate of fee and those from outside may also be allowed at a higher fee. The regular students may be issued the mark list with the optional subject included in current semester and the outsiders may be issued a certificate separately.

B.Tech.. MECHANICAL ENGINEERING

Semester I [Stream A]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS 15-1101A	Calculus	3	1	0	3	40	60	100
AS 15-1102A	Engineering Physics	3	1	0	3	40	60	100
GE 15-1103A	Engineering Mechanics	4	1	0	4	40	60	100
GE 15-1104A	Basic Civil Engineering	3	0	0	3	40	60	100
GE 15-1105A	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS 15-1106A	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE 15-11L1A	Civil Engineering Workshop	0	0	3	1	25	25	50
GE 15-11L2A	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS 15-11L3A	Language Lab	0	0	1	1	25	25	50
HS 15-11L4A	NSS/Nature conservation	0	0	1	1	50	-	50
	Total	**18**	**4**	**8**	**22**			

*CA – **Continuous Assessment**, ESE – **End Semester Examination***

Semester II [Stream A]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
GE 15-1201A	Computer Programming	3	1	0	3	40	60	100
AS 15-1202A	Engineering Chemistry	3	1	0	3	40	60	100
GE 15-1203A	Engineering Graphics	2	1	3	5	40	60	100
GE 15-1104A	Basic Electrical Engineering	3	0	0	3	40	60	100
GE 15-1205A	Basic Electronics Engineering	3	0	0	3	40	60	100
AS 15-1206A	Environmental Studies	3	1	0	3	40	60	100
GE 15-12L1A	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE 15-12L2A	Computer Programming Laboratory	0	0	3	1	25	25	50
	Total	**17**	**4**	**9**	**22**			

Semester III

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1301*	Linear Algebra & TransforM.Tech.niques	3	1	0	3	40	60	100
ME15-1302	Electrical Technology	3	1	0	3	40	60	100
ME15-1303	Mechanics of Solids	3	1	0	3	40	60	100
ME15-1304	Fluid Mechanics	3	1	0	3	40	60	100
ME15-1305	Metallurgy & Materials Science	3	1	0	3	40	60	100
ME15-1306	Machine Drawing	3	1	0	3	40	60	100

ME15-13L1	Strength of Materials Lab	0	0	3	2	25	25	50
ME15-13L2	Fluid Mechanics Lab	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE

Semester IV

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1401*	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
ME15-1402	Metrology & Instrumentation	3	1	0	3	40	60	100
ME15-1403	Mechatronics	3	1	0	3	40	60	100
ME15-1404	Applied Thermodynamics	3	1	0	3	40	60	100
ME15-1405	Hydraulic Machinery	3	1	0	3	40	60	100
ME15-1406	Manufacturing Processes	3	1	0	3	40	60	100
ME15-14L1	Metrology Lab	0	0	3	2	25	25	50
ME15-14L2	Hydraulic Machinery Lab	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE

Semester V

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
AS15-1501*	Numerical and Statistical Methods	3	1	0	3	40	60	100
ME15-1502	Mechanics of Machinery	3	1	0	3	40	60	100
ME15-1503	Machine Tools & Machining Science	3	1	0	3	40	60	100
ME15-1504	Thermal Engineering	3	1	0	3	40	60	100
ME15-1505	Industrial Management	3	1	0	3	40	60	100
ME15-1506	Power Plant Engineering	3	1	0	3	40	60	100
ME15-15L1	Computational Methods Lab	0	0	3	2	25	25	50
ME15-15L2	Machine Shop	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

* Common for CE/CS/EC/EE/IT/ME/SE
CA – Continuous Assessment, ESE – End Semester Examination

Semester VI

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks		Total
						CA	ESE	
ME15-1601	Dynamics of Machinery	3	1	0	3	40	60	100
ME15-1602	Machine Design – I	3	1	0	3	40	60	100
ME15-1603	Operations Management	3	1	0	3	40	60	100
ME15-1604	Heat & Mass Transfer	3	1	0	3	40	60	100
ME15-1605	CAD/CAM	3	1	0	3	40	60	100
ME15-1606	Elective – I	3	1	0	3	40	60	100
ME15-16L1	CAD/CAM Lab	0	0	3	2	25	25	50
ME15-16L2	Heat and Mass Transfer Lab	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

ME15-1606 ELECTIVE – I

E1	Hydraulic and Pneumatic drives
E2	Advanced Mechanics of Solids
E3	Energy Conservation and Environment Protection
E4	Advanced Engineering Materials
E5	Fundamentals of Combustion & Pollution

LIST OF OPTIONAL SUBJECTS

Sl. No:	Subject	L	T	P	No: of Hours/Semester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
7	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

One or more optional subjects may be offered in any semester outside regular teaching hours and the students may opt to study them if they wish. The course may be conducted by using experts from inside or outside the University on Self Supporting manner. The Fee may be fixed based on the expenses in a non-profit manner with the students of the department given a 148otmail148ed rate of fee and those from outside may also be allowed at a higher fee. The regular students may be issued the mark list with the optional subject included in current semester and the outsiders may be issued a certificate separately.

SEMESTER VII (2015 scheme)

Code No.	Subject	L Hrs/Wk	T Hrs/Wk	P/D Hrs/Wk	c	Marks		Total
						CA	ESE	
ME15-1701	Refrigeration & Air-conditioning	3	1	0	3	40	60	100
ME15-1702	Vibration & Noise Control	3	1	0	3	40	60	100
ME15-1703	Machine Design- II	3	1	0	3	40	60	100
ME15-1704	Automobile Engineering	3	1	0	3	40	60	100
ME15-1705	Elective II	3	1	0	3	40	60	100
ME15-17L1	Thermal Engineering Lab	0	0	3	2	25	25	50
ME15-17L2	Automation Lab	0	0	3	2	25	25	50
GE15-17L3	Entrepreneurship Development	0	0	2	1	50	-	50
ME15-17L4	Project Phase 1 & Industrial	0	0	2	2	50	-	50
	TOTAL	15	5	10	22			

ME15-1705 ELECTIVE-II

El: Aerospace Engineering
E2: Finite Element Method
E3: Quality Engineering

E4: Mechanical Behaviour of Materials
E5: Supply Chain Management

 # Industrial internship of a minimum duration of 2 weeks during May – June vacation before the commencement of 7thSemester classes is desirable

SEMESTER VIII

Code No.	Subject	L Hrs/Wk	T Hrs/W k	P/D Hrs/Wk	C	Marks		Total
						CA	ESE	
ME15-1801	Compressible Fluid Flow	3	1	0	3	40	60	100
ME15-1802	Production Technology	3	1	0	3	40	6 0	100
ME15-1803	Operations Research	3	1	0	3	40	60	100
ME15-1804	Elective III	3	1	0	3	40	60	100
ME15-18L1	Seminar			3	2	50	-	50
ME15-18L2	Project Phase II			11	6	200	-	200
ME15-18L3	Comprehensive Viva Voce			0	2	-	50	50
	TOTAL	12	4	14	22			

ME15-1804 ELECTIVE-III

E1-Propulsion Engineering
E2-Materials Management
E3-Computational Fluid Dynamics
E4-Cryogenic Engineering
E5-Theory of Plates and Shells

LIST OF OPTIONAL SUBJECTS

Sl. No:	Subject	L	T	P	No: of Hours/Semester	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

*The B.Tech. Safety & Fire Engineering Programme is only in School of Engineering, CUSAT.

SEMESTER I [Stream A]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks CA	ESE	Total
AS15-1101A	Calculus	3	1	0	3	40	60	100
AS15- 1102A	Engineering Physics	3	1	0	3	40	60	100
GE15-1103A	Engineering Mechanics	4	1	0	4	40	60	100
GE15-1104A	Basic Civil Engineering	3	0	0	3	40	60	100
GE15-1105A	Basic Mechanical Engineering	3	0	0	3	40	60	100
HS15-1106A	Technical Communication and Professional Ethics	2	1	0	2	40	60	100
GE15-11L1A	Civil Engineering Workshop	0	0	3	1	25	25	50
GE15-11 L2A	Mechanical Engineering Workshop	0	0	3	1	25	25	50
HS15-11L3A	Language Lab	0	0	1	1	25	25	50
HS15- 11L4A	NSS/Nature conservation	0	0	1	1	50	-	50
	TOTAL	**18**	**4**	**8**	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

Semester II [Stream A]

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P/D Hrs/ Wk	Credit	Marks CA	ESE	Total
GE15- 1201A	Computer Programming	3	1	0	3	40	60	100
AS15-1202A	Engineering Chemistry	3	1	0	3	40	60	100
GE15-1203A	Engineering Graphics	2	1	3	5	40	60	100
GE15-1204A	Basic Electrical Engineering	3	0	0	3	40	60	100
GE15-1205A	Basic Electronics Engineering	3	0	0	3	40	60	100
AS15- 1206A	Environmental Studies	3	1	0	3	40	60	100
GE15-12L1A	Electrical Engineering Workshop	0	0	3	1	25	25	50
GE15-12L2A	Computer Programming Laboratory	0	0	3	1	25	25	50
	TOTAL	**17**	**4**	**9**	**22**			

Semester III

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	Credit	CA	ESE	Total
AS15 -1301	Linear Algebra & TransforM.Tech.niques	3	1	0	3	40	60	100
SE15 -1302	Chemical Process Principles	3	1	0	3	40	60	100

SE15- 1303	Engineering Fluid Mechanics and Machinery	3	1	0	3	40	60	100
SE15 -1304	Principles of Safety Management	3	1	0	3	40	60	100
SE15 -1305	Elements of Machine Drawing	1	0	3	3	40	60	100
SE15- 1306	Safety in Construction	3	1	0	3	40	60	100
SE15- 13 L1	Fluid Mechanics & Machinery Laboratory	0	0	3	2	25	25	50
SE15 –13 L2	Safety Engineering Laboratory	0	0	3	2	25	25	50
	TOTAL	**16**	**5**	**9**	**22**			

Semester IV

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs / Wk	Credit	CA	ESE	Total
AS15 – 1401	Complex Variables and Partial Differential Equations	3	1	0	3	40	60	100
SE15 – 1402	Heat and Mass Transfer Operations	3	1	0	3	40	60	100
SE15 – 1403	Strength of Materials	3	1	0	3	40	60	100
SE15 -1404	Fire Engineering Fundamentals	3	1	0	3	40	60	100
SE15 -1405	Electrical Technology and Safety	3	1	0	3	40	60	100
SE15 – 1406	Occupational Health and First Aid	3	1	0	3	40	60	100
SE15 – 14 L1	Strength of Materials Laboratory	0	0	3	2	25	25	50
SE15 –14 L2	Electrical Technology Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Semester V

Course Code	Course	L Hrs /Wk	T Hrs /Wk	P Hrs/ Wk	Credit	CA	ESE	Total
AS15 – 1501	Numerical and Statistical Methods	3	1	0	3	40	60	100
SE15 – 1502	Chemical Technology and Reaction Engineering	3	1	0	3	40	60	100
SE15 – 1503	Principles of Engineering Design	3	1	0	3	40	60	100
SE15 – 1504	Planning and Design of Fire Protection Systems	3	1	0	3	40	60	100
SE15 – 1505	Manufacturing Processes	3	1	0	3	40	60	100
SE15 – 1506	Chemical Process Safety	3	1	0	3	40	60	100
SE15 – 15L1	Chemical Engineering Laboratory	0	0	3	2	25	25	50
SE15 – 15L2	Fire Safety Training	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Semester VI

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	Credit	CA	ESE	Total
SE 15 – 1601	Legal Aspects of HSE	3	1	0	3	40	60	100
SE 15 – 1602	Process Instrumentation and Control	3	1	0	3	40	60	100
SE 15 – 1603	Hazard Control in Manufacturing	3	1	0	3	40	60	100
SE 15 – 1604	Structural Fire Safety	3	1	0	3	40	60	100
SE 15 – 1605	Environmental Engineering and Management	3	1	0	3	40	60	100
SE 15 – 1606 E	Elective I	3	1	0	3	40	60	100
SE 15 – 16 L1	Machine Shop	0	0	3	2	25	25	50
SE 15 – 16 L2	Environmental Engineering & Management Laboratory	0	0	3	2	25	25	50
	TOTAL	**18**	**6**	**6**	**22**			

Elective I

E1	Power Plant Engineering
E2	Safety in Petroleum and Petrochemical Industries
E3	Food and Biosafety
E4	Fault Detection and Diagnosis
E5	Fire Dynamics

Semester VII (2015 Scheme)

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	Credit	CA	ESE	Total
SE15- 1701	Hazard Identification and Risk Assessment	3	1	0	3	40	60	100
SE 15- 1702	Transportation Systems and Safety	3	1	0	3	40	60	100
SE 15- 1703	Principles of Industrial Management	3	1	0	3	40	60	100
SE 15- 1704	Life Safety in Building Fire	3	1	0	3	40	60	100
SE 15- 1705 E	Elective II	3	1	0	3	40	60	100
SE 15-17L1	Fire Engineering Laboratory	0	0	3	2	25	25	50
SE 15-17L2	Industrial Hygiene Laboratory	0	0	3	2	25	25	50
SE 15-17L3	Entrepreneurship Development	0	0	2	1	50	-	50
SE 15-17L4	Computational Laboratory	0	0	2	2	25	25	50
	Total	**15**	**5**	**10**	**22**			

Industrial internship for a minimum duration of two weeks during May-June vacation before the commencement of 7th semester classes is desirable.

Elective II

Course Code	Course
E1	Reliability Engineering
E2	Automobile Engineering and Safety
E3	Industrial Ecology
E4	Fluid Power Systems
E5	Explosives Technology and Safety

Semester VIII

Course Code	Course	L Hrs/ Wk	T Hrs/ Wk	P Hrs/ Wk	C	CA	ESE	Total
SE 15- 1801	Human Factors Engineering	3	1	0	3	40	60	100
SE 15-1802	Advanced Safety Engineering and Management	3	1	0	3	40	60	100
SE 15-1803	Disaster Management	3	1	0	3	40	60	100
SE 15-1804 E	Elective – III	3	1	0	3	40	60	100
SE 15-18L1	Seminar	0	0	3	2	50	-	50
SE 15-18L1	Project	0	0	11	6	200	-	200
SE 15-18L2	Comprehensive Viva Voce	0	0	0	2	-	50	50
	Total	**12**	**4**	**14**	**22**			

Elective III

Course Code	Course
E1	Total Quality Management
E2	Introductory Design of Structures
E3	Computational Fluid Dynamics
E4	Intellectual Property Rights
E5	Statistical Methods for Engineers

LIST OF OPTIONAL SUBJECTS

Sl No.	Subject	L	T	P	No.of Hrs/Sem	CA Marks
1	Personality Enrichment	1	2		30	50
2	General Aptitude	1	2		30	50
3	Foreign Language	1	2		30	50
4	Advanced Computer Programming	1		2	30	50
5	Healthy Living	1		2	30	50
6	Theatre Arts	1		2	30	50
7	Imaging Devices	1		2	30	50
8	Disaster Management	1		2	30	50

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1	Mr. Anish Job Kurian, Assistant Professor	Mechanical Engineering	8606707991 anishjob1919@gmail.com
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SCHOOL OF ENGINEERING

M.Tech. INDUSTRIAL SAFETY
(Specialisation: HSE Management)

Semester I

Course Code	Course	C/E	Credits
18-455-0101	Statistical and Computational Methods	C	4
18-455-0102	Environmental Engineering and Management	C	4
18-455-01**	Elective I	E	3
18-455-01**	Elective II	E	3
18-455-0109	HSE Laboratory	C	1
18-455-0110	Seminar I	C	1
18-455-0111	Research Methodology and IPR	C	2
Total			18

Semester II

Course Code	Course	C/E	Credits
18-455-0201	Hazard Analysis and Risk Assessment	C	4
18-455-0202	Occupational Health and Hygiene	C	4
18-455-02**	Elective III	E	3
18-455-02**	Elective IV	E	3
18-455-0209	Fire Engineering Laboratory	C	1
18-455-0210	Seminar II	C	1
18-455-0211	Internship	C	2
Total			18

Semester III

Course Code	Course	C/E	Credits
18-455-03**	Elective V	E	3
18-455-03**	Elective VI	E	3
18-455-0307	Dissertation – Phase I	C	12
Total			18

Semester IV

Course Code	Course	C/E	Credits
18-455-0401	Dissertation – Phase II	C	18
Total			18

**Electives must be selected from the following list for the corresponding Semester
Total Credits for the M.Tech. Program=72

ELECTIVES I & II (Semester I)

18-455-0103	Industrial Safety Management – Concepts and Practices
18-455-0104	Reliability Engineering
18-455-0105	Industrial Noise and Vibration Control
18-455-0106	Corrosion and Surface Engineering
18-455-0107	Remote Sensing and Geographic Information System
18-455-0108	Food Safety and Sanitation

ELECTIVES III & IV (Semester II)

18-455-0203	Construction Safety and Fire Engineering
18-455-0204	Health, Safety and Environmental Laws
18-455-0205	Hazard Control in Manufacturing
18-455-0206	Pipeline Engineering
18-455-0207	Disaster Preparedness and Emergency Planning
18-455-0208	Ecological Engineering

ELECTIVES V & VI (Semester III)

18-455-0301	Fluid Power Safety
18-455-0302	Human Factors Engineering
18-455-0303	HSE Management in Hydrocarbon Industry
18-455-0304	Fire Modelling
18-455-0305	Environmental Impact Assessment
18-455-0306	Computational Fluid Dynamics

M.Tech. COMPUTER SCIENCE AND ENGINEERING
(Specialisation: Network Computing)

Semester I

Course Code	Course	C/E	Credits
CSN 3101	Mathematical Foundations of Computer Science	C	4
CSN 3102	Parallel and Distributed Computing	C	4
CSN 3103	Elective I	E	3
CSN 3104	Elective II	E	3
CSN 3105	Core L1 – Network Programming and Simulation Lab	C	1
CSN 3106	Core L2-Seminar I	C	1
CSN 3107	Core Common: Research Methodology & IPR	C	2
Total			18

Semester II

Course Code	Course	C/E	Credits
CSN 3201	Cluster and Grid Computing	C	4
CSN 3202	Cloud Computing	C	4
CSN 3203	Elective III	E	3
CSN 3204	Elective IV	E	3
CSN 3205	Core L3- Parallel Computing Lab	C	1
CSN 3206	Core L4- Seminar II	C	1
CSN 3207	Core L5- Mini Project	C	2
Total			18

Semester III

Course Code	Course	C/E	Credits
CSN 3301	Elective IV	E	3
CSN 3302	Elective V (CBCS)	E	3
CSN 3303	Dissertation Phase I	C	10
Total			16

Semester IV

Course Code	Course	C/E	Credits
CSN 3401	Dissertation Phase II	C	16
Total			16

List of Electives

Sl.No	Course
1	Compiler for High Performance Computing
2	Theory of Computing
3	Advanced Data Mining
4	GPU Computing
5	Soft Computing
6	Big Data Analysis
7	Data Forensics
8	Wireless Sensor Networks
9	Sensor Network and Internet of Things
10	High Performance Embedded Computing
11	Operating System Design
12	Cryptography & Network Security
13	Artificial Intelligence & Machine Learning
14	Natural Language Processing
15	Deep Learning

M.Tech. CIVIL ENGINEERING
(Specialisation: Geotechnical Engineering)

Semester I

Course Code	Course	C/E	Credits
18-449-0101	Advanced Soil Mechanics	C	4
18-449-0102	Subsurface Investigations and Instrumentation	C	4
18-449-01**	Elective I	E	3
18-449-01**	Elective II	E	3
18-449-0109	Geotechnical Engineering Lab	C	1
18-449-0110	Seminar I	C	1
18-449-0111	Research Methodology & IPR	C	2
Total			18

Semester II

Course Code	Course	C/E	Credits
18-449-0201	Soil Dynamics and Machine Foundations	C	4
18-449-0202	Advanced Foundation Engineering	C	4
18-449-02**	Elective III:	E	3
18-449-02**	Elective IV:	E	3
18-449-0209	Computer Applications Lab	C	1
18-449-0210	Seminar II	C	1
18-449-0211	Internship	C	2
Total			18

Semester III

Course Code	Course	C/E	Credits
18-449-03**	Elective V	E	3
18-449-03**	Elective VI	E	3
18-449-0307	Dissertation Phase – I	C	12
Total			18

Semester IV

Course Code	Course	C/E	Credits
18-449-0401	Dissertation Phase – II	C	18
Total			18

ELECTIVES I & II (Semester I)

Course Code	Course
18-449-0103	Ground Improvement Techniques
18-449-0104	Theoretical Soil Mechanics
18-449-0105	Geosynthetics in Geotechnical Engineering

18-449-0106	Finite Element Analysis
18-449-0107	Pavement Design and Evaluation
18-449-0108	Ground Water Engineering

ELECTIVES III & IV (Semester II)

Course Code	Course
18-449-0203	Earth Pressure and Retaining Structures
18-449-0204	Geotechnical Earthquake Engineering
18-449-0205	Marine Geotechnical Engineering
18-449-0206	Structural Design of Foundations
18-449-0207	Soil Structure Interaction
18-449-0208	Foundations on Expansive soils

ELECTIVES V & VI (Semester III)

Course Code	Course
18-449-0301	Geo-environmental Engineering
18-449-0302	Rock Mechanics
18-449-0303	Landslide Engineering
18-449-0304	Statistical and Computational Methods
18-449-0305	Sustainable Built Environment
18-449-0306	Remote Sensing, GIS and its Applications in Civil Engineering

M.Tech. CIVIL ENGINEERING (Part-Time)
(Specialization: Construction Engineering and Management)

Semester I

Course Code	Course	Credits
CEC 3101	Applied Mathematics	3
CEC 3102	Construction Management	3
CEC 3103	Advanced Geotechnical Engineering	3
CEC 3104	Structural Dynamics	3
CEC 3105	Seminar	1
Total		**13**

Semester II

Course Code	Course	Credits
CEC 3201	Computational Techniques	3
CEC 3202	Construction Engineering	3
CEC 3203	Foundation Engineering	3
CEC 3204	Elective I	3
CEC 3205	Computational Laboratory	1
Total		**13**

Semester III

Course Code	Course	Credits
CEC 3301	Construction Equipments and Management	3
CEC 3302	Construction Safety and Fire Engineering	3
CEC 3303	Design of Prestressed Concrete Structures	3
CEC 3304	Elective II	3
CEC 3305	Computer Applications Laboratory	1
Total		**13**

Semester IV

Course Code	Course	Credits
CEC 3401	MIS & Finance Management	3
CEC 3402	Elective III	3
CEC 3403	Elective IV	3
CEC 3404	Project – Preliminary Evaluation	4
Total		**13**

Semester V

Course Code	Course	Credits
CEC 3501	Project Progress Evaluation and Viva Voce	13
Total		**13**

Semester VI

Course Code	Course	Credits
CEC 3601	Project Dissertation Evaluation and Viva Voce	13
Total		**13**
Grand Total		**78**

Electives

Course Code	Course	Credits
E1	Earthquake Resistant Design of Structures	3
E2	Design of Metal Structures	3
E3	Design of Special Structures	3
E4	Finite element Method	3
E5	Eco-friendly Constructions	3
E6	Building Services	3
E7	Modern Construction Practices	3
E8	Innovate Construction Practices	3
E9	Ground Improvement Techniques	3
E10	Maintenance and Rehabilitation of Structures	3
E11	Contracts and Legal Aspects in Construction	3
E12	Structural Design of Foundations	3
E13	Advanced Concrete Technology	3

Course Code	Course	Credits

M.Tech. CHEMICAL ENGINEERING (Part-Time)
(Process Engineering)

Semester I

Course Code	Course	Credits
CHEP 3101	Advanced Engineering Mathematics	3
CHEP 3102	Advanced Fluid dynamics and Heat Transfer	3
CHEP 3103	Computer Control of Process Plants	3
CHEP 3104	Bioprocess Engineering	3
CHEP 3105	Seminar I	1
Total		**13**

Semester II

Course Code	Course	Credits
CHEP 3201	New Separation Techniques	3
CHEP 3202	Adsorption Engineering	3
CHEP 3203	Environmental Engineering and Management	3
CHEP 3204	Elective I	3
CHEP 3205	Seminar II	1
Total		**13**

Semester III

Course Code	Course	Credits
CHEP 3301	Advanced Chemical Reaction Engineering	3
CHEP 3302	Interafacial Science and Engineering	3
CHEP 3303	Process Safety Engineering	3
CHEP 3304	Elective II	3
CHEP 3305	Seminar III	1
Total		**13**

Semester IV

Course Code	Course	Credits
CHEP 3401	Nano Science and Technology	3
CHEP 3402	Elective III	3
CHEP 3403	Elective IV	3
CHEP 3404	Project – Preliminary Evaluation	4
Total		**13**

Semester V

Course Code	Course	Credits
CHEP 3501	Project – Progress Evaluation	13
Total		**13**

Semester VI

Course Code	Course	Credits
CHEP 3601	Project – Dissertation Evaluation & Viva voce	13
Total		**13**
Grand Total		**78**

List of Electives

Course Code	Subject
E1	High Polymer Engineering
E2	Food Process Engineering
E3	Fluidization Engineering
E4	Project Engineering of Process Plants
E5	Energy Systems Engineering
E6	Process Modelling, Simulation and Optimization
E7	Bio energy Engineering
E8	Computational Fluid Dynamics
E9	Advanced Chemical Engineering Thermodynamics
E10	Computer Aided Design
E11	Pinch Technology
E12	Chemical Process Synthesis
E13	Design of Piping Systems for Chemical Plants
E14	Evaluation of Chemical Plant Projects

M.Tech. MECHANICAL ENGINEERING (Part-Time) (Production Engineering)

Semester I

Course Code	Course	Credits
MEP 3101	Applied Mathematics	3
MEP 3102	New Materials and Their Processing	3
MEP 3103	Metal Forming Theory	3
MEP 3104	Computational Methods in Engineering	3
MEP 3105	Seminar I	1
Total		**13**

Semester II

Course Code	Course	Credits
MEP 3201	Computer Aided Product Design	3
MEP 3202	Metal Cutting Theory and Practice	3
MEP 3203	Maintenance and Reliability Engineering	3
MEP 3204	Elective I	3
MEP 3205	Seminar II	1
Total		**13**

MEP 3204 – Elective I

MEP E1	Mechatronics
MEP E2	Lean Manufacturing
MEP E3	Six Sigma
MEP E4	Process Control And Automation

Semester III

Course Code	Course	Credits
MEP 3301	Computer Integrated Manufacturing	3
MEP 3302	Casing and Welding Techniques	3
MEP 3303	Modern Machining Process	3
MEP 3304	Elective II	3
MEP 3305	CAD/CAM Laboratory	1
	Total	**13**

MEP 3304 – Elective II

MEP E-5	Special Purpose Machine Tools
MEP E-6	Micro fabrication
MEP E-7	Logistics and Supply Chain Management
MEP E-8	Industrial Tribology

Semester IV

Course Code	Course	Credits
MEP 3401	Computer Numerical Control of Machine Tools	3
MEP 3402	Elective III	3
MEP 3403	Elective IV	3
MEP 3404	Project Preliminary Evaluation	4
	Total	**13**

MEP 3402 – Elective III & MEP 3403 Elective IV

MEP E-9	Hydraulic and Pneumatic Control Systems
MEP E-10	Mechanical Vibrations
MEP E-11	Design for Manufacture
MEP E-12	Quality Engineering and Management
MEP E-13	Total Quality Management
MEP E-14	Finite Element Method and Application
MEP E-15	Manufacturing System Design

Semester V

Course Code	Course	Credits
MEP 3501	Project Progress Evaluation	13
	Total	**13**

Semester VI

Course Code	Course	Credits
MEP 3601	Project Dissertation Evaluation &Viva Voce	13
	Total	**13**
	Grand Total	**78**

M.Tech. MECHANICAL ENGINEERING

(Specialisation: Thermal Engineering)

Semester I

Course Code	Course	C/E	Credits
18-450-0101	Advanced Fluid Mechanics	C	4
18-450-0102	Advanced Thermodynamics	C	4
18-450-01**	Elective I	E	3
18-450-01**	Elective II	E	3
18-450-0109	Thermal Engineering Laboratory I	C	1
18-450-0110	Seminar I	C	1
18-450-0111	Research Methodology and IPR	C	2
Total			18

Semester II

Course Code	Course	C/E	Credits
18-450-0201	Advanced Heat & Mass Transfer	C	4
18-450-0202	Thermodynamics and Propulsion	C	4
18-450-02**	Elective III	E	3
18-450-02**	Elective IV	E	3
18-450-0209	Thermal Engineering Laboratory II	C	1
18-450-0210	Seminar II	C	1
18-450-0211	Mini Project	C	2
Total			18

Semester III

Course Code	Course	C/E	Credits
18-450-03**	Elective V	E	3
18-450-03**	Elective VI	E	3
18-450-0307	Dissertation Phase – I	C	12
Total			18

Semester IV

Course Code	Course	C/E	Credits
18-450-0401	Dissertation Phase – II	C	18
Total			18

**Electives must be selected from the following list for the corresponding Semester
Total Credits for the M.Tech. Program=72

ELECTIVES I & II (Semester I)

Course Code	Course
18-450-0103	Industrial Refrigeration and Air-Conditioning
18-450-0104	Incompressible and Compressible Flows
18-450-0105	Computational Methods in Engineering
18-450-0106	Hydrodynamics

18-450-0107	Conduction and Radiation
18-450-0108	Introduction to Combustion

ELECTIVES III & IV (Semester II)

Course Code	Course
18-450-0203	Combustion and Pollution
18-450-0204	Finite Element Analysis
18-450-0205	Convection and Two Phase Flows
18-450-0206	Principles of Turbo machinery
18-450-0207	Numerical Methods in Thermal Engineering
18-450-0208	Space Cryogenics

ELECTIVES V & VI (Semester III)

Course Code	Course
18-450-0301	Measurements in Thermal Engineering
18-450-0302	Statistical Methods for Engineering
18-450-0303	CFD and its Application
18-450-0304	Heat Exchanger Design
18-450-0305	Gas Turbines
18-450-0306	Introduction to Turbulence

M.Tech. ELECTRONICS AND COMMUNICATION ENGINEERING
(Specialisation: Wireless Technology)

Semester I

Course Code	Course	C/E	Credits
18-453-0101	Digital Communication	C	4
18-453-0102	Antenna Systems	C	4
18-453-01**	Elective I	E	3
18-453-01**	Elective II	E	3
18-453-0109	Antenna Lab	C	1
18-453-0110	Digital Communication Lab	C	1
18-453-0111	Core Common: Research Methodology & IPR	C	2
Total			18

Electives I & II (Semester I)

Course Code	Course
18-453-0103	Advanced Digital Signal Processing
18-453-0104	Advanced Information Theory
18-453-0105	Communication Network
18-453-0106	Microwave Integrated Circuits
18-453-0107	Detection and Estimation of Signals
18-453-0108	Embedded Cyber Physical System

Semester II

Course Code	Course	C/E	Credits
18-453-0201	Electromagnetic Interference & Compatibility	C	4
18-453-0202	Wireless Communications	C	4
18-453-02**	Elective III	E	3
18-453-02**	Elective IV	E	3
18-453-0209	Wireless Communication Lab	C	1
18-453-0210	Seminar	C	1
18-453-0211	Mini Project	C	2
Total			18

Electives III & IV (Semester II)

Course Code	Course
18-453-0203	OFDM & MIMO Wireless Communication
18-453-0204	Software Defined Radio
18-453-0205	Multimedia Compression Techniques
18-453-0206	Wireless Sensor Networks
18-453-0207	VLSI for Wireless Communication
18-453-0208	Optical Networks

Semester III

Course Code	Course	C/E	Credits
18-453-03**	Elective V	E	3
18-453-03**	Elective VI	E	3
18-453-0307	Dissertation Phase I	C	12
Total			18

Electives V & VI (Semester III)

Course Code	Course
18-453-0301	Cooperative Communication
18-453-0302	Analytical & Computational Techniques in Electromagnets
18-453-0303	Optical & Satellite Communication
18-453-0304	Interconnection Networks for High Performance Computing
18-453-0305	Advanced Techniques for Wireless Reception
18-453-0306	Internet of Things

Semester IV

Course Code	Course	C/E	Credits
18-453-0401	Dissertation Phase II	C	18
Total			18

M.Tech. SOFTWARE SYTEMS

Semester I

Course Code	Course	C/E	Credits
18-451-0101	Computational Methods in IT	C	4
18-451-0102	Algorithm Design & Analysis	C	4
18-451-01**	Elective I	E	3
18-451-01**	Elective II	E	3
18-451-0109	Algorithm Design Lab	C	1
18-451-0110	Seminar I	C	1
18-451-0111	Research Methodology and IPR	C	2
Total			18

Electives I & II (Semester I)

Course Code	Course
18-451-0103	Android Programming
18-451-0104	Big Data Analytics
18-451-0105	Distributed Algorithms
18-451-0106	Randomized Algorithms
18-451-0107	Ad Hoc Wireless Networks
18-451-0108	Computational Biology

Semester II

Course Code	Course	C/E	Credits
18-451-0201	Advanced Computer Networks	C	4
18-451-0202	Software Engineering	C	4
18-451-02**	Elective III	E	3
18-451-02**	Elective IV	E	3
18-451-0209	Data Management Lab	C	1
18-451-0210	Seminar II	C	1
18-451-0211	Mini Project	C	2
Total			18

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Electives III & IV (Semester II)

Course Code	Course
18-451-0203	Cyber Physical Systems
18-451-0204	Recommender Systems
18-451-0205	Object Oriented Design With UML
18-451-0206	Software Test Design
18-451-0207	Real Time Operating System
18-451-0208	Cloud Computing

Semester III

Course Code	Course	C/E	Credits
18-451-03**	Elective V	E	3
18-451-03**	Elective VI	E	3
18-451-0307	Dissertation Phase-I	C	12
Total			18

Electives V & VI (Semester III)

Course Code	Course
18-451-0301	Internet of Things
18-451-0302	Agile Project Management
18-451-0303	Artificial Intelligence & Soft Computing
18-451-0304	Advanced Computer Architectures
18-451-0305	Information Security and Cyber Laws
18-451-0306	Systems Thinking

Semester IV

Course Code	Course	C/E	Credits
18-451-0401	Dissertation Phase – II	C	18
Total			18

**Electives must be selected from the following list for the corresponding
Semester
Total Credits for the M.Tech. Program=72

M.Tech. ELECTRICAL AND ELECTRONICS ENGINEERING

(Specialization: Power Electronics)

Semester I

Course Code	Course	Credits
EEP 3101	Optimization Techniques	3
EEP 3102	Power Electronics Circuits	3
EEP 3103	Modern Control Theory	3
EEP 3104	Advanced Power Semiconductor Devices	3
EEP 3105	Seminar I	1
Total		**13**

Semester II

Course Code	Course	Credits
EEP 3201	Advanced Power Electronics Circuits	3
EEP 3202	Advanced Signal Processing	3
EEP 3203	Flexible AC Transmission	3
EEP 3204	Elective I	3
EEP 3205	Seminar II	1
Total		**13**

Elective I

EEP 3204 A	Energy Management in Electrical System
EEP 3204 B	Industrial Instrumentation
EEP 3204 C	Process Control & Instrumentation

Semester III

Course Code	Course	Credits
EEP 3301	Power Electronics Drives	3
EEP 3302	System Dynamics	3
EEP 3303	Power Quality	3
EEP 3304	Elective II	3
EEP 3305	Seminar III	1
Total		**13**

Elective II

EEP 3304 A	Smart Grid Technologies and Applications
EEP 3304 B	Digital Simulations of Power Electronic System
EEP 3304 C	Soft Computing

Semester IV

Course Code	Course	Credits
EEP 3401	High Voltage DC Transmission	3
EEP 3402	Elective III	3
EEP 3403	Elective IV	3
EEP 3404	Project – Preliminary Evaluation	4
Total		**13**

Elective III

EEP 3402 A	Research Methodology
EEP 3402B	Engineering Optimization
EEP 3402C	Power Electronic Control of Special Electrical Machines

Elective IV

EEP 3403 A	Digital Control Systems
EEP 3403B	Microcontroller Based Systems
EEP 3403C	Distributed Generation and Control

Semester V

Course Code	Course	Credits
EEP 3501	Project – Progress Evaluation	13
	Total	**13**

SemesterVI

Course Code	Course	Credits
EEP 3601	Project – Dissertation Evaluation & Viva Voce	13
	Total	**13**
Grant Total		**78**

M.Tech. ELECTRONICS DESIGN AND TECHNOLOGY

Semester I

Course Code	Course	C/E	Credits
EDT 3101	Embedded OS & Linux System Software	C	4
EDT 3102	Neuro Fuzzy Systems	C	4
EDT 3103	Advanced Digital Design	C	4
EDT 3104	Design of Analog Systems	C	4
EDT 3105	Seminar	C	1
	Elective I	E	3
	Elective II	E	3
Total			23

Semester II

Course Code	Course	C/E	Credits
EDT 3201	Designing with Embedded Processors and Interfaces	C	4
EDT 3202	Multimedia Signal Processing	C	4
EDT 3203	Mixed Signal System Design	C	4
EDT 3204	Design of Electronic Products	C	4
EDT 3205	Seminar	C	1
	Elective III	E	3
	Elective IV	E	3
Total			23

Semester III

Course Code	Course	C/E	Credits
EDT 3301	Industrial Training/ Internship	C	2
EDT 3302	Project Evaluation	C	10
Total			12

Semester IV

Course Code	Course	C/E	Credits
EDT 3401	Project Evaluation & Viva Voce	C	14
Total			14

Electives

Course Code	Course
EDT 3E06	VLSI Circuit Design and Technology
EDT 3E07	Design of Power Converters

EDT 3E08	Internet of Things
EDT 3E09	Wireless Sensor Networks
EDT 3E10	Automotive Electronics
EDT 3E11	Multicore Architectures
EDT 3E12	Low Power VLSI
EDT 3E13	High Speed Digital Design
EDT 3E14	Fault Tolerant Systems
EDT 3E15	Research Methodology

Details of Faculty

Sl. No.	Name & Designation	Communication
I. Applied Sciences & Humanities Division		
1.	Dr.T.P.Johnson Associate Professor & Head	2577437, 9995376115 (Res./Mob.) tpjohnson@cusat.ac.in
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3.	Dr.Dhannia T. Assistant Professor	2575131, 9446227207 dhanniat@cusat.ac.in
II. Chemical Engineering Division		
4.	Dr.G.Madhu Professor & Head	2543357, 9447366900 profmadhu@cusat.ac.in
III. Civil Engineering Division		
5.	Dr.Abdul Rahman K.U. Associate Professor	2447501, 9497683196 arku@cusat.ac.in
6.	Sri.Arun Kumar T. Assistant Professor	9946510679 Arunkumart2001@yahoo.co.uk
7.	Dr.K.S.Beena Professor	6454433, 9447329888 beenavg@cusat.ac.in
8.	Dr.Benny Mathews Abraham Professor	2540377, 9446409897 benny@cusat.ac.in
9.	Dr.Bindu C.S. Associate Professor	2544135, 9495429703 binduromeo@cusat.ac.in
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14.	Sri.Narasimha D.S	2576443, 8547775943

	Associate Professor	narasimha@cusat.ac.in
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18.	Dr.Sobha Cyrus Professor	2575286, 9846146198 sobharoy@cusat.ac.in
19.	Dr.Subha V. Reader	2398700, 9447292584 v.subha@cusat.ac.in
	IV.Computer Science & Engineering Division	
20.	Smt.Ancy Zachariah Assistant Professor & Head	2545889, 9544884424 ancyz@cusat.ac.in
21.	Sri.V.Damodaran Associate Professor	9447001195 damodar@cusat.ac.in
22.	Dr.David Peter S. Professor(on deputation as Registrar, CUSAT)	2577605,9446366805 davidpeter@cusat.ac.in
23.	Dr.Latha R.Nair Assistant Professor	2577620, 9567489098 latharnair@cusat.ac.in
24.	Sri.Pramod Pavithran Associate Professor	2577111, 9447106663 Pramod-p@cusat.ac.in
25.	Smt.Preetha S. Assistant Professor	9947468348 preethas@cusat.ac.in
26.	Dr.Sheena Mathew Professor	6622311, 9446509508 Sheenamathew@cusat.ac.in
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28.	Dr.Sudheep Elayidom M. Selection Grade Lecturer	2463306, 989504399 sudheepelayidom@cusat.ac.in
29.	Sri.Vinod Kumar P.P. Associate Professor	2577315, 9447222647 ppvinod@cusat.ac.in
	V.Electronics & Communication Engineering Division	
30.	Dr.Abdulla P. Associate Professor	9496445235 abdulla@cusat.ac.in
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32.	Dr.Babita Roslind Jose Assistant Professor	2532409, 9846222168 babitajose@cusat.ac.in
33.	Dr.Binu Paul Associate Professor & Head	2426000, 8547015950 binupaul@cusat.ac.in
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35.	Dr.R.Gopikakumari Professor	2557720, 9446129193 gopika@cusat.ac.in
36.	Dr.Jibukumar M.G. Associate Professor	2462028, 9497683331 jijukumar@cusat.ac.in

37.	Dr.Mridula S. Reader	2576068, 9567883856 mridula@cusat.ac.in
38.	Dr.P.Mythili Associate Professor	2426340, 9400939416 mythili@cusat.ac.in
39.	Sri.Premkumar C.V. Assistant Professor	2464449, 9447171544 premkumar@cusat.ac.in
40.	Dr.Rekha K.James Reader	2320212, 9745182001 rekhajames@cusat.ac.in
41.	Dr.Shahana T.K. Associate Professor	6524767, 9895839629 shahanatk@cusat.ac.in
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VI.Electrical & Electronics Engineering Division

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47.	Dr.Usha Nair Reader	2577534, 9847147689 sshanair4@gmail.com un@cusat.ac.in

VII.Mechanical Engineering Division

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51.	Sri.Franklin Robert John Associate Professor	9496978546 frankrj@cusat.ac.in
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60.	Dr.Saju K.K., Reader (on deputation as Director, IRAA)	9895593988 kksaju@cusat.ac.in
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62.	Dr.K.P.Sankaranarayanan Nair Associate Professor	9496297116, 9895185860 kpsnair@cusat.ac.in
63.	Dr.P.S.Sreejith Associate Professor (on deputation as Principal, CUCEK)	2607676, 9447812820 pssreejith@cusat.ac.in

VIII.Information Technology Division

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65.	Smt.Daleesh M.Viswanathan Assistant Professor	9446218042 daleesha@cusat.ac.in
66.	Dr.Philip Samuel Reader	9495467252 philips@cusat.ac.in
67.	Dr.Renumol V.G. Assistant Professor	9446475103 renumol@cusat.ac.in
68.	Smt.Sariga Raj Assistant Professor	9446556876 sariga@cusat.ac.in
69.	Sri.Santhosh Kumar M.B. Assistant Professor	9746622326 Santo-mb@cusat.ac.in
70.	Sri.Shelbi Joseph Assistant Professor & Head	9446221045 sheli@cusat.ac.in
71.	Dr.Varghese Paul Associate Professor	9496560996 vp.itcusat@gmail.com

IX.Safety and Fire Engineering Division

72.	Dr.Dipak Kumar Sahoo Professor	9496215851 dksahoo@gmail.com
73.	Dr.George Mathew Associate Professor & Head	2836192, 9447726194 182otmai-m@cusat.ac.in
74.	Sri.A.Nirmal Job Associate Professor	9446740057 nirmaljob@cusat.ac.in
75.	Dr.V.R.Renjith, Reader	9447108856, renjithvr@cusat.ac.in
76.	M.N. Vinod Kumar Professor	2331698 9446606906, mnvinodkumar@cusat.ac.in

FACULTY OF ENVIRONMENTAL STUDIES

Dean:

Dr.M.K.Jayaraj
Professor
Department of Physics
Cochin University of Science and
Technology.

SCHOOL OF ENVIRONMENTAL STUDIES

M.Sc. ENVIRONMENTAL TECHNOLOGY
(STREAM I – ENVIRONMENTAL ENGINEERING)

Semester I

Course Code	Course	C/E	Credits
ENV/ENB 2101	Environmental Biology	C	3
ENV/ENB 2102	Chemistry of the Environment	C	3
ENV/ENB 2103	Physical processes in the environment	C	3
ENV/ENB 2104	Environmental Microbiology	C	3
ENV/ENB 2105	Environmental Chemistry Lab	C	2
ENV/ENB 2106	Environmental Microbiology lab	C	2
ENV/ENB 2107	Environmental Physics & Geology lab	E	1
ENV/ENB 2108	Chemo-metrics & Good Laboratory Practices	E	2

Semester II

Course Code	Course	C/E	Credits
ENV/ENB 2201	Advanced Methods in Environmental Analysis	C	2
ENV/ENB 2202	Introduction to Environmental Engineering	C	3
ENV/ENB 2203	Environmental Toxicology	C	3
ENV/ENB 2204	Fluid Mechanics	C	2
ENV/ENB 2205	Environmental Engineering Lab	C	2
ENV/ENB 2206	Chemical Methods in Environmental Analysis Lab	C	2
ENV/ENB 2207	Environmental Toxicology Lab	C	1
ENV/ENB 2208	Environmental Modelling	E	2
ENV/ENB 2209	Environmental Management and Legal Aspects	E	3
ENV/ENB 2210	Geo-informatics	E	2
ENV/ENB 2211	Natural Resource Management	E	2
ENV/ENB 2212	Biomolecules	E	2
ENV/ENB 2213	Introductory Bio-nanotechnology	E	2

Semester III

Course Code	Course	C/E	Credits
ENV 2301	Basics of Chemical Engineering	C	2
ENV 2302	Wastewater Treatment	C	3
ENV 2303	Introduction to Engineering Drawings	C	1
ENV 2304	Air Pollution Control	C	2
ENV 2305	Geo-informatics Lab	C	2
ENV 2306	Environmental Engineering & Design Lab	C	3
ENV 2307	Chemistry of Water Treatment	E	3
ENV 2308	Solid Waste Treatment	E	2
ENV/ENB 2214	Introduction to Environmental Studies(Open Course)	E	3

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Semester IV

Course Code	Course	C/E	Credits
ENV 2401	Project	C	14
ENV 2402	Viva – Voce	C	2

M.SC.. ENVIRONMENTAL TECHNOLOGY
(STREAM 2 – ENVIRONMENTAL BIOTECHNOLOGY)

Semester I

Course Code	Course	C/E	Credits
ENV/ENB 2101	Environmental Biology	C	3
ENV/ENB 2102	Chemistry of the Environment	C	3
ENV/ENB 2103	Physical processes in the environment	C	3
ENV/ENB 2104	Environmental Microbiology	C	3
ENV/ENB 2105	Environmental Chemistry Lab	C	2
ENV/ENB 2106	Environmental Microbiology lab	C	2
ENV/ENB 2107	Environmental Physics & Geology lab	E	1
ENV/ENB 2108	Chemo-metrics & Good Laboratory Practices	E	2

Semester II

Course Code	Course	C/E	Credits
ENV/ENB 2201	Advanced Methods in Environmental Analysis	C	2
ENV/ENB 2202	Introduction to Environmental Engineering	C	3
ENV/ENB 2203	Environmental Toxicology	C	3
ENV/ENB 2204	Fluid Mechanics	C	2
ENV/ENB 2205	Environmental Engineering Lab	E	2
ENV/ENB 2206	Chemical Methods in Environmental Analysis Lab	C	2
ENV/ENB 2207	Environmental Toxicology Lab	C	1
ENV/ENB 2208	Environmental Modelling	E	2
ENV/ENB 2209	Environmental Management and Legal Aspects	E	3
ENV/ENB 2210	Geo-informatics	E	2
ENV/ENB 2211	Natural Resource Management	E	2
ENV/ENB 2212	Bio molecules	E	2
ENV/ENB 2213	Introductory Bio-nanotechnology	E	2

Semester III

Course Code	Course	C/E	Credits
ENB 2301	Environmental Biotechnology	C	3
ENB 2302	Eco-Toxicology	C	3
ENB 2303	Biodiversity and Conservation	C	3
ENB 2304	Bioremediation	C	3
ENB 2305	Eco-Toxicology Lab	C	2
ENB 2306	Geo-informatics Lab	E	2
ENB 2307	Microbial Technology Lab	E	2

ENB 2308	Applied Environmental Microbiology	E	3
ENB2309	Biodiversity Lab	E	1
ENB 2310	Solid Waste Treatment	E	2

Semester IV

Course Code	Course	C/E	Credits
ENV 2401	Project	C	14
ENV 2402	Viva – Voce	C	2

DETAILS OF FACULTY

Sl.No	Name &Designation	Specialisation	Communication
1.	**Dr.Rajathy Sivalingam** Professor	Eco Toxicology & Environmental Toxicology	rajkumar@cusat.ac.in 0484-2577311(O) 0484- 2577246I
2.	**Dr. V. Sivanandan Achari** Assoc. Professor &Director	Environmental Chemistry Environmental Modeling	vsachari@cusat.ac.in 9847952318
3.	**Dr.M.Anand** Asst. Professor	Environmental Biotechnology	anandm@cusat.ac.in 9447254921
4	**Dr.Preethy Chandran** Assistant Professor	Environmental Microbiology,	preethychandran@cusat.ac.in 9751275798
5	**Dr.Ratheeshkumar C S** Assistant Professor	Environmental Chemistry	ratheeshkumar2003@gmail.com

NATIONAL CENTRE FOR AQUATIC ANIMAL HEALTH

M.Tech. MARINE BIOTECHNOLOGY

Semester I

Course Code	Course	C/E	Credits
MBT 3101	Marine Biodiversity Conservation	C	2
MBT 3102	Marine Microbiology and Microbial Productivity of the Oceans	C	2
MBT 3103	Marine Genomics and Proteomics	C	2
MBT 3104	Marine Bioprospecting	C	2
MBT 3105	Systems and Computational Biology	E	2
MBT 3106	Animal Cell Culture and hybridoma Technology	E	2
MBT 3107	Products and Services of Oceans (Inter Disciplinary)	E	3
MBT 3108	Fundamentals of finfish and shellfish taxonomy	E	2
MBT 3109	Global Fishery Resources and Sustainable Utilization	E	3
MBT 3110	Recombinant DNA Technology(Lab)	C	2
MBT 3111	Hybridoma Technology (Lab)	C	1
MBT3112	Marine Microbial Diversity (Lab)	C	1
Total Credit: Core 12; Elective 12			24

Semester II

Course Code	Course	C/E	Credits
MBT 3201	Biotechnological Interventions in Aquatic Animal Health	C	2
MBT 3202	Fish Genetics and High Health Brood-stock Development	C	2
MBT 3203	Bioprocess Engineering	C	2
MBT 3204	Marine Algal Biotechnology	C	2
MBT 3205	Marine Biotechnology Industry Management	E	2
MBT 3206	Biotechnological Innovations in Seed Production in Aquaculture	E	3
MBT 3207	Ocean Health and Sustenance of Life on Earth (Inter Disciplinary)	E	3
MBT3208	Nano-biotechnology	E	2
MBT3209	Live Feed Organisms in Aquaculture	E	2
MBT 3210	Biotechnological Interventions in Aquatic Animal Health (Lab)		1

MBT 3211	Bio-prospecting andBioprocess Engineering (Lab)	C	2
MBT3212	High Health Brood Stock Development (Lab)	C	1
Total Credit: Core 12; Elective 12			24

Semester III and IV

Areas of specialization: Non – credit
1. Sustainable Marine Food Production Systems
2. Marine Bio-fuels
3. Climate Change and Biodiversity Conservation
4. Pharmaceuticals from Oceans

Common – Non-credit
Research Methodology

A student can undertake research on any one of the areas under the guidance of a Research Guide. During the course, the student is expected to undertake extensive literature search and specialize on the area stipulated. The assessment will be continuous by the Guide besides group monitoring in every fortnight, where all Faculty members along with external experts will be participating. At the end of the semester comprehensive assessment by an Examination Committee will be convened.

Semester III

Course Code	Course	C/E	Credits
MBT 3301	Research Project under the area of specialization	C	12
MBT 3302	Viva Voce Examination under the area of specialization	C	6
Total Credit			18

Semester IV

Course Code	Course	C/E	Credits
MBT 3401	Research Project under the area of specialization	C	12
MBT 3402	Viva Voce Examination under the area of specialization	C	6
Total Credit			**18**

Credits

Total credits: 84 (Core: 60, Elective: 24)
Semester 1: 24; Semester 2: 24; Semester 3: 18; Semester 4: 18.

Details of Faculty

SI. No.	Name and Designation	Specialization	Communication
1.	Dr.Valsamma Joseph Associate Professor ,Director and Course Co-ordinator	Marine Biotechnology	04842381120 (O) 9846047433 (Mob) valsamma@cusat.ac.in.
2	Prof.I.S.Bright Singh KSCSTE- Emeritus Scientist	Aquatic Animal Health/ Marine Biotechnology	04842381120 (O) 9447631101 isbsingh@gmail.com
3.	Dr.Sajeevan T.P. Assistant Professor	Marine Biotechnology	04842381120 (O) 9946099408 (Mob) sajeevantp@gmail.com
4.	Dr. Jayesh Puthumana Assistant Professor	Marine Biotechnology	04842381120 (O) 9447719804 jayesh@cusat.ac.in
5.	Mr. Shibin S.P. Assistant Professor	Bioprocess Technology	0484 -2381120 09447714543 sp.shibin@gmail.com
6.	Prof.A.Mohandas Emeritus Professor	Parasitology & Haematology	04842381120 (O) 9447957277 modas943@gmail.com

FACULTY OF HUMANITIES

Dean:

Dr.K.Ajitha
Professor
Department of Hindi
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Kochi- 682 022

DEPARTMENT OF HINDI

M. A. DEGREE   IN HINDI LANGUAGE AND LITERATURE

REVISED SYLLABUS

(2017 Admission Onwards)

NATURE OF COURSE	:	CBCS	
TOTAL SEMESTERS	:	4	
DURATION	:	2 YEARS	
TOTAL CREDIT	:	72	

Semester – I

Course code	Course	C/E	Credits
HIN 2101	Ancient and Nirgun Poetry	C	4Credits
HIN 2102	Fiction	C	4Credits
HIN 2103	Functional Hindi	C	4Credits
HIN 2104	History of Literature : Ancient and Medieval Periods	C	3Credits
HIN 21	Elective	E	3Credits
Total			**18 Credits**

Elective – List attached

Semester – II

Course code	Course	C/E	Credits
HIN 2201	Sagun and Reeti Poetry	C	4Credits
HIN 2202	Essays, Sketches and Other Prose Forms	C	4Credits
HIN 2203	Modern Poetry – I	C	4Credits
HIN 2204	Development and Structure of Hindi Language	C	3Credits
Elective	HIN 22- - Elective	E	3Credits
Total			**18 Credits**

Semester – III

Course code	Course	C/E	Credits
HIN 2301	HIN 2301 Modern Poetry – II	C	4Credits
HIN 2302	HIN 2302 Hindi Drama And Theatre	C	4Credits
HIN 2303	HIN 2303 History of Literature : Modern Period	C	4Credits
HIN 2304	HIN 2304 Indian Literary Thoughts	C	3Credits
Elective	HIN 23- - Elective	E	3Credits
Total			**18 Credits**

Semester – IV

Course code	Course	C/E	Credits
HIN 2401	Modern Poetry III	C	4Credits
HIN 2402	Indian Literature	C	4Credits
HIN 2403	Western Literary thoughts	C	4Credits
HIN 2404	General Linguistics	C	3Credits
Elective	- - Elective	E	3Credits
Total			**18 Credits**

(Code of electives start only from no. of 10 for clarity)

10. Indian Culture

11. Popular Culture

12. Hindi Renaissance

13. Hindi Literature

14. Comparative Literature

15. Hindi Writings of Kerala

16. Urdu Literature

17. Theatreof Hindi

18. Feminine Discourse in Hindi Literature

19. Ecological Discourse in Hindi Literature

20. Aadivasi Discourse in Hindi Literature

21. Dalit Literature

22. Literature and Sociology

23. Human Rights in Literature

24. Communicative Hindi

25. Translation   : Theory and Practical

26. Mass Communication and Media Writing

27. MAL 05-Malayalathinte Varthamanam

M.Phil. HINDI

Semester I

Course code	Course	C/E	Credits
HIN 4101	Core-Modern literary thoughts and Post Independent Hindi Literature	C	3Credits
HIN 4102	Elective-Area of Research	E	3Credits
HIN 4103	Research Methodology	C	4Credits
HIN 4104	Literature review and Seminar	C	2Credits
	Total		12

Semester II

Course code	Course	C/E	Credits
HIN 4201	Project Evaluation	C	8Credits
	Viva Voce	C	4Credits
	Total		12

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1	Dr. K. Ajitha Professor & Head of the Department	Ancient and Modern Hindi Literature, Drama and Theatre, Subaltern Studies, Comparative Literature	0484 – 2575845(R) 0484-2575954 (O) 2509/2502 (Intercom) ajiravi@cusat.ac.in 123ajeeta@gmail.com
2	Dr. R. Sasidharan Professor	Ancient and Modern Hindi Literature, Translation Studies, Comparative Literature, Drama and Theatre Dalit Literature	0484-2575954 (O) 2497(Intercom) 0484-2540352(Res) rsd@cusat.ac.in sreeragamsasi@gmail.com
3	Dr. K. Vanaja Professor	Ancient and Modern Hindi Literature Translation Studies, Comparative Literature, Literary Criticism, Feminist and Eco Literature	0484-2332783 (R) 0484-2575954 (O) vanaja@cusat.ac.in Vanaja.krevathy@gmail.com
4	Dr. Aneesh. K.N Assistant Professor	Modern Hindi Literature, Drama and Theatre Comparative Literature	0484-2575954 (O) 2507 (Intercom) aneeshkn1@gmail.com
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DEPARTMENT OF ENGLISH AND FOREIGN LANGUAGES

Appendix VI
Regulations
Certificate Courses in French/German
With effect from 2012 admissions

1. Duration

The Course is conducted for six hours a week during one academic year. This is a part time course and classes shall be held in the evening after 5 p.m. The classes are held thrice a week

2. Aim of the Course

To teach the students to read, write and understand simple texts, carry out conversation within the limits of the covered topics, translate texts by overcoming language difficult (synthetic reading) and understand simple texts read out them.

3. Eligibility

Candidates for admission to the certificate course in French/German shall be required to have passed pre-degree/plus two examination or equivalent thereto of any University recognised by CUSAT. Previous knowledge in the language concerned is not essential.

4. Course Work

The Course work for the study for the certificate in French, German, shall be according to the Schemes of Examination and Syllabi prescribed. No. candidates is eligible for these examinations unless he/she has undergone the prescribed Course in a Department/Institution under the University for one academic year and has passed all the prescribed examinations.

The minimum attendance required by a candidate will be 75% of the total number of working days.

5. Scheme of Examinations

There will be university examination at the end of the Course in the subject prescribed under the Scheme of Examinations. There shall be two written papers and a viva –voce carrying hundred marks each.

6. Gradation of successful candidate

A candidate should get a separate minimum of 40% in each paper and an aggregate minimum of 50% in the examination. A minimum of 20% in viva-voce is also essential. Those who get 50% and above but below 60% of shall be declared to have passed the examination in second class. Candidates who get 60% but below 75% and above shall be declared to have passed in First class. Candidates who secure 75% and above shall be declared to have passed with distinction.

Marks obtained in the oral test will also be included for determining the gradation.

7. Revision of Regulations and Curriculum

The university may from time to time, revise, amend or change the regulations, schemes of examinations and syllabi. In the case of students already undergoing the Courses the changes will take effect from the beginning of the following academic year after the changes are introduced.

Certificate Course in French
w.e.f 2012 admissions

Revises syllabus
1. Introduction to phonetics
2. Lexical minimum : about 1200 words
3. Grammatical minimum

-articles (definitive, in definitive, positive)
- Nouns – gender-number

- Pronouns (possessive, personal, relative, interrogative)
- Adjectives-qualitative, possessive, interrogative
- Verbs
1. Indicative mood three groups-present tense, past tense, future tense, immediate future, immediate past, imperfect, Le future anterieur Le plus-que- parfait
2. Imperative
3. Past participle
4. Present participle
5. Present conditional
   -Adverbs Comparative, superlative

Text book: "Le nouveau Sans frontiers" Vol.1

Scheme of Examination

"The examination shall consist of two parts, written and oral.The written examination shall have two papers

Paper I-Written Examination

Paper 1-Grammer.	Duration: 3 Hrs.	Total Marks: 100
		Internal-Assessment: 40
		External: 60

(a) Questions on grammar, vocabulary and usage 40

(b) Comprehension questions based on texts front the prescribed text book 10

I Comprehension based on a given passage 10

Found in the prescribed text book.

Paper II-Translation	Duration: 3 Hrs.	.Total Marks:	100
Internal Assessment			40
	External -		60

A. Translation from French to English (Seen from prescribed text) 10x2 – 20
B, Translation from English to French (Use ff Dictionary is permitted) 10x2 – 20
   (Unseen passage)
C. Translation of Simple Sentence into French 10x2 = 20
Part II-Oral Examination Total Marks:
(a) Reading, Comprehension, Questions
(b) Dictation
I Description
(d) Conversation

Appendix (VI)
REGULATIONS
INTEGRATED DIPLOMA IN JAPANEES

(with effect from 2012 Admissions)
1. Duration
   The duration of the course is for 10 months from July to April, 10 Hours a week. This is a part time course and the classes shall be held either in the morning or in the evening from Monday to Friday
2. Aim of the Course
   To teach the students to read, write and communicate in simple Japanese to give training in scientific translation so that the students can prepare themselves to take up translation as a career

3. Eligibility

Candidates for admission to the integrated Diploma course in Japanese shall be required to have pass pre-degree/Plus two examination or equivalent thereto of any University 196otmail196ed by CUSAT previous knowledge in the language concerned is no essential

4. Course Work

The course work for the study for the integrated Diploma Japanese shall be according to the Scheme Examination and syllabi prescribed. No candidate is eligible for the examinations unless the student has undergone the prescribed course in it department under the University for one academic year and has passed all it prescribed tests and assignments.

5. Scheme of Examination

There will be university examination at the end of the Course in subject prescribed under the scheme of Examination.

There shall be two written papers and viva-voce as detailed in the scheme Examination

6. Graduation

A Candidate should get a separate minimum 40% in each paper and aggregate minimum of 50% in the examination. A minimum of 40% in viva-voce is also essential. Those who get 50% and above but below 60% shall be decide to have pass the examination in Second class. Candidates who get 60% below 75% and above shall be declared to have in First class Candidates who secure 75% and above shall be declared to have passed distinction

INTEGRATED DIPLOMA IN JAPANESE

Revised Syllabus

1) Introduction to the general characteristics of Japanese language-end phonetics through Hiragana and Katakana using charts.
2) Reading and Writing of Hiragana and Katakana.
3) Vocabulary –Basic Minimum 1400 words plus related Words.'

4) Grammar
   1. Sentence structures, word orders
   2. Nouns, pronouns
   3. Verbs- tense, te-form, transitive and intransitive, verbal conjugation, active and passive voice
   4. Adjectives –te-form, attribute form, dictionary form, predicative use, conjugation
   5. Particles, numerals, adverbs, auxiliary verbs'prefix, suffix, preposition, postposition;

5) Expressions – ability, alternative action, cause and reason (15(2} comparison, continuous state of action desirative, duty, existence (1X2), experience, fondness, giving and receiving, giving and receiving of favour, intension, invitation, permission, possession, purpose of going and coming, request, idiomatic expressions, polite and impolite expressions.

6) Understanding of simple essays and stories.
7) Conveyance of ideas in the form of letters.

g) Kanji – About 380 Kanjis with Onyomi, Kunyomi and Jukugo, that is combinations of Kanjis to express in more advanced Japanese originated in China.

   This Course –aims to teach the student the level of 3rd Grade, Japanese Language Proficiency Test.

Text Book: Nihongo Shoho, Part I, Part 2
            The Japanese Foundation,

Japanese Language Institute, Japan

Reference Book: 1) How To Use Good Japanese
                     The Japanese Language
                      School of International Students
                  Institute, Japan

                  2) Basic Kanji Book, Vol. 1
                     Bonjinsha, Japan

Scheme of examination
         The examination will consist of two parts: written and oral
Part 1- Written examination   Duration: 3 Hours   Max .Marks: 100
Paper 1 Grammar   Internal 40
                                             External 60
                                1.   Hiragana, Katakana   10
                                2.   Kanji   10
                                3.   Question on text   20
                                4.   Grammar   20
                                                               60
The Internal Assessment shall be based on attendance, active participation in class-room and correct and regular submission of assignments.
Paper II – Translation   Internal   40
                                       External   60

1.   Translation from Japanese to English/Malayalam   25
2.   Translation from English/Malayalam to Japanese   25
3.   Composition   10

Part II – Oral Examination
                       Dictation   25
                       Reading and comprehension   25
                       Conversation   50
                                                            100

Certificate course in German
w.e.f 2012 admissions

   Revised Syllabus

   1.   Introduction
   2.   Grammar
 -   articles, definite, indefinite
 -   declension of nouns; singular, plural
 -   pronouns
 -   declension of adjective
 -   conjugation of verbs, singular, plural
 -   tenses of verbs
 -   forms of irregular verbs
 -   verbs with separable and inseparable prefixes
 -   auxiliaries: haben, sein
 -   modal verbs: mussen, konnen, durfen, wollen, sollen, in present and past tenses; mochten
 -   prepositions

- the impersonal 'es'
- forms of negation
- types of sentences

Text Book Wolfgang, Hieber; Lernziel Deutsch:

      Deutsch als Fremdsprache
      Grundstufe 1

Max Heuber Verlage, Munchen1983

Scheme of Examination

The examination shall consist of two parts, written and oral, The written examination shall have two papers

Part 1	Internal	40 marks
	External	60 marks
Paper 1 Grammar Duration : 3 Hrs	Total Marks	100
Question on Grammar and idiomatic expression found in the prescribed text book	Internal	40 marks
	External	60 marks

Paper II Translation   Duration 3 Hrs   Total Marks   100

  a) Translation from English into German   40
     One simple passage within the limits of the
     vocabulary of the prescribed text book
     (1 seen & 1 unseen)
  b) Translation from English into German
     Once simple passage within the limits of the
     Vocabulary of the prescribed text books   20

Part II – Oral Examination

                                         Total Marks : 100

    a. Reading, Comprehension, Questions
    b. Dictation
    c. Description
    d. Conversation

SYLLABUS

ELECTIVE COURSE IN COMMUNICATIVE ENGLISH-I

Credits: 3   **Teaching Hours: 50**

Module I

Grammar and Vocabulary

-   • Subject- Verb agreement
- Preposition
- Adjective – degree of Comparison
- Tag questions
- Prefixes, Suffixes, Roots
- Phrasal Verbs

(pick up, work out, catch on, keep up, get across, find out, look up, get by, put through, hold on speak up, call off, put off, get through, call back, count on, let down, pull through, laid up, come out in, pass out, come down with, worn out take off, carry out, go off, blow up, break into, let out, put down, give out, pull off, come across, clear up, tell off, take off, get up to, get down to, get on, pick on, make up, own up, take up, look after)

Module II

- Reading Skills- Preparation of Glossary

Module Ill

Writing Skills

- Letters – Friendly Letters
  Formal Letters
- Dialogue Writing
- Paragraph Writing

Module IV

- English Conversation Practice based on Situations

References

1) English Conversation Practice- Grant Taylor, Tata McGraw Hill.
2) English Vocabulary in Use- Michael McCarthy Felicity O'Dell, CUP
3) High School English Grammar Composition- Wren & Martin, New Delhi.
4) Help with Phrasal Verbs – Richard Acklam, Heinemann.

POST GRADUATE DIPLOMA IN COMMUNICATIVE ENGLISH

COURSE STRUCTURE

Sl No	Course Code	Title of Paper	Continuous Evaluation	Year- end Examination	Total Marks	Hrs/ week
1	PGDCE-01	Paper I-Communicative Grammar	50	50	100	2
2	PGDCE-02	Paper II-Vocabulary and writing	50	50	100	2
3	PGDCE -03	Paper III-English Language and its varieties	50	50	100	2
4	PGDCE -04	Paper-IV Aspects and Patterns of communication	50	50	100	2
5	PGDCE-05	Paper-V Communication Skills	50	50	100	2
6	PGDCE-06	Paper-VI Dissertation/Viva voce	50	50	100	

(No.Conf.II/2941/2/2016 (10) Dated, Kochi – 22, 05.12.2016

No. Conf.II/2941/2/2016(7) Date: 09.12.2016)

FACULTY OF LAW

Dean:

Dr.K.C.Sunny Vice Chancellor NUALS,NUALS Campus, H.M.T.Colony P.O. Kalamassery, Kochi-683 503

SCHOOL OF LEGAL STUDIES

U.G. Course – B.B.A., LL.B (HONS)

Semester I

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M.1	General English -1	6	2		NA	50	50	100
C.M.2	Business Organisation and Management	6	2		NA	50	50	100
C.M.3	Managerial Economics	6	2		NA	50	50	100
C.M.4	Business Statistics	6	2		NA	50	50	100
C.L.1	Law of Torts and Motor Vehicles Accidents	6	2		NA	50	50	100
C.L.2	General Principles of Contract	6	2		NA	50	50	100

Semester II

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M.5	General English-II	6	2		NA	50	50	100
C.M.6	Business Environment	6	2		NA	50	50	100
C.M.7	Business Communication	6	2		NA	50	50	100
C.M.8	Financial Accounting	6	2		NA	50	50	100
C.L.3	Special Contracts	6	2		NA	50	50	100
C.L.4	Constitutional Law-I	6	2		NA	50	50	100

Semester III

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M .9	Cost Accounting	6	2		NA	50	50	100
C.M.10	Advertising and Publicity Management	6	2		NA	50	50	100
C.M.11	Modern Banking	6	2		NA	50	50	100
C.L.5	Jurisprudence (Legal Method, Indian Legal System and Basic Theory of Law)	6	2		NA	50	50	100
C.L.6	Constitutional Law-II	6	2		NA	50	50	100
C.L.7	Law of Crimes-I	6	2		NA	50	50	100

Semester IV

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M.12	Financial Management	6	2		NA	50	50	100
C.M.13	Marketing Management	6	2		NA	50	50	100
C.M.14	Human Resources Management	6	2		NA	50	50	100
C.L.8	Family Law -1	6	2		NA	50	50	100
C.L.9	Administrative Law	6	2		NA	50	50	100
C.L.10	Law of Crimes-II	6	2		NA	50	50	100

Semester V

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M.15	Business Ethics	6	2		NA	50	50	100
C.M.16	Information Technology for Managers	6	2		NA	50	50	100
C.L.11	Law of Criminal Procedure	6	2		NA	50	50	100
C.L.12	Family Law –II	6	2		NA	50	50	100
C.L.13	Consumer Protection Law	6	2		NA	50	50	100
C.L.14	Law of Evidence	6	2		NA	50	50	100

Semester VI

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M.17	Industrial Relations	6	2		NA	50	50	100
C.M.18	Operations Management	6	2		NA	50	50	100
C.L.15	Company Law	6	2		NA	50	50	100
C.L.16	Labour Law-I	6	2		NA	50	50	100
C.L.17	Civil Procedure Code and Limitation Act	6	2		NA	50	50	100
C.L.18	Public International Law	6	2		NA	50	50	100

Semester VII

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
C.M.19	Management Project	6	2		NA	50	50	100
C.L.19	Principles of Taxation Law	6	2		NA	50	50	100
C.L.20	Labour Law-II	6	2		NA	50	50	100
C.L.21	Environmental Law	6	2		NA	50	50	100
C.L.22	Property Law	6	2		NA	50	50	100
C.C.L.1	Drafting, Pleading and Conveyance	6	2		NA	50	50	100

Semester VIII

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
G.E.C.1	General Elective-1	6	2		NA	50	50	100
G.E.C.2	General Elective-2	6	2		NA	50	50	100
G.E.C.3	General Elective-3	6	2		NA	50	50	100
G.E.C.4	General Elective-4	6	2		NA	50	50	100
C.M.20	Organisational Dynamics	6	2		NA	50	50	100
C.C.L.2	Professional Ethics & Professional Accounting System	6	2		NA	50	50	100

Semester IX

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
G.E.C.5	General Elective-5	6	2		NA	50	50	100
G.E.C.6	General Elective-6	6	2		NA	50	50	100
S.E.C.1	Special Elective-1	6	2		NA	50	50	100
S.E.C.2	Special Elective-2	6	2		NA	50	50	100
S.E.C.3	Special Elective-3	6	2		NA	50	50	100
C.C.L.3	Alternative Dispute Resolution	6	2		NA	50	50	100

Semester X

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
S.E.C.4	Special Elective-4	6	2		NA	50	50	100
S.E.C.5	Special Elective-5	6	2		NA	50	50	100
S.E.C.6	Special Elective-6	6	2		NA	50	50	100
S.E.C.7	Special Elective-7	6	2		NA	50	50	100
S.E.C.8	Special Elective-8	6	2		NA	50	50	100
C.C.L.4	Moot Court Exercise and Internship	6	2		NA	50	50	100
V.V.	Viva-Voce						100	100

U.G. Course – B.Com, LL.B (HONS)

Semester I

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
CEL 1	English Paper I	6	2		NA	50	50	100
COM 1	Business Organisation and Management	6	2		NA	50	50	100

Course Code	Course	L	T	P	Credits	Internal	External	Total
COM 2	Managerial Economics	6	2		NA	50	50	100
COM 3	Business Statistics	6	2		NA	50	50	100
C.L.1	Law of Torts and Motor Vehicles Accidents	6	2		NA	50	50	100
C.L.2	General Principles of Contract	6	2		NA	50	50	100

Semester II

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
CEL 2	English Paper II	6	2		NA	50	50	100
COM 4	Financial Accounting	6	2		NA	50	50	100
COM 5	Business Communication	6	2		NA	50	50	100
COM 6	Business Environment	6	2		NA	50	50	100
C.L.3	Special Contracts	6	2		NA	50	50	100
C.L.4	Constitutional Law-I	6	2		NA	50	50	100

Semester III

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
COM 7	Cost Accounting	6	2		NA	50	50	100
COM 8	Modern Banking	6	2		NA	50	50	100
COM 9	Life Insurance and Social Security	6	2		NA	50	50	100
C.L.5	Jurisprudence (Legal Method, Indian Legal System and Basic Theory of Law)	6	2		NA	50	50	100
C.L.6	Constitutional Law-II	6	2		NA	50	50	100
C.L.7	Law of Crimes-I	6	2		NA	50	50	100

Semester IV

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
COM 10	Financial Management	6	2		NA	50	50	100
COM 11	Marketing Management	6	2		NA	50	50	100
COM 12	Human Resource Management	6	2		NA	50	50	100
C.L.8	Family Law -1	6	2		NA	50	50	100
C.L.9	Administrative Law	6	2		NA	50	50	100
C.L.10	Law of Crimes-II	6	2		NA	50	50	100

Semester V

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
COM 13	Cooperation and Rural Development	6	2		NA	50	50	100
COM 14	Information Technology for Business and Law	6	2		NA	50	50	100
C.L.11	Law of Criminal Procedure	6	2		NA	50	50	100
C.L.12	Family Law –II	6	2		NA	50	50	100
C.L.13	Consumer Protection Law	6	2		NA	50	50	100
C.L.14	Law of Evidence	6	2		NA	50	50	100

Semester VI

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
COM 15	Entrepreneurship Development	6	2		NA	50	50	100
COM 16	Corporate Accounting	6	2		NA	50	50	100
C.L.15	Company Law	6	2		NA	50	50	100
C.L.16	Labour Law-I	6	2		NA	50	50	100
C.L.17	Civil Procedure Code and Limitation Act	6	2		NA	50	50	100
C.L.18	Public International Law	6	2		NA	50	50	100

Semester VII

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
COM 17	Accounting for Specialised Institutions	6	2		NA	50	50	100
C.L. 19	Principles of Taxation Law	6	2		NA	50	50	100
C.L. 20	Labour Law-II	6	2		NA	50	50	100
C.L. 21	Environmental Law	6	2		NA	50	50	100
C.L. 22	Property Law	6	2		NA	50	50	100
C.C.L.1	Drafting , Pleading and Conveyance	6	2		NA	100	--	100

Semester VIII

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
COM 18	Auditing Principles and Practice	6	2		NA	50	50	100

Course Code	Course	L	T	P	Credits	Internal	External	Total
C.C.L.2	Professional Ethics & Professional Accounting System	6	2		NA	100	--	100
G.E.1	General Elective-1*	6	2		NA	50	50	100
G.E.2	General Elective-2*	6	2		NA	50	50	100
G.E.3	General Elective-3*	6	2		NA	50	50	100
G.E.4	General Elective-4*	6	2		NA	50	50	100

Semester IX

| Course Code | Course | Hrs/Week | | | Credits | Marks | | |
		L	T	P		Internal	External	Total
C.C.L.3	Alternative Dispute Resolution	6	2		NA	100	--	100
G.E.5	General Elective-5*	6	2		NA	50	50	100
G.E.6	General Elective-6*	6	2		NA	50	50	100
S.E.1	Special Elective-1*	6	2		NA	50	50	100
S.E.2	Special Elective-2*	6	2		NA	50	50	100
S.E.3	Special Elective-3*	6	2		NA	50	50	100

Semester X

| Course Code | Course | Hrs/Week | | | Credits | Marks | | |
		L	T	P		Internal	External	Total
C.C.L.4	Moot Court Exercise and Internship	6	2		NA	100	--	100
S.E.4	Special Elective-4*	6	2		NA	50	50	100
S.E.5	Special Elective-5*	6	2		NA	50	50	100
S.E.6	Special Elective-6*	6	2		NA	50	50	100
S.E.7	Special Elective-7*	6	2		NA	50	50	100
S.E.8	Special Elective-8*	6	2		NA	50	50	100
V.V.	Viva-Voce						100	100

* The Elective courses will be decided according to the availability of teachers at the beginning of each semester.

General Elective Courses in Law:

1. International Trade Law

2. Criminology, Penology and Victimology

3. Air and Space Law

4. Law and Medicine

5. Women and Law

6. Law Relating to Child

7. Law, Poverty and Development

8. Interpretation of Statutes

9. Science, Technology and Law

10. Forensic Science and Medical Jurisprudence

11. Private International Law

12. Land Utilization Law

13. International Humanitarian and Refugee Law

14. Law of the Sea

15. Laws Relating to Armed Forces

16. Laws Relating to Agriculture

17. Law of Local Self Government

18. Disability Law

19. Law Governing Scientific Research

20. Law Relating to Ships

21. Law on Building and Engineering Contracts

22. Securities Laws

23. Marine Safety Law

24. Healthcare Law

25. Law of Co-operative Societies

26. Disaster Management Law

27. Intellectual Property Laws

28. Human Rights Law

Special Elective Courses in Business Law

1. Banking Law

2. Insurance Law

3. Law of Carriages

4. Foreign Trade Law

5. Bankruptcy and Insolvency Law

6. Law of Corporate Governance

7. Law of Merger and Acquisition

8. Competition Law

9. Information Technology Law

10. Law on Corporate Finance

U.G. Course – 3 Year LL.B.

Semester I

Course Code	Course	Hrs/Week L	T	P	Credits	Internal	External	Total
C.1	Law of Torts including M V Accidents and Consumer Protection Laws	5	1		NA	50	50	100
C.2	General Principles of Contract	5	1		NA	50	50	100
C.3	Law of Crimes	5	1		NA	50	50	100
C.4	Family Law – I	5	1		NA	50	50	100
E.1	Elective – I*	5	1		NA	50	50	100

Semester II

Course Code	Course	Hrs/Week L	T	P	Credits	Internal	External	Total
C.5	Special Contracts	5	1		NA	50	50	100
C.6	Constitutional Law-I	5	1		NA	50	50	100
C.7	Administrative Law	5	1		NA	50	50	100
C.8	Family Law –II	5	1		NA	50	50	100
E.2	Elective –II*	5	1		NA	50	50	100

Semester III

Course Code	Course	Hrs/Week L	T	P	Credits	Internal	External	Total
C.9	Jurisprudence (Legal Method, Indian Legal System and Basic Theory of Law)	5	1		NA	50	50	100
C.10	Constitutional Law-II	5	1		NA	50	50	100
C.11	Law of Evidence	5	1		NA	50	50	100
E.3	Elective –III*	5	1		NA	50	50	100
P. I	Drafting, Pleading and Conveyance	5	1		NA	100	--	100

Semester IV

Course Code	Course	Hrs/Week L	T	P	Credits	Internal	External	Total
C.12	Law of Criminal Procedure	5	1		NA	50	50	100
C.13	Civil Procedure Code and Limitation Act	5	1		NA	50	50	100
C.14	Company Law	5	1		NA	50	50	100
E.4	Elective –IV*	5	1		NA	50	50	100

Course Code	Course	Hrs/Week L	T	P	Credits	Marks Internal	External	Total
P. II	Professional Ethics & Professional Accounting System	5	1		NA	100	--	100

Semester V

Course Code	Course	Hrs/Week L	T	P	Credits	Marks Internal	External	Total
C.15	Property Law	5	1		NA	50	50	100
C.16	Public International Law	5	1		NA	50	50	100
C.17	Labour Law-I	5	1		NA	50	50	100
E.5	Elective –V*	5	1		NA	50	50	100
P 3	Alternative Dispute Resolution	5	1		NA	100	--	100

Semester VI

Course Code	Course	Hrs/Week L	T	P	Credits	Marks Internal	External	Total
C.18	Environmental Law	5	1		NA	50	50	100
C.19	Principles of Taxation Law	5	1		NA	50	50	100
C.20	Labour Law-II	5	1		NA	50	50	100
E.6	Elective –VI*	5	1		NA	50	50	100
P. 4	Moot Court Exercise and Internship	5	1		NA	100	--	100
V.V.	Viva-Voce						100	100

* The Elective courses will be decided according to the availability of teachers at the beginning of each semester.

General Elective Courses in Law:

1. International Trade Law
2. Criminology, Penology and Victimology
3. Air and Space Law
4. Law and Medicine
5. Women and Law
6. Law Relating to Child
7. Law, Poverty and Development
8. Interpretation of Statutes
9. Science, Technology and Law
10. Forensic Science and Medical Jurisprudence
11. Private International Law
12. Land Utilization Law

13. International Humanitarian and Refugee Law

14. Law of the Sea

15. Laws Relating to Armed Forces

16. Laws Relating to Agriculture

17. Law of Local Self Government

18. Disability Law

19. Law Governing Scientific Research

20. Law Relating to Ships

21. Law on Building and Engineering Contracts

22. Securities Laws

23. Marine Safety Law

24. Healthcare Law

25. Law of Co-operative Societies

26. Disaster Management Law

27. Human Rights Law

28. Intellectual Property Laws

Course Code	One Year LLM Programme (2018-19)	
Course Code	**I Semester Papers**	**Credits**
17-401-0101	Law & Justice in a Globalised World Stream I	3
17-401-0105	Comparative Public Law Stream III	3
17-401-0109	Research Methodology and Legal Writing	3
17-401-0116	Fundamentals of Criminal Liability	2
17-401-0113	Fundamental Rights and the Constitution	2
17-401-0138	Law of International Organisations	2
17-401-0110	Seminar Course on Dissertation I	2
Course Code	**II Semester (Specialization-Criminal law)**	**Credits**
17-401-0229	Penal System and Penal Policy	2
17-401-0231	Penology	2
17-401-0232	Crime Investigation	2
17-401-0233	Criminal Trial	2
17-401-0201	Dissertation & Viva-Voce	3
17-401-0202	Seminar Course on Dissertation II	2
	II Semester (Specialization-Constitutional law)	
17-401-0213	Centre-State Legislative Relationship	2
17-401-0214	Parliamentary Form of Government	2
17-401-0215	Emergency Powers under the Constitution	2
17-401-0216	Judiciary under the Indian Constitution	2
17-401-0201	Dissertation & Viva-Voce	3
17-401-0202	Seminar Course on Dissertation	2

Course Code	Group A: Administrative Law	Credits
17-401-0111	Basic Principles of Administrative Process and Good Governance	2
17-401-0203	Judicial Control over Administartive Process	2
17-401-0204	Administrative Process and Law Making	2
17-401-0205	Governmental Accountability and Liabilities	2
17-401-0206	Public Services : Status and Accountability	2
17-401-0207	Administrative Control over Public Enterprises	2

Course Code	Group B : Commercial Law	Credits
17-401-0112	Foundations of Contractual Liability	2
17-401-0208	Sale and supply of goods	2
17-401-0209	Corporate Governance	2
17-401-0210	Insurance Law	2
17-401-0211	Banking Law	2
17-401-0212	International Trade Law	2

Course Code	Group C : Constitutional Law	Credits
17-401-0213	Centre-State Legislative Relationship	2
17-401-0113	Fundamental Rights and the Constitution	2
17-401-0214	Parliamentary Form of Government	2
17-401-0215	Emergency Powers under the Constitution	2
17-401-0216	Judiciary under the Indian Constitution	2
17-401-0217	Interstate Trade and Commerce and Right to Property	2
17-401-0218	Constitutional Scheme and Pluralist Society	2

Course Code	Group D : Consumer Protection Law	Credits
17-401-0114	General Principles of Consumer Law	2
17-401-0219	Quality Control and Professional Services	2
17-401-0220	Consumer Dispute Resolution	2
17-401-0221	Competition Law	2
17-401-0222	International and Comparative Competition Law	2
17-401-0223	Issues in Competition Law	2

Course Code	Group E : Corporate Governance and Securities Law	Credits
17-401-0115	Law of Corporate Governance	2
17-401-0224	Corporate Finance and Security Laws	2
17-401-0225	Administration of Securities Law	2
17-401-0226	Law of Corporate Reorganization	2
17-401-0227	Law of Mutual Funds and Collective Investment Schemes	2
17-401-0228	Corporate Bankruptcy Law	2

Course Code	Group F : Criminal Law	Credits
17-401-0116	Fundamentals of Criminal Liability	2
17-401-0229	Penal System and Penal Policy	2

17-401-0230	Criminology	2
17-401-0231	Penology	2
17-401-0232	Crime Investigation	2
17-401-0233	Criminal Trial	2

Course Code	Group G : Environmental Law	Credits
17-401-0117	Environment Protection: National and International Perspectives	2
17-401-0234	Protection and Conservation of Land, Water and Air	2
17-401-0235	Conservation of Forests,Wild life and Biological Diversity	2
17-401-0236	Conservation and Protection of Coastal Zone and Wet Lands	2
17-401-0237	Regulation of Trans-boundary pollution	2
17-401-0238	Environment and Development	2

Course Code	Group H : Human Rights Law	Credits
17-401-0118	Legal Rights and Duties	2
17-401-0239	International Human Rights Law	2
17-401-0240	International Human Rights Law and the Vulnerable Populations	2
17-401-0241	Human Rights and Indian Legal System	2
17-401-0242	Science, Technology and Human Rights	2
17-401-0243	Human Rights and Right to Development	2

Course Code	Group I : Intellectual Property Rights	Credits
17-401-0119	Intellectual Property Rights and Development	2
17-401-0244	Access to Information and Copyright	2
17-401-0245	Affordability under Patent Regime-Patents and Right to Health	2
17-401-0246	Patent and Biotechnology	2
17-401-0247	TRIPS Flexibilities and Development	2
17-401-0248	Collective property as Intellectual Property	2

Course Code	Group J : International Criminal Law	Credits
17-401-0120	General Principles of Liability in International Criminal Law	2
17-401-0249	International Crimes	2
17-401-0250	International Criminal Procedure	2
17-401-0251	International Standards on Criminal Defence Rights	2
17-401-0252	Prosecution of International Crimes: Institutional Arrangements	2
17-401-0253	International Standards on Pre-trial Detention Procedure	2

Course Code	Group K : International Trade Law	Credits
17-401-0121	World Trading System	2
17-401-0254	International Trade in Investments and Services	2
17-401-0255	International Trade and Environment	2
17-401-0256	International Trade in Agriculture and Food	2
17-401-0257	International Commercial Arbitration and Concilation	2
17-401-0258	State Control of International Trade	2

Course Code	Group L : Labour and Service Laws	Credits
17-401-0122	Trade Unionism, Collective Bargaining and Industrial Democracy	2
17-401-0259	Industrial Disputes & its Resolution	2
17-401-0260	Wages	2
17-401-0261	Monetary Benefits	2
17-401-0262	Social Security Laws	2
17-401-0263	Law relating to Public Servants	2
Course Code	Group M : Maritime Law	Credits
17-401-0123	Admiralty and Maritime Jurisdiction	2
17-401-0264	Ownership and Management of Ships	2
17-401-0265	Carriage of Goods by Sea	2
17-401-0266	Marine Insurance	2
17-401-0267	International Maritime and Commercial Arbitration and Concilation	2
17-401-0268	Maritime Safety and Security Law	2
Course Code	Foundation Courses/Compulsory	Credits
17-401-0101	Law & Justice in a Globalised World Stream I	3
17-401-0102	Law & Justice in a Globalised World Stream II	3
17-401-0103	Comparative Public Law Stream I	3
17-401-0104	Comparative Public Law Stream II	3
17-401-0105	Comparative Public Law Stream III	3
17-401-0106	Comparative Public Law Stream IV	3
17-401-0107	Comparative Public Law Stream V	3
17-401-0108	Comparative Public Law Stream VI	3
17-401-0109	Research Methodology and Legal Writing	3
17-401-0110	Seminar Course on Dissertation I	2
17-401-0201	Dissertation & Viva-Voce	3
17-401-0202	Seminar Course on Dissertation	2
Course Code	Open Elective Courses in Law	Credits
17-401-0124	Constitutional rights and criminal Justice process	3
17-401-0125	Criminal Procedure and Rights of the Accused	3
17-401-0126	Fair Trial	3
17-401-0127	Human Rights : Conceptual foundation	3
17-401-0128	Human Rights : Historical Development	3
17-401-0129	Protection of Environment : Role of Law	3
17-401-0130	IP and Management	3
17-401-0131	Patenting Inventions: Practice and access to tools	4
	Elective Courses in Law	
17-401-0132	Judicial Process	2
17-401-0133	Jurisprudence and Legal Theory	2
17-401-0134	Law and Social Transformation in India	2

17-401-0135	Law in Society	2
17-401-0136	Legal Education	2
17-401-0137	International Law	2
17-401-0138	Law of International Organisations	2
17-401-0139	Law of Armed Conflicts	2
17-401-0140	Private International Law	2
17-401-0141	International Labour Organisation	2
17-401-0142	Constitutionalism	2
17-401-0143	Constitutionalism: Pluralism and Federalism	2
17-401-0144	Centre- State Relations	2
17-401-0145	Parliamentary Government	2
17-401-0146	Emergency and Defense Power	2
17-401-0147	Protection of life and personal liberty	2
17-401-0148	Fundamental Rights and Constitutional Protection	2
17-401-0149	Indian Constitutional Law: The New Challenges	2
17-401-0150	International Humanitarian Law & Refugee Law	2
17-401-0151	Collective bargaining and industrial democracy	2
17-401-0152	Coastal Zone Management	2
17-401-0153	Legal Control of Industrial Pollution	2
17-401-0154	Legal control of Marine Pollution	2
17-401-0155	Law of Agency	2
17-401-0156	Law of Carriages	2
17-401-0157	Banking and Insurance Laws	2
17-401-0158	Law on International Sales	2
17-401-0159	Law on International Trade Finance	2
17-401-0160	Remedies under Contract Law	2
17-401-0161	Sale and supply of goods	2
17-401-0162	Marine Insurance	2
17-401-0163	Competition Law	2
17-401-0164	International Commercial Arbitration and Concilation	2
17-401-0165	Socio-economic offences and the Criminal Justice Process	2
17-401-0166	Criminal Justice Standards for Police	2
17-401-0167	International Criminal Justice and Children	2
17-401-0168	International Standards on Pre-trial Detention Procedure	2
17-401-0169	International standards on Sentencing Procedure	2
17-401-0170	International Norms on Treatment of Prisoners	2
17-401-0171	Law and Medicine	2
17-401-0172	International Law of Foreign Investments	2
	Interdisciplinary Electives	
17-401-0173	Community Informatics	4
17-401-0266	Consumer Protection Law	4
17-401-0174	General Principles on IPR	3
17-401-0175	Banking Theory and Practice	3
17-401-0176	Information Security Management	4

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1.	Dr. Aneesh V. Pillai (Assistant Professor)	Consumer Law & Human Rights Law	dr.avpillai@cusat.ac.in , advavpillai@gmail.com 8606558242
2.	Smt. Arathi Ashok (Assistant Professor)	Jurisprudence, IPR &Labour Law	arathi.ashokd@gmail.com arathiashok@cusat.ac.in 9847982918
3.	Dr. Binu Mole K. (Assistant Professor)	Jurisprudence, Maritime Law, Environmental Law &Labour Law	binumolek@gmail.com drbinumolek@cusat.ac.in 9497804305
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5.	Sri. Harisankar S. (Assistant Professor)	International Trade Law	harisankar@u.nus.edu 7356986574
6.	Sri. Induraj V.R. (Assistant Professor)	Jurisprudence, Commercial Law & Consumer Law	vrinduraj@gmail.com , Induraj@cusat.ac.in 9446417548
7.	Smt. Jean Vinitha Peter (Assistant Professor)	Jurisprudence, Criminal Law & Constitutional Law	vinithajean@gmail.com , jeanvinithapeter@cusat.ac.in 9947987614
8.	Sri. Naveen S. (Assistant Professor)	Environmental Law, Constitutional Law, IPR , International Organisation and Human Rights	naveensukumaran@gmail.com naveensukumaran@cusat.ac.in 9400250724
9.	Dr. NematSheereen S. (Assistant Professor)	Financial Management, Marketing Management	nematsheerin3@gmail.com 9446208502
10.	Dr. Preetha S. (Assistant Professor)	Jurisprudence, Commercial Law & Criminal Law	preetha.sadasivan@gmail.com preetha@cusa.ac.in 9446208509
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12.	Sri. Sreejith S. (Assistant Professor)	Management, Finance, Marketing	lamjith@gmail.com 9995510007
13.	Dr. VaniKesari A. (Assistant Professor)	Jurisprudence, Administrative Law, Human Rights Law& Constitutional Law	vanikesaria@gmail.com Ph: 0484-2543744 9495953744

Apart from the permanent faculties, guest faculties are also engaged on satisfaction of work load by the permanent faculty.

INTER UNIVERSITY CENTRE FOR IPR STUDIES

LLM (IPR) PHD/LL.M (IP) PHD

Semester I

Course Code	Course	C/E	Credits
IUC 2101	The Concept of Law and Justice	C	4
IUC 2102	Foundation Course I on IPR – Intellectual Property – General Principles	C	4
IUC 2103	Seminar Course – 1	C	4
IUC 2104	Elective I *	E	4

Semester II

Course Code	Course	C/E	Credits
IUC 2201	Law and Social Change	C	4
IUC 2202	Foundation Course II on IPR – Intellectual Property Rights – The Social Relevance	C	4
IUC 2203	Seminar Course – II	C	4
IUC 2204	Elective II *	E	4

Semester III

Course Code	Course	C/E	Credits
IUC 2301	Research Methodology	C	4
IUC 2302	Course work on IPR – I	C	8
IUC 2303	Elective III*	E	4
IUC 2304	Elective IV *	E	4

Semester IV

Course Code	Course	C/E	Credits
IUC 2401	Course work on IPR – II	C	8
IUC 2402	Course work on IPR – III	C	8
IUC 2403	Elective V*	E	4

Semester V

Course Code	Course	C/E	Credits
IUC 2501	Course work on IPR – IV	C	8
IUC 2502	Course work on IPR – V	C	8

Semester VI

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Course Code	Course	C/E	Credits
IUC 2601	Course work on IPR – VI	C	8
IUC 2602	Course work on IPR – VII	C	8

Semester VII

Course Code	Course	C/E	Credits
IUC 2701	Course work on IPR – VIII	C	8
IUC 2702	Course work on IPR – IX	C	8

Semester VIII

Course Code	Course	C/E	Credits
IUC 2801	Course work on IPR – X	C	8
IUC 2802	Course work on IPR – XI	C	8

Semester IX& X

Course Code	Course	C/E	Credits
IUC 2901	Thesis on IPR	C	32

ELECTIVE COURSES

1. Patent Law and TRIPS Agreement
2. IPR and Computer Programme
3. Protection of Traditional Knowledge
4. TRIPS Agreement and Access to Medicine
5. Genetic Resources and Associated Traditional Knowledge
6. World Intellectual Property Organisation (WIPO) Development Agenda
7. WTO Dispute Settlement and TRIPS Agreement
8. Protection of Broadcasting Organisations
9. Copyright and Entertainment Industry
10. Acquisition of intellectual Property Rights : International Aspects

ONE YEAR PG DIPLOMA IN INTELLECTUAL PROPERTY RIGHTS

Semester – I

Course Code	Course	C/E	Credits
	General Principles of IPR	C	4
	Patent Drafting and Filing (National and International) and Enforcement of Rights	C	4
	Trademarks Drafting and Filing (National and International and Enforcement Rights	C	4

Semester – II

Course Code	Course	C/E	Credits
	Transfer of Technology	C	4

	Electives (2)
	    a. Electives 1
	    b. Electives 2
	        Or
		E
		E
			4
			4

	Project Work/Internship	E	8
	TOTAL		**24**

ELECTIVE COURSES

1. Patent Law and TRIPS Agreement
2. IPR and Computer Programme
3. TRIPS Agreement and Access to Medicine

ONE YEAR LL.M (IPR)

(Notif.No.Conf.II/2941/3/2018 (5) dated 21.01.2019)

Semester –I

Course Code	Course	C/E	Credits
IUCI 2101	Justice in a Globalised World	C	3
IUCI 2102	Comparative Public Law	C	3
IUCI 2103	Research Methodology	C	3
IUCI 2104	Intellectual Property Rights and Development : Flexibilities under International IP System	C	2
IUCI 2105	Access to Information and Copyright	E	2
IUCI 2106	Seminar course on Dissertation	C	2

Semester –II

Course Code	Course	C/E	Credits
IUCI 2201	Affordability under Patent Regime-Patents and Right to Health	C	2
IUCI 2202	Patent and Biotechnology	C	2
IUCI 2203	Trips Flexibilities and Development	C	2
IUCI 2204	Collective property as Intellectual Property	C	2
IUCI 2205	Dissertation & Viva Voce	C	3
IUCI 2206	Seminar course on Dissertation II	C	2

ELECTIVE COURSES OFFERED TO NON-LAW STUDENTS OF CUSAT

Course Code	Course	C/E	Credits
IUC EL01	Introduction to IPR – Patent Law and Practice	E	2
IUC EL02	IP and Management	E	3
IUC EL03	Patenting Inventions: Practice and Access to Tools	E	4

DETAILS OF FACULTY

Sl. No.	Name & Designation	Specialisation	Communication
1.	Dr.N.S. Gopalakrishnan (Honorary Professor)	Commercial Law, Criminal Law & IPL	nsg@cusat.ac.in Ph:0484-2577542 9447077542
2.	Dr.I.G. Rathish Assistant Professor (contract	Chemistry	rathishig@gmail.com Ph:8108074199 8921982102
3.	Ms.Anjana Girish Assistant Professor (contract)	Public Law & IPR	anjana.girish87@gmail.com Ph:9847063736
5.	Dr.Anson C J Assistant Professor (contract)	IPR & Management	777anson@gmail.com 9400610461

FACULTY

OF

MARINE

SCIENCES

Dean:

Dr.Rosamma Philip
Professor(Retd)
Department of Marine
Biology,Microbiology&Biochemistry
Cochin University of Science and Technology
Kochi- 682 016

SCHOOL OF INDUSTRIAL FISHERIES

M.Sc.   INDUSTRIAL FISHERIES

Semester I

Course Code	Course	C/E	Credits
SIF 2101	Taxonomy And Bionomics of Commercial And Cultivable Fin And Shell Fishes	E	3
SIF 2102	Fish And Environment	E	3
SIF 2103	Fishing Craft And Gear Materials	C	3
SIF 2104	Fishing Gear And Their Fabrication	E	3
SIF 2105	Fish Process Biochemistry	E	3
SIF 2106	Fundamentals of Fish Preservation	E	3
SIF 2107	Managerial Economics	C	3
SIF 2108	Ecological Economics	E	3
SIF 2109	Management Accounting And Finance Management for Fisheries	C	3
SIF 2110	Computer Applications (Practical)	E	2
SIF 2111	Statistics (Practical)	E	2
SIF 2112	Taxonomy and Bionomics of Commercial and Cultivable Fin and Shellfishes (Practical)	E	1
SIF 2113	Fish and Environment (Practical)	E	1
SIF 2114	Fish Process Biochemistry (Practical)	E	1
SIF 2115	Fundamentals of Fish Preservation (Practical)		1

Semester II

Course Code	Course	C/E	Credits
SIF 2201	Capture Fisheries and Fish Population Dynamics	C	3
SIF 2202	Oceanic and Deep Sea Fisheries	E	3
SIF 2203	Fishing Craft Technology	E	3
SIF 2204	Freezing and Canning Technology of Fish	C	3
SIF 2205	Instrumental Techniques in Fish Product Analysis	C	3
SIF 2206	Economics of Fisheries Production	C	3
SIF 2207	Aquaculture Economics	E	3
SIF 2208	Organisation Management	E	3
SIF 2209	Capture Fisheries And Fish Population Dynamics (Practical)	C	1
SIF 2210	Fishing Craft Technology (Practical)	C	1
SIF 2211	Freezing & Canning Technology Fish (Practical)	C	
SIF 2212	Economics of Fisheries Production (Field study)	C	

Semester III

Course Code	Course	C/E	Credits
SIF 2301	Breeding And Seed Production Technology of Fin & Shell Fish	C	3
SIF 2302	Fish Genetics And Hybridization	E	3
SIF 2303	Fishing Gear Technology	C	3
SIF 2304	Inland Fishing Gear, Their Design And Operation	E	3
SIF 2305	Fishery Products Technology	C	3
SIF 2306	Value – Added Fishery Products	E	3
SIF 2307	Economics of Fish Marketing	E	3
SIF 2308	Fisheries and Rural Development	E	3
SIF 2309	Operation Management For Fisheries Industry	C	3
SIF 2310	Decision Tools and Management Techniques	E	3
SIF 2311	Breeding and Seed Production Technology of Fin and Shell Fish(Practical)	C	1
SIF 2312	Fishing Gear Technology (Practical)	C	1
SIF 2313	Fishery Products Technology (Practical)		1

Semester IV

Course Code	Course	C/E	Credits
SIF 2401	Management of Fish and Shrimp Grow Out Systems	C	3
SIF 2402	Ecology of Culture Systems and Environmental Impacts of Aquaculture	E	2
SIF 2403	Fishing Operation, Seamanship and Navigation	E	3
SIF 2404	Quality Assurance and Food Safety inSeafoodIndustry	C	3
SIF 2405	Seafood Quality Systems – Emerging Trends		3
SIF 2406	Economics of Fisheries Management	C	3
SIF 2407	Fisheries and Tourism Development	E	3
SIF 2408	Marketing Management for Fishery Products	C	3
SIF 2409	Total Quality Management	E	3
SIF 2410	Management of Fish And Shrimp Grow Out Systems (Practical)	C	1
SIF 2411	Ecology of Culture Systems and Environmental Impacts of Aquaculture (Practical)	C	1
SIF 2412	Quality Assurance and Food Safety in Seafood Industry (Practical)	C	1
SIF 2413	Marketing Management for Fishery Products (Field Study) Dissertation & Viva-voce	E	5

SIF 2414	Implant Training	C	1
SIF 2415	Dissertation	C	3
SIF 2416	Viva-voce	C	1

MASTER OF FISHERIES SCIENCE (M.F.Sc.) IN SEAFOOD SAFETY AND TRADE

Semester I

Course Code	Course	C/E	Credits
SIS 2101	Food Microbiology & Food Chemistry	C	4
SIS 2102	Managerial Economics	C	3
SIS 2103	Principles of Fisheries Business Management	C	3
SIS 2104	Quantitative Techniques for Business Management	E	4
SIS 2105	Marketing Research for Sea-food Business	C	3
SIS 2106	Food Microbiology& Food Chemistry- Practical	C	2
SIS 2107	Market Research- Data Analysis using Statistical Software (SPSS)-Practical	C	1
SIS 2108	Institutional/Industry/Field visit/Case Studies/Seminar/Library	C	1

Semester II

Course Code	Course	C/E	Credits
SIS 2201	Seafood Processing Technology	C	4
SIS 2202	Environmental and Natural Resource Economics	C	4
SIS 2203	Supply Chain Management & International Logistics for Fish & Fishery Products Trade	C	4
SIS 2204	Aquaculture systems and practices	E	4
SIS 2205	International trade and Development 3 (Elective)	E	4
SIS 2206	Seafood Processing Technology– Practical	C	2
SIS 2207	Aquaculture systems and practices-Practical	E	1
SIS 2208	Institutional/ Industry/ Field visit/ Case Studies/Seminar Fisheries Economics/	E	3

Semester III

Course Code	Course	C/E	Credits
SIS 2301	Sustainable aquaculture system for safer food products	C	3
SIS 2302	Value Added Products Technology	E	3
SIS 2303	International Business Environment & Finance Management	E	3
SIS 2304	Food Safety for Trade	C	3

SIS 2305	International Marketing & Export Procedures	C	3
SIS 2306	Value Added Products Technology – Practical	E	1
SIS 2307	Food Safety For Trade	C	1
SIS 2308	Institutional/ Industry/ Field visit/ Case Studies/Seminar Fisheries Economics	E	1
	Total		18

Semester IV

Course Code	Course	C/E
SIS 2401 (Stream I)	Seafood Safety	C
SIS 2402 (Stream II)	Management Seafood Trade & Quality	C
SIS 2403	Thesis Seminars	C
SIS 2404	Research & Thesis work	C
SIS 2405	Thesis evaluation and Viva-voce	C
SIS 2406	Implant Training and Evaluation	C
SIS 2407	Course Viva-voce	C

Details of Faculty

Sl. No.	Name	Specialization	Designation
1.	Dr. K.T. Thomson Professor	Fisheries Economics	0484-2863713 9388482279 thomsonkt@rediffmail.com
2.	Dr.A.Ramachandran Professor(on Deputation)	Fisheries Management	0484-2863706 9447062400 224otma_rama@hotmail.com
3.	Dr.M.Harikrishnan Associate Professor and Director	Industrial Fisheries	0484-29637149447327804 mahadevhari@cusat.ac.in. mahadevhari@ 224otmail.com
4.	Dr.Mini Sekharan Assistant Professor	Fisheries Management	0484-23547119895070310 minisekharan@yahoo.com
5.	Dr.Shibu A.V. Assistant Professor	International Marketing and Trade	0484-2354711 8129511388 avshibu@gmail.com.
6.	Dr.S. Sabu. Assistant Professor	Quality Assurance and Food Safety	0484-2354711 9847233764 sabuif@gmail.com.
7.	Dr. Dhanya P.R. Assistant Professor (contract)	Industrial Fisheries	

SCHOOL OF MARINE SCIENCES

1.DEPARTMENT OF ATMOSPHERIC SCIENCES

M.Sc. METEOROLOGY

SEMESTER I

Course Code	Course	Core/Elective	Credits
ATM 2201	Geophysical Fluid Dynamics	C	4
ATM 2202	Atmospheric Physics	C	4
ATM 2203	Observational Techniques	C	3
ATM 2204	Computing and Programming-I (Practical)	C	3
ATM 2205	Viva – Voce	C	1
ATM 2206	Introductory Physical Oceanography	E	3
ATM 2207	Advanced Mathematics	E	4
ATM 2208	Numerical and Statistical Methods	E	3
Total			25

Elective I

Course Code	Course
ATM 2102	Atmospheric Physics

SEMESTER II

Course Code	Course	Core/Elective	Credits
ATM 2201	Synoptic and Trophical Meteorology	C	4
ATM 2202	Dynamic Meteorology	C	4
ATM 2203	Meteorological Analysis I (Practical)	C	2
ATM 2204	Computing and Programming II (Practical)	C	2
ATM 2205	Viva – Voce	C	1
ATM 2206	Climate and Climate Change	E	4
ATM 2207	Satellite Remote Sensing	E	4
Total			21

Elective II

Course Code	Course
ATM 2201	Synoptic and Tropical Meterology

SEMESTER III

Course Code	Course	Core/Elective	Credits
ATM 2301	Numerical Weather Prediction	C	4
ATM 2302	Applied Meteorology	C	4
ATM 2303	Meteorological Analysis –II (Practical)	C	2
ATM 2304	Meteorological Computation (Practical)	C	2
ATM 2305	Viva – Voce	C	1
ATM 2306	Cloud Physics and Atmospheric Electricity	E	3
ATM 2307	Air – Sea Interaction	E	3
ATM 2308	Middle Atmosphere	E	3
ATM 2309	Disaster Management	E	3
Total			

Elective III

Course Code	Course

Semester IV

Course Code	Course	Core/Elective	Credits
ATM 2401	Project	C	16
ATM 2402	Comprehensive Viva	C	2

M.TECH. ATMOSPHERIC SCIENCE

Semester I

Course Code	Paper	Core/Elective	Credits
ATM 3101	General Circulation and Climate	C	4
ATM 3102	Atmospheric Dynamics	C	4
ATM 3103	High Speed Computations (Practical)	C	2
ATM 3104	Viva – Voce	C	2
ATM 3105	Physics of Atmosphere and Ocean	C	1
ATM 3106	Diagnostic Meteorology	E	3
ATM 3107	Remote Sensing Applications	E	3
ATM 3108	Applied Statistics	E	3
ATM 3109	Advanced Mathematics	E	3

ATM 3110	Physics and Chemistry of the Stratosphere	E	3
ATM 3111	Meteorological Analysis (Practical)	E	2
Total			

Elective I

Course Code	Course
ATM 3105	Physics of Atmosphere and Ocean

Semester II

Course Code	Paper	Core/Elective	Credits
ATM 3201	Atmosphere and Ocean Modeling	C	4
ATM 3202	Climate Dynamics	C	4
ATM 3203	Modeling Laboratory (Practical)	C	2
ATM 3204	Viva – Voce	C	1
ATM 3205	Advanced Atmospheric Dynamics	E	2
ATM 3206	Air Pollution Meteorology	E	2
ATM 3207	Agricultural Meteorology	E	2
ATM 3208	Hydro Meteorology	E	2
ATM 3209	Regional Climate Change	E	2
ATM 3210	Boundary Layer Meteorology	E	2
Total			

Semester III

Course Code	Paper	Core/Elective	Credits
ATM 3301	Mid – Term Evaluation of Project	C	18

Semester IV

Course Code	Paper	Core/Elective	Credits
ATM 3401	Project Dissertation Evaluation & Viva Voce	C	18

DETAILS OF FACULTY

Sl.No.	Name & Designation	Specialization	Communication (Contact No. & e-mail id)
1.	Dr. C.A. Babu (CAB) Professor	Boundary Layer Meteorology	0480 2881651 0484 2863813 babuca@cusat.ac.in
2.	Baby Chakrapani (BC) Assoc. Professor	Numerical Modelling of Atmospheric and Ocean Processes	0487 2428620 / 0484 2863803 bcpani@cusat.ac.in
3.	Dr. K. Satheesan (KS) Assoc. Professor & Head	Remote Sensing, Radar Meteorology	9400810099 0484 2863815 Satheesan.k@gmail.com
4.	Mr. V. Madhu (VM) Assoc. Professor	Middle Atmospheric Dynamics, Tropical Meteorology	9495424310 / 0484 2863814 madhuv@cusat.ac.in
5.	Dr. Lekshmy P R (PRL) Asst. Professor	Isotope Hydrology, Tropical Meteorology Paleo Climatology	7878320842 / 0484 2863802 rarylekshmy@ gmail.com
6.	Dr. Abhilash S (AS)	Tropical Meteorology Climate Modelling	9561642841, 0484 2863802 abhimets@gmail.com
7.	Dr. Midhun M (MM) Asst. Professor	Climate Dynamics, Paleo Climatology	9662735653 0484 2863802 midhun.ndr@gmail.com

2. DEPARTMENT OF CHEMICAL OCEANOGRAPHY

M.Sc. HYDRO CHEMISTRY

Semester I

Course Code	Course	C/E	Credits
COD 2101	Concepts in Theoretical Chemistry	C	3
COD 2102	Stereochemistry and Reaction mechanism	C	3
COD 2103	Co-ordination Chemistry 1	C	3
COD 2104	Quantitative Chemical Analysis (Practical)	C	2
COD 2105	Analytical Techniques (Practical)	C	2
	Total		13

Elective I

Course Code	Course
COD 2003	Analytical Chemistry I
COD 2014	Solid State and Surface Phenomena

Semester II

Course Code	Course	C/E	Credits
COD 2201	Thermodynamics and Statistical mechanism	C	3
COD 2202	Natural products and Reagents in organic synthesis	C	3
COD 2203	Chemical Oceanography	C	3
COD 2204	Practical III – Separation and Synthetic methods	C	2
COD 2205	Practical IV – Water and Sediment analysis	C	2
	Elective III	E	3
	Elective IV	E	2
	Elective V	E	3
	Elective VI	E	3

SemesterIII

Course Code	Course	C/E	Credits
COD 2301	Solution Chemistry	C	3
COD 2302	Organic spectroscopy and Photochemistry	C	3
COD 2303	Chemistry of Inorganic solvents and Organometallics	C	3
COD 2304	Aquatic pollution	C	3
COD 2305	Practical V – Physicochemical methods	C	2
COD 2306	Practical VI – Instrumental techniques in aquatic analysis	C	2
	Elective VII	E	3
	Elective VIII	E	2

Semester IV

Course Code	Course	C/E	Credits
COD 2401	Dissertation (Project work in the Department/Universities/Scientific institutes/Industrial Organizations etc.)	C	14
COD 2402	Viva-voce	C	2

Total number of credits for core courses in four semesters	58
Minimum number of credits to be taken as elective courses	14
Total number of credits required for the completion of M.Sc.. (Hydrochemistry) Programme	72

List of Electives

Course Code	Course	Credits
COD 2001	Atmospheric Chemistry	3
COD2002	Aquatic Chemical resources	2
COD2003	Analytical Chemistry – 1	3
COD2004	Analytical Chemistry – 2	3
COD2005	Bioinorganic Chemistry	2
COD2006	Chemistry of Marine Natural products	3
COD2007	Co-ordination Chemistry 2	3
COD2008	Environment Law and EIA	2
COD2009	General Chemical Oceanography Practical	2
COD2010	Green Chemistry	2
COD2011	Instrumental Techniques	3
COD2012	Nanomaterials and supramolecular chemistry	3
COD2013	Phycochemicals resources and marine drugs	2
COD2014	Solid state and surface phenomena	3
COD2015	Water Management	3

M. Phil MARINE CHEMISTRY

Semester I

Course Code	Course	C/E	Credits
COD4101	Introduction to Marine Chemistry	C	5
COD4102	Research Methodology and Quantitative Techniques	C	5
COD4103	Literature Review and Seminar	C	3
COD4104	Marine Pollution	E (Any one)	5
COD4105	Marine Natural Products		

Course Code	Course	C/E	Credits
COD4106	Marine Chemical Resources		
COD4107	Advanced Instrumentation		
COD4108	Remote Sensing and GIS		
	Total		**18**

SemesterII

Course Code	Course	C/E	Credits
COD4201	Project Evaluation and viva voce	C	18
Total for the Course			**36**

* Out of the 300 marks, 200 shall be for the evaluation of the dissertation and 100 shall be for the viva voce examination. Both these evaluations shall be done by the internal and the external examiners.

Details of Faculty

Sl. No	Name & Designation	Specialisation	Communication
1	Dr. S. Muraleedharan Nair (SM) Professor	Chemical Oceanography, Analytical Techniques, Organic Chemistry	0484 – 2345357 Mob: 9400259840 muralis@cusat.ac.in
2	Dr. C. H. Sujatha (CHS) Professor	Chemical Oceanography, Analytical Techniques, Inorganic Chemistry	0484 – 2304722 Mob:9995991778 drchsujatha@yahoo.co.in
3	Dr. N. Chandramohanakumar (NC) Emeritus Professor	Chemical Oceanography, Analytical Techniques, Theoretical & Physical Chemistry	0484 – 2537140 Mob: 9447391882 chandramohan@cusat.ac.in
4	Dr. Jacob Chacko (JC) Emeritus Professor	Chemical Oceanography, Analytical Techniques, Organic Chemistry	0484 – 2540699 jchacko@cusat.ac.in
5	Dr. Habeeb Rahman K (HR) Assistant Professor &Head	Chemical Oceanography Isotope Geochemistry	8281256045 habeebcusat@gmail.com
6	Dr. Arun Gopi Asst.professor(on contract)	Organic Chemistry	9895575726 arungopiperingala@gmail.com
7	Dr.Prashob Peter K J Asst.professor(on contract)	Chemical Oceanography Marine Chemistry	8086124541 prashobpp@gmail.com

3. DEPARTMENT OF MARINE BIOLOGY, MICROBIOLOGY & BIOCHEMISTRY

M.Sc. MARINE BIOLOGY

Semester I

Course Code	Course	C/E	Credits
MBO 2101	Marine Biology	C	3
MBO 2102	Cytology and Fish Genetics	C	3
MBO 2103	Biochemistry	C	3
MBO 2105	Marine Biology (Lab)	C	2
MBO 2106	Biochemistry & Instrumentation (Lab)	C	2

Semester II

Course Code	Course	C/E	Credits
MBO 2201	Marine Microbiology	C	3
MBO 2202	Fish and Fisheries	C	3
MBO 2203	Marine Pollution	C	3
MBO 2204	General Animal Physiology	C	3
MBO 2205	Marine Microbiology (Lab)	C	2
MBO 2206	Fish and Fisheries (Lab)	C	2

Semester III

Course Code	Course	C/E	Credits
MBO 2301	Fish Pathology	C	3
MBO 2302	Aquaculture	C	3
MBO 2303	Marine Biotechnology	C	3
MBO 2304	Marine Ecology	C	3
MBO 2305	Marine Ecology and Aquaculture (Lab)	C	2
MBO 2306	Fish Physiology and Pathology (Lab)	C	2

Semester IV

Course Code	Course	C/E	Credits
MBO 2401	Project work and Dissertation	C	18

List of Electives

Course Code	Course	Credits
MBO 2104	Planktonology	2
MBO 2107	Coral Reef Ecology	2
MBO 2108	Ornamental Fish Culture	2
MBO 2109	Biological Oceanography	2

MBO 2207	Aquarium plants and culture of fish food organisms	2
MBO 2208	Marine Conservation Biology	2
MBO 2209	Ornamental Fish Culture and Live feed organisms (Lab)	2
MBO 2307	Seafood Microbiology and Quality Control	2
MBO 2308	Marine Botany	2

M. Phil LIFE SCIENCES

Semester I

Course Code	Course	Core /Elective	Credits
MB4101	Advances in Life Sciences	C	5
MB4102	Research Methodology	C	5
MB4103	Literature Review & Seminar	C	3

Semester II

Course Code	Course	Core / Elective	Credits
MB 4201	Research Project and Viva-voce	C	18

List of Electives

Course Code	Course	Credits
MB4104	Marine Biotechnology	5
MB4105	Marine Conservation Biology	5
MB4106	Microbial Oceanography	5
MB4107	Sea food Microbiology and Quality Control	5

M.Tech. MARINE GENOMICS

Semester I

Course Code	Course	Core	Credits
MBG 3101	Genetic Engineering	C	4
MBG 3102	Marine Genomics	C	4
MBG 3103	Molecular Biology Lab (P)	C	2
Total Credit			**10**

Semester II

Course Code	Course	Core	Credits
MBG 3201	Genetic Biodiversity and Taxonomy	C	4
MBG 3202	Ecological & Evolutionary Genomics	C	4

MBG 3203	Marine Genomics Lab (P)	C	2
Total Credit			**10**

Semester III

Course Code	Course	Core	Credits
MBG 3301	Project Dissertation and Mid-term Evaluation	C	18
Total			**18**

Semester IV

Course Code	Course	Core	Credits
MBG 3401	Project Dissertation Evaluation & Viva Voce	C	18
Total			**18**

List of Electives

Course Code	Course	Elective	Credits
MBG 3105	Introduction to Marine Sciences	E	4
MBG 3106	Bioinformatics	E	3
MBG 3107	Bioinformatics Lab (P)	E	2
MBG 3108	Microbial Genomics	E	4
MBG 3204	Proteomics	E	4
MBG 3205	Proteomics Lab (P)	E	2
MBG 3206	Functional Genomics	E	4
MBG 3207	Immunogenomics	E	3
MBG 3208	Bio safety, Bioethics, IPR and Entrepreneurship	E	2
MBG 3209	Pharmacogenomics	E	3
MBG 3210	Systems Biology	E	2
MBG 3211	Developmental Genomics	E	2

Details of Faculty

Sl.No.	Name & Designation	Specialisation	Communication
1	Dr. S. Bijoy Nandan Professor& Head	Marine Biology	Phone: 9446022880/ 7025150844 bijoynandan@yahoo.co.in bijoynandan@cusat.ac.in
2	Dr. Aneykutty Joseph Professor & Director (School of Marine Sciences)	Marine Biology	Phone: 0484-2393564 ; 9744265966 aneykuttyj@yahoo.co.in aneykuttyj@gmail.com
3	Dr. A.A. Mohamed Hatha Professor	Fish Pathology and Nutrition	Phone: 0484-2505099; 9446866050 mohamedhatha@cusat.ac.in mohamedhatha@gmail.com
4	Dr. Priyaja P Assistant Professor	Marine Biology with Invertebrata	Phone: 9447444882 priyaja59@gmail.com
5	Dr. Padmakumar K B Assistant Professor	Algology	Phone: 9847255972 kbpadmakumar@cusat.ac.in kbpadmakumar@gmail.com
6	Dr. Swapna P Antony Assistant Professor	Aquaculture	Phone: 8089131058/ 0484-2863214 swapnapantony@gmail.com swapnapantony@cusat.ac.in
7	Dr. Sreerekha P R (Assistant Professor on Contract basis)	Biochemistry	Phone: 9645090535 prs222@gmail.com sreerekhapr@cusat.ac.in
8	Dr. Rosamma Philip Professor (Retd), UGC-BSR Faculty & Dean (Faculty of Marine Sciences),	Marine Microbiology	Phone: 0484-2303632; 9447620009 rose@cusat.ac.in rosammap@gmail.com

4. DEPARTMENT OF MARINE GEOLOGY AND GEOPHYSICS

M.Sc. MARINE GEOLOGY

Semester I

Course Code	Course	C/E	Credits
MGO 2101	Mineralogy	C	3
MGO 2102	Physical Geology and Geomorphology	C	3
MGO 2103	Structural Geology	C	3
MGO2104	Invertebrate Palaeontology and Stratigraphy	C	3
MGO 2105	Mineralogy (Practical)	C	1
MGO 2106	Structural Geology (Practical)	C	1
MGP 2104	Elective	E	3
MGP 2107	Elective	E	2
MGP 2108	Elective	E	3

Semester II

Course Code	Course	C/E	Credits
MGO 2201	Igneous and Metamorphic Petrology	C	3
MGO 2202	Geochemistry	C	3
MGO 2203	Economic Geology	C	3
MGO 2204	Groundwater Geology	C	3
MGO 2205	Petrology and Economic Geology (Practical)	C	1
MGO 2206	Geochemistry (Practical)	C	1
MGO 2207	Elective	E	2
MGO 2208	Elective	E	1
MGP 2202	Elective	E	3
MGP 2203	Elective	E	3
MGP 2204	Elective	E	3

Semester III

Course Code	Course	C/E	Credits
MGO 2301	Marine Geology	C	3
MGO 2302	Marine Mineral Resources	C	2
MGO 2303	Marine Micropaleontology and Paleoceanography	C	3
MGO 2304	Sedimentary Geology	C	3
MGO 2305	Geophysics and offshore exploration	C	2
MGO 2306	Marine Geology (Practical)	C	1
MGO 2307	Invertebrate and Micropaleontology (Practical)	C	1
MGO 2308	Sedimentary Geology (Practical)	C	1
MGO 2309	Elective	E	2
MGO 2310	Elective	E	3

MGP 2301	Elective	E	3
MGP 2302	Elective	E	3
MGP 2303	Elective	E	1

Semester IV

Course Code	Course	C/E	Credits
MGO2401	Coastal Processes and Evolution	C	3
MGO 2402	Marine Environments and Sediments	C	3
MGO 2403	Indian Stratigraphy	C	2
MGO 2404	Coastal Geology(Practical)	C	1
MGO 2405	Project Work	C	7
MGP 2401	Elective	E	3
MGP 2403	Elective	E	3

List of Electives

Course Code	Course	Credit
MGP 2104	Remote sensing and GIS	3
MGP 2107	Computations in Earth Sciences(Practical)	2
MGP 2108	General Geology	3
MGO 2207	Engineering Geology	2
MGO 2208	Geological Mapping (Practical)	1
MGP 2202	Seismology	3
MGP 2203	Digital Signal Processing	3
MGP 2204	Electrical and Electromagnetic Prospecting	3
MGO 2309	Clay and Clay Minerals	2
MGO 2310	Environmental Geology And Disaster Management	3
MGP 2301	Seismic Prospecting	3
MGP 2302	Well Logging	3
MGP 2303	Geophysical Field Work (Practical)	1
MGP 2401	Geodynamics	3
MGP 2403	Petroleum Geology	1

M.Sc. MARINE GEOPHYSICS

Semester I

Course Code	Course	C/E	Credits
MGP 2101	Electronics for Instrumentation	C	3
MGP 2102	Physics of the Earth	C	2
MGP 2103	Gravity and Magnetic Prospecting	C	4
MGP 2104	Remoting Sensing & GIS	C	3
MGP 2105	Electronics(Practical)	C	2
MGP 2106	Gravity and Magnetic Prospecting Computations (Practical)	C	1
MGP 2107	Computations in Earth Sciences (Practical)	C	2
MGP 2108	Elective	E	3
MGO 2102	Elective	E	3

Semester II

Course Code	Course	C/E	Credits
MGP 2201	Structural Geology & Stratigraphy	C	3
MGP 2202	Seismology	C	3
MGP 2203	Digital Signal Processing	C	3
MGP 2204	Electrical and Electromagnetic Prospecting	C	3
MGP 2205	Seismology (Practical)	C	1
MGP 2206	Digital Signal Processing (Practical)	C	1
MGP 2207	Geology (Practical)	C	1
MGO 2201	Elective	E	3
MGO 2202	Elective	E	3
MGO 2207	Elective	E	2

Semester III

Course Code	Course	C/E	Credits
MGP 2301	Seismic Prospecting	C	3
MGO 2301	Marine Geology	C	3
MGP 2302	Well Logging	C	3
MGP 2303	Geophysical Field Work(Practical)	C	1
MGP 2304	Seismic Prospecting (Practical)	C	1
MGO 2306	Marine Geology (Practical)	C	1
MGP 2305	Elective	E	3
MGO 2302	Elective	E	2
MGO 2310	Elective	E	3

Semester IV

Course Code	Course	C/E	Credits
MGP 2401	Geodynamics	C	3
MGP 2402	Ground Water Geophysics	C	3
MGP 2403	Petroleum Geology	C	3
MGP 2404	Project Work	C	7
MGP 2405	Elective	E	3
MGO 2403	Elective	E	2

List of Electives

Course Code	Course	Credit
MGP 2108	General Geology	3
MGO 2102	Physical Geology and Geomorphology	3
MGO 2201	Igneous and Metamorphic Petrology	3
MGO 2202	Geochemistry	3
MGO 2207	Engineering Geology	2
MGP 2305	Offshore Exploration	3
MGO 2302	Marine Mineral Resources	2
MGO 2310	Environmental Geology and Disaster Management	3
MGP 2405	Microprocessor & PC Based Instrumentation	3
MGO 2403	Indian Stratigraphy	2

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1	Dr. Sunil P S Associate Professor	Geophysical Prospecting, Space Geodesy & Geodynamics	9869801448 sunilps@cusat.ac.in
2	Dr. P. Ajayakumar Assistant Professor	Gravity, Magnetic Seismology	9495365980 ajaycochin@cusat.ac.in
3	Dr. N. R. Nisha Assistant Professor	Marine Micropaleontology, Paleoceanography, Paleoclimatology	9846929649 nrnisha@cusat.ac.in
4	Dr. Ratheesh Kumar R T	Plate tectonics, Geodynamics, Hard-rock Petrology, Solid Earth Geophysics	8078123690 ratheesh.geo@gmail.com

5. DEPARTMENT OF PHYSICAL OCEANOGRAPHY

M.Sc. OCEANOGRAPHY

(Scheme & Syllabus applicable from 2018 Admission)

Semester – I (CORE COURSES)

Course Code	Course Title	Credit
OCE2101	Introductory Physical Oceanography	4
OCE2102	Geophysical Fluid Dynamics	4
OCE2103	Ocean Instrumentation	3
OCE2104	Ocean Observations (Practical)	1
OCE2105	Physical Oceanographic Computations (Practical)	1
OCE 2106	Computer Programming in Oceanography (Practical)	2
		C = 15

Semester – II (CORE COURSES)

Course Code	Course Title	Credit
OCE2201	Ocean Dynamics	4
OCE 2202	Air Sea Interaction	4
OCE2203	Coastal and Estuarine Oceanography	3
OCE 2204	Dynamical Computations (Practical)	1
OCE2205	Coastal Oceanography (Practical)	2
		C = 14

Semester – III (CORE COURSES)

Course Code	Course Title	Credit
OCE2301	Ocean Remote Sensing	4
OCE2302	Numerical Ocean Modelling	3
OCE2303	Ocean and Climate	3
OCE2304	Data Analysis in Oceanography (Practical)	2
OCE 2305	Ocean Modelling (Practical)	2
		C = 14

Semester – IV * (CORE COURSES)

Course Code	Course Title	Credit
OCE 2401	Project Dissertation**	**C =16**

List of Electives

Course Code	Course title	Credits	Pre-requisites
OCE 2E01	General Oceanography	3	GS
OCE 2E02	Marine Hazards and Management	2	GS
OCE 2E03	Marine Pollution	3	GS
OCE 2E04	Ocean Optics	2	2101
OCE 2E05	Marine Acoustics	4	2101
OCE 2E06	Coastal Zone Management – I	3	GS
OCE 2E07	Coastal Zone Management – II	3	2E06
OCE 2E08	Beach Dynamics	2	2101 & 2203
OCE 2E09	GIS in Oceanography	2	GS
OCE 2E10	Advanced Ocean Dynamics	4	2102 & 2201
OCE 2E11	Wave Dynamics	3	2101 & 2201
OCE 2E12	Marine Biogeochemistry	3	GS
OCE 2E13	Ocean Circulation	2	2101 & 2201
OCE 2E14	Remote Sensing (Practical)	2	2301
OCE 2E15	Marine Remote Sensing Applications	3	GS
OCE 2E16	Regional Oceanography	3	2101/2E01
OCE 2E17	Ocean Engineering	4	2101 & 2203
OCE 2E18	Applied and Computational Mathematics	4	GM/GP
OCE 2E19	Ocean Ecosystem Modelling	2	2101& 2201
OCE 2E20	Statistical Methods in Oceanography (Practical)	1	GM/GP
OCE 2E21	Polar Oceanography	3	2101

GS – Graduate in Science   GM – Graduate in Mathematics   GM – Graduate in Physics

* A student shall register for a minimum of 56 credits in the first three semesters before he/she registers for the fourth semester.

** The student will devote the fourth semester on dissertation work, related to a relevant area of specialization either in the department or in an industrial/ research/ academic institutions outside the University. They will be sent outside institution based upon their performance in their previous semesters on the consent of the department council. All the students have to submit their project dissertation at the end of the semester.

The award of maximum 100 marks for the project dissertation to student is based on:

A) *Continuous assessment by his/her guide based on his/her performance and progress during the course of dissertation work will carry a maximum of 50 marks.*

B) *On submission of the project dissertation, an assessment by the Department Examination Committee constituted by the Department Council, based on a presentation and Viva Voce conducted in the parent department will carry a maximum of 50 marks.*

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M. Tech. Ocean Technology

[Scheme & Syllabus applicable from Academic Year 2018]

Semester I (CORE COURSES)

Course Code	Course Title	Credit
OCE 3101	Ocean Physics	4
OCE 3102	Coastal Engineering	4
OCE 3103	Ocean Lab I (P)	1
OCE 3104	Ocean Lab II (P)	1
		C= 10

Semester II (CORE COURSES)

Course Code	Course Title	Credit
OCE 3201	Advanced Marine Technology	4
OCE 3202	Environmental Ocean Technology	4
OCE 3203	Ocean Lab III (P)	2
		C= 10

Semester III

OCE 3301	**Project Dissertation and Mid Term Evaluation**	**C= 18**

Semester IV

OCE 3401	**Project Dissertation Evaluation and Viva Voce**	**C= 18**

LIST OF ELECTIVES

Course Code	Course Title	Credits	Pre-Requisites
OCE 3E01	Ocean Circulation and Dynamics	4	MO,MP,MM,BT
OCE 3E02	Ocean Modelling and Prediction	3	MO,MM, BT
OCE 3E03	Boundary Layer Dynamics	4	OT,MM
OCE 3E04	Marine Environmental Pollution	4	OT,MB
OCE 3E05	Ocean Resources	4	MO,MGP,MM,GP
OCE 3E06	Ocean Instrumentation	4	OT,ME
OCE 3E07	Integrated Coastal Zone Management	4	OT,MB

OCE 3E08	Ocean Acoustics	4	OT,MO,MP
OCE 3E09	Satellite Oceanography	4	OT,MM,ES,BT
OCE 3E10	Ocean Material Technology	4	OT,NA,BTM
OCE 3E11	Observational Techniques & Instrumentation	4	OT,MO,M- GP,MP,MM,ME
OCE 3E12	Deep Sea Submersibles and Exploration Technology	2	OT,NA
OCE 3E13	Satellite Image Processing & GIS (P)	2	OCE 3E09
OCE 3E14	Marine Geotechnical Engineering	4	MO,MGP,BT,BTM,MG
OCE 3E15	Dynamics of Ocean Structures	4	MO,MGP,BT,BTM,MG
OCE 3E16	Modelling of offshore and coastal processes	4	OCE 3102
OCE 3E17	Ocean Lab IV (P)	1	OCE 3E02
OCE 3E18	Descriptive Oceanography	3	BT,MP,MO,MM,MG,NA,MB

OT- M.Tech. Ocean Technology Students   MP- M.Sc. Physics
MM- M.Sc. Meteorology   BT- B.Tech. Civil/ Environmental Science
MO- M.Sc. Oceanography   MGP – M.Sc. Marine Geophysics
BTM – B.Tech.Mechanical Engineering   NA – B.Tech. Naval Architecture & Ship Building
MB- M.Tech. Marine Bio Technology Students   ES- M.Sc. Environmental Sciences
MG- M.Sc. Marine Geology

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1	Dr.R.Sajeev (RS) Associate Professor & Head	Coastal Oceanography	Ph: Off: 0484-2363950 rsajeev@cusat.ac.in
2	Dr.P.K.Saji (PKS) Assistant Professor	Ocean Circulation Ocean Modeling	Ph: Off: 0484-2363950 pksaji@cusat.ac.in
3	Dr.V.Vijith Assistant Professor	Estuarine Oceanography Ocean Modeling	Ph: Off: 0484-2363950 vijithpod@cusat.ac.in

FACULTY OF SCIENCE

Dean:

Dr.K Girish Kumar
Professor &Head
Department of Applied Chemistry
Cochin University of Science and Technology
Kochi- 682 022

DEPARTMENT OF APPLIED CHEMISTRY

M.Sc. CHEMISTRY

SEMESTER I

Course Code	Course	C/E	Credits
CHE 2101	Inorganic Chemistry – I (Main Group Elements)	Core	3
CHE 2102	Organic Chemistry – I (Structure and Reactivity)	Core	3
CHE 2103	Physical Chemistry – I (Quantum Chemistry and Chemical Bonding)	Core	3
CHE 2104	Group Theory and Spectroscopy	Core	3
CHE 2105	Inorganic Chemistry Lab	Core	2
CHE 2106	Equilibrium and Nonequilibrium Thermodynamics	Elective	3
CHE 2107	Environmental Chemistry	Elective	2
CHE 2108	Chemistry of Polymers	Elective	2
CHE 2109	Spectroscopic Techniques	Interdepartmental Elective	2

SEMESTER I – ELECTIVES

Course Code	Course	C/E	Credits
CHE 2106	Equilibrium and Nonequilibrium Thermodynamics	Elective	3
CHE 2107	Environmental Chemistry	Elective	2
CHE 2108	Chemistry of Polymers	Elective	2
CHE 2109	Spectroscopic Techniques	Interdepartmental Elective	2

SEMESTER II

Course Code	Course	Core/Elective	Credits
CHE 2201	Analytical Chemistry	Core	2
CHE 2202	Inorganic Chemistry – II (Chemistry of d-and-f-block Elements)	Core	3
CHE 2203	Organic Chemistry – II (Reactions and Mechanisms)	Core	2
CHE 2204	Organic Chemistry – III (Reagents and Synthesis)	Core	2

CHE 2205	Physical Chemistry – II (Statistical Thermodynamics and Electrochemistry)	Core	3
CHE 2206	Organic Spectroscopy	Core	2
CHE 2207	Organic Chemistry Lab	Core	2
CHE 2208	Introduction to Theory of Orbital Interactions in Chemistry	Elective	2
CHE 2209	Introduction to Materials Chemistry	Elective	2
CHE 2210	Stereoselective Synthesis	Elective	2
CHE 2211	Polymer Technology	Elective	2
CHE 2212	Bioanalytical Chemistry	Elective	2
CHE 2213	Advanced Photochemistry	Elective	2
CHE 2214	Chemical Instrumentation	Interdepartmental Elective	2

SEMESTER II – ELECTIVES

Course Code	Course	Core/Elective	Credits
CHE 2208	Introduction to Theory of Orbital Interactions in Chemistry	Elective	2
CHE 2209	Introduction to Material Chemistry	Elective	2
CHE 2210	Stereoselective Synthesis	Elective	2
CHE 2211	Polymer Technology	Elective	2
CHE 2212	Bioanalytical Chemistry	Elective	2
CHE 2213	Advanced Photochemistry	Elective	2
CHE 2214	Chemical Instrumentation	Interdepartmental Elective	2

SEMESTER III

Course Code	Course	Core/Elective	Credits
CHE 2301	Instrumental Methods of Analysis	Core	2
CHE 2302	Inorganic Chemistry – III (Organometallic and Bioinorganic Chemistry)	Core	3
CHE 2303	Organic Chemistry – IV (Natural Products)	Core	4
CHE 2304	Physical Chemistry – III (Kinetics, Surface Chemistry and Catalysis)	Core	3
CHE 2305	Physical Chemistry Lab	Core	2
CHE 2306	Nuclear and Radiation Chemistry	Elective	3

CHE 2307	Industrial Catalysis	Elective	3
CHE 2308	Medicinal Chemistry	Elective	4
CHE 2309	Solid State Chemistry and Crystallography	Elective	4
CHE 2310	Molecular Modeling in Chemistry	Elective	4
CHE 2311	Microbial Technology	Elective	2
CHE 2312	Chemistry of Carbohydrates	Elective	2

SEMESTER III – ELECTIVES

Course Code	Course	Core/Elective	Credits
CHE 2306	Nuclear and Radiation Chemistry	Elective	3
CHE 2307	Industrial Catalysis	Elective	3
CHE 2308	Medicinal Chemistry	Elective	4
CHE 2309	Solid State Chemistry and Crystallography	Elective	4
CHE 2310	Molecular Modeling in Chemistry	Elective	4
CHE 2311	Microbial Technology	Elective	2
CHE 2312	Chemistry of Carbohydrates	Elective	2

SEMESTER IV

Course Code	Course	Core/Elective	Credits
CHE 2401	Dissertation	Core	16

M.Tech. INDUSTRIAL CATALYSIS

Semester I

Course Code	Course	C/ E	Credits
CHE 3101	Surface Chemistry and Catalysis	C	4
CHE 3102	Catalyst Technology – I	C	4
CHE 3103	Physical Methods in Catalysis – I	C	4
CHE 3104	Chemical Reaction Engineering	E	3
CHE 3105	Enzyme Catalysis	E	3
CHE 3106	Electro Catalysis	E	3
CHE 3107	Lab Course	C	2
CHE 3108	Viva – voce	C	-
	Total		23

Semester II

Course Code	Course	C/ E	Credits
CHE 3201	Surface Characterization Techniques	C	4
CHE 3202	Catalysis by Metal Complexes	C	4
CHE 3203	Catalyst Technology – II	C	4

CHE 3204	Industrial Catalytic Processes	E	3
CHE 3205	Phase Transfer Catalysis	E	3
CHE 3206	Polymer Supported Catalysis	E	3
CHE 3207	Photo catalysis	E	3
CHE 3208	Lab Course	C	2
CHE 3209	Viva – voce	C	-
	Total		26

Semester III

Course Code	Course	C/E	Credits
CHE 3301	Project dissertation work: Project progress evaluation.	C	16
	Total		16

(The project work, extending to the whole Semester and next semester, is carried out at National R&D laboratories.)

Semester IV

Course Code	Course	C/E	Credits
CHE 3401	Project dissertation work: Project progress evaluation.	C	16
	Total		16

M.Phil. Programme Course Structure (2018 Regulation)

Course Code	Course	Core/Elective	Credits
SEMESTER I			
CHE 4101	Modern Methods in Chemistry	Core	4
CHE 4102 A – CHE 4102 O	Elective Course CHE 4104 A to CHE 4104 O	Elective	4
CHE 4103	Research Methodoloy	Core	4
CHE 4104	Literature Review	Core	2
SEMESTER II			
CHE 4201	Project Work	Core	8
CHE 4202	Viva-voce	Core	4
Total Credit		**26**	

ELECTIVE COURSES FOR M.Phil.

1.	Chemical Instrumentation	CHE 4102	A.
2.	Inorganic Chemistry	CHE 4102	B.
3.	Quantum Chemistry	CHE 4102	C.
4.	Organic Chemistry – Terpenoids	CHE 4102	D.
5.	Organic Chemistry – Lipids	CHE 4102	E.

6.	Organic Synthesis	CHE 4102	F.
7.	Organic Chemistry (Heterocyclic compounds and natural products having heterocyclic systems.	CHE 4102	G.
8.	Physical Chemistry – (Electrochemical Methods)	CHE 4102	H.
9.	Adsorption and Catalysis	CHE 4102	I.
10.	Chemistry of Polymers	CHE 4102	J.
11.	Pericyclic Reactions and Photochemistry	CHE 4102	K.
12.	Polymer Composite	CHE 4102	L.
13.	Enzyme Technology	CHE 4102	M.
14.	Advanced Computational Chemistry	CHE 4102	N.
15.	Chemistry of Nanomaterials	CHE 4102	O.

Details of Faculty

Details of Faculty			
SI No.	**Name and Designation**	**Specialization**	**Communication**
1.	Dr. K. Girish Kumar (GK) Professor and Head of the Department	Analytical Chemistry	0484-2577813; 2862420 giri@cusat.ac.in
2.	Dr. K. Sreekumar (KSK) Professor	Polymer Chemistry/Catalysis	0484-2421530; 2862430 ksk@cusat.ac.in
3.	Dr. N. Manoj (MN) Professor	Organic Chemistry	0484-2301268; 2862422 manoj.n@cusat.ac.in
4.	Dr. P. M. Sabura Begum (PMS) Professor	Organic Chemistry	0484-2577539; 2862426 pmsabura@cusat.ac.in
5.	Dr.P.V.Mohanan (PVM) Professor	Analytical Chemistry	0484-2508947; 2862429 mohan@cusat.ac.in
6.	Dr. Suja Haridas (SH) Assistant Professor	Physical Chemistry / Catalysis	0484-2408438; 2862428 sujaharidas@cusat.ac.in
7.	Dr. Sebastian Nybin Remello(SNR) Assistant Professor	Inorganic Chemistry / Catalysis	0484-2575804 2862421 nybinremello@cusat.ac.in
8.	Dr. Susmita De (SD) Assistant Professor	Computational / Theoretical Chemistry	0484-2575804 2862421 susmita@cusat.ac.in
9.	Dr. Kala R. (KR) Assistant Professor	Inorganic Chemistry	0484-2575804 2862423 kala@cusat.ac.in

10.	Dr. Leena R. (LR) Assistant Professor	Physical Chemistry	0484-2575804 2862656 leenarajith@ gmail.com
11	Dr. Manoj E (ME) Assistant Professor	Inorganic Chemistry	2862424 manojepotti@gmail.com
12.	Dr. Sindhu Mathai (SM) Assistant Professor	Organic Chemistry	2862425 sindhumathai@cusat.ac.in

DEPARTMENT OF BIOTECHNOLOGY

M.Sc. BIOTECHNOLOGY

Semester I

Course Code	Course	C/E	Credits
BTG 2101	Basic Biochemistry	C	3
BTG 2102	General Microbiology	C	3
BTG 2103	Genetics	C	3
BTG 2104	Cell Biology	C	3
BTG 2105	Biostatistics	C	3
BTG 2106	# Lab Course-I	C	3
BTG 2107	Analytical Techniques	E	3
Total			18C,3E

Semester II

Course Code	Course	C/E	Credits
BTG 2201	Enzymology	C	3
BTG 2202	Molecular Biology	C	2
BTG 2203	Bioprocess Technology	C	3
BTG 2204	Metabolism and bioenergetics	C	3
BTG 2205	# Lab course-II	C	3
BTG2206	Bioinformatics	E	3
BTG2207	Neurobiology and Neurochemistry	E	3
BTG 2208	Biopharmaceuticals	E	3
BTG 2209	Nanobiotechnology	E	3
Total			14 C; 12E

Semester III

Course code	Course	C/E	Credits
BTG 2301	Recombinant DNA Technology	C	3
BTG 2302	Immunology & Immunotechnology	C	3
BTG 2303	Bioethics, Bio-pe safety and IPR	C	3
BTG 2304	# Lab Course –III	C	3
BTG2305	Plant Biotechnology	E	3
BTG 2306	Marine Microbiology & Biotechnology	E	3
BTG 2307	Environmental Biotechnology	E	3
BTG 2308	Animal Biotechnology	E	3
BTG 2309	Medical Biotechnology	E	3
BTG 2310	Industrial Biotechnology	E	3
BTG 2311	Cancer Biology	E	3
Total			12 C;18 E

#15 hours /week = 3 credit practical lab

Semester IV

Course code	Course	C/E	Credits
BTG 2401	Dissertation	C	15
	Comprehensive Viva Voce		1
Total			16 C
Total for M.Sc. Biotechnology programme			60 C, 33 E

M.Sc. MICROBIOLOGY

Semester-I

Course Code	Course	C/E	Credits
MBG 2101	Basic Biochemistry	C	3
MBG 2102	General Microbiology	C	3
MBG 2103	Genetics	C	3
MBG 2104	Cell biology	C	3
MBG 2105	Biostatistics	C	3
MBG 2106	# Lab course-I	C	3
MBG 2107	Analytical techniques	E	3
MBG 2108	Microbial Physiology	E	3
	Total		C=18;E=6

Semester-II

Course Code	Course	C/E	Credits
MBG 2201	Systematic bacteriology	C	3
MBG 2202	Molecular biology	C	2
MBG 2203	Bioprocess technology	C	3
MBG 2204	Fungi and Protozoa	C	3
MBG 2205	# Lab course-II	C	3
MBG 2206	Environmental microbiology	E	3
MBG 2207	Molecular Virology	E	3
MBG 2208	Microbial Genetics	E	3
	Total		C=14;E=9

Semester-III

Course Code	Course	C/E	Credits
MBG 2301	Medical Microbiology	C	3
MBG 2302	Immunology and Immunotechnology	C	3
MBG 2303	Bioethics ,Bio- safety and IPR	C	3
MBG 2304	# Lab Course – III	C	3
MBG 2305	Food Microbiology and Food safety	E	3
MBG 2306	Marine Microbiology & Biotechnology	E	3
	Total		C=12;E=6

15 hours/week = 3 credit practical lab.

Semester-IV

Course Code	Course	C/E	Credits
MBG 2401	Dissertation	C	15
	Comprehensive viva voce	C	1
	Total		16C
	Grand Total for M.Sc.. Microbiology programme		60 C,21 E

Details of Faculty

Sl.No.	Name & Designation	Specialization	Communication(ContactNo. &E-mail id)
1	Dr.Sarita G Bhat,Professor	Microbial Genetics	9846033486; sgbhat@cusat.ac.in
2	Dr.Ajith Vengellur, Assistant Professor	Genetics Molecular Biology Cancer Biology	7558996850; vengellur@gmail.com
3	Dr.Baby Chakrapani, Assistant Professor	Neurobiology	9495109908; bcps80@gmail.com
4	Dr. M Chandrasekharan, Adjunct Faculty	Microbiology, Microbial Technology	9447251914; mchandra@cusat.ac.in
5	Dr.P M Sherief, Adjunct Faculty	Biochemistry	9447165473; pmsherief@gmail.com
6	Dr.Thomas Phillip, Adjunct Faculty	Animal Sciences and Immunology	9446214877; pthanuveli@yahoo.com
7	Dr.Thomas Mathew, Adjunct Faculty	Botany and Genetics	9446479124; tmperak@yahoo.co.in
8	Dr. Kuriachen P M Adjunct Faculty	Plant Histology Histochemistry & Ultrastructure	9497443868 kuriachenputhooru@gmail.com
9	Dr.Mohanan V V, Ramalingaswamy Faculty	Virology	8594097653; mohanwiwi@gmail.com
10	Dr.AnushaAshokan; DST-INSPIRE Faculty	Cancer biology and Immunology	9645095089; anushaashokan@gmail.com
11	Dr. Deepa Narayanan (on contract)	Nanomedicine & Biomaterials for Tissue Engineering	7561829921; deepan301281@gmail.com
12	Dr. Manjusha S (on contract)	Biochemistry Molecular Biology	7907436274; biomanjusha@yahoo.com

DEPARTMENT OF MATHEMATICS

M.Sc. MATHEMATICS

Semester I

Course Code	Course	C/E	Credits
MAM 2101	Linear Algebra	C	4
MAM 2102	Real Analysis I	C	4
MAM 2103	Topology I	C	4
MAM 2104	Ordinary Differential Equations	C	3
MAM 2105	Measure & Integration	C	4
	Total		**19**

Semester II

Course Code	Course	C/E	Credits
MAM 2201	Algebraic Structures	C	4
MAM 2202	Functional Analysis I	C	4
MAM 2203	Complex Analysis I	C	4
MAM 2204	Probability Theory	C	3
MAM 2205	Partial Differential Equations	C	3
	Total		**18**

Semester III

Course Code	Course	C/E	Credits
MAM 2301	Functional Analysis II	C	4
MAM 2302	Complex Analysis II	C	4
MAM 2303	Topology II	C	3
MAM 2304	Computational Mathematical Laboratory	C	2
MAM 23__	Elective I	E	4
MAM 2306	Viva Voce		1
	Total		**18**

Semester IV

Course Code	Course	C/E	Credits
MAM 2401	Differential Geometry	C	4
MAM 2409	Number Theory	E	4
MAM 2414	Wavelets	E	4
MAM 2416	Group Representation Theory	E	4
MAM 2418	Commutative Algebra	E	4
MAM 2428	Banach Algebras & Spectral Theory	E	4
MAM 2406	Viva Voce		1
	Total		**17**

TOTAL CREDITS FOR THE SUCCESSFUL COMPLETION OF THE COURSE -72
LIST OF ELECTIVE SUBJECTS:

Course Code	Course
MAM 2306/2406	Graph Theory
MAM 2407	Stochastic Processes I
MAM 2308/2408	Some Topics in Discrete Mathematics
MAM 2309/2409	Number Theory
MAM 2310/2410	Combinatorics
MAM 2311/2411	Coding Theory
MAM 2412	Fluid Mechanics
MAM 2313/2413	Harmonic Analysis
MAM 2414	Wavelets
MAM 2315/2415	Lie Algebra
MAM 2416	Group Representation Theory
MAM 2317/2417	Coding Theory and Cryptography
MAM 2318/2418	Commutative Algebra
MAM 2319/2419	Operations Research
MAM 2320/2420	Theory of Games
MAM 2321/2421	Mathematical Finance
MAM 2322/2422	Topics in Graph Theory I
MAM 2323/2423	Cryptography
MAM 2324/2424	Topics in Algebraic Graph Theory I
MAM 2425	Topics in Algebraic Graph Theory II
MAM 2326/2426	Classical Mechanics
MAM 2427	Project Work
MAM 2428	Introduction to Banach Algebra
MAM 2329/2429	Spectral Theory I
MAM 2330/2430	Integral Transforms
MAM 2331/2431	Functions of Several Variables
MAM 2332/2432	Topics in Applied Mathematics

M.Phil. MATHEMATICS

Semester I

Course Code	Course	C/E	Credits
MAM 4101	Topics in Analysis	C	5
MAM 4102	Research Methodology & Quantitative Techniques	C	5
MAM 4103	Literature Review & Seminar	C	3
	Elective	E	5
Total for I semester			18

Semester II

Course Code	Course	C/E	Credits
MAM 4201	Project Evaluation and Viva-voce		18
Total for the Course			36

LIST OF ELECTIVE SUBJECTS:

Course Code	Course
MAM 4108	Stochastic Processes
MAM 4109	Topics in Graph Theory I
MAM 4110	Topics in Graph Theory II
MAM 4111	Some Topics in Discrete Mathematics
MAM 4112	Cryptography
MAM 4113	Topics in Algebraic Graph Theory I
MAM 4114	Topics in Algebraic Graph Theory II
MAM 4115	Combinatorics
MAM 4116	Coding Theory
MAM 4117	Theory of Semi groups
MAM 4118	Theory of Categories
MAM 4119	Theory of Generalized Inverses
MAM 4120	Group Representations
MAM 4121	Lie Algebras
MAM 4122	Theory of Games Non-Linear Programming
MAM 4123	Probability Theory
MAM 4124	Advanced Spectral Theory
MAM 4125	Banach Algebras

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1.	Prof. P.G. Romeo (PGR) Professor& Head	Algebra	romeopg@cusat.ac.in 9447663109
2.	Dr. V.B. Kiran Kumar (VBK) Assistant Professor	Functional Analysis, Spectrum of Operators, Linear Algebra, Approximation Theory.	Kiranbalu36@gmail.com 8547496594
3.	Dr. Ambily A.A. (AAA) Assistant Professor	Commutative Algebra, Algebraic K-theory	aaambily@gmail.com 9496530225
4.	Dr. Noufal A. (AN) Assistant Professor	Functional Analysis, Approximation Theory, Integral Transforms, Signal Processing	noufalasharaf@gmail.com 9447327154
5.	Dr. M.N.Narayanan Namboodiri (MNN) Emeritus Scientist	Functional Analysis	mnnadri@gmail.com 9446505953
6.	Prof. A. Vijayakumar (AV) Emeritus Professor	Graph Theory, Spectral Graph Theory, Power Domination Problems	vijay@cusat.ac.in 9447608851

DEPARTMENT OF PHYSICS

M.Sc. PHYSICS

Semester I

Course Code	Course	C/E	Credits
PHY 2101	Mathematical Physics 1	C	4
PHY 2102	Classical Mechanics	C	4
PHY 2103	Basic Solid State Physics	C	4
PHY 2104	Basic Electronics	C	4
PHY 2105	Experiments in General Physics	C	2

Semester II

Course Code	Course	C/E	Credits
PHY 2201	Quantum Mechanics I	C	4
PHY 2202	Statistical Physics	C	4
PHY 2203	Electrodynamics	C	4
PHY 2204	Lasers and Atomic and Molecular Spectroscopy	C	4
PHY 2205	Experiments in General Physics	C	2

Semester III

Course Code	Course	C/E	Credits	Pre-requisites
PHY 2301	Quantum Mechanics II	C	4	Quantum Mechanics I
PHY 2302	Nuclear and Particle Physics	C	4	
PHY 2303	Mathematical Physics 11	C	4	Mathematical Physics 1
PHY 2304	Advanced Practical (Lab Course)-I	C	2	
	Elective I	E	4	

Semester IV

Course Code	Course	C/E	Credits
PHY 2401	Advanced Practical (Lab Course)-II	C	2
PHY 2402	Project Work	C	4
	Elective II	E	4
	Elective III	E	4

	Elective IV	E	4

Elective Courses

Course No.	Course	Credit
05	Advanced Solid State Physics	4
06	Applied Electronics	4
07	Quantum Electronics	4
08	Industrial Physics – I	4
09	Industrial Physics – II	4
10	Gravitation Cosmology	4
11	Nonlinear Dynamics and Chaos	4
12	Solar Cells	4
13	Quantum Field Theory	4
14	Modern Optics	4
15	Thin Film Physics	4
16	Solid State Devices and Applications	4
17	Physics of Nanostructured Materials	4
18	Quantum Computation and Information	4
19	Advanced Magnetism and Magnetic Materials	4
20	Molecular Physics and Laser Spectroscopy	4
21	Synthesis and Characterization of Materials	4
22	Quantum Optics	4
23	Nonlinear Optics	4
24	Remote Sensing	4
25	Digital Signal Processing	4
26	Elementary Astronomy	4
27	Nondestructive Techniques and Applications	4
28	Measurement and Instrumentation	4
29	Astrophysics	4
30	Advanced Practical (Lab Course) – II	4

Details of Faculty

Sl. No.	Name and Designation	Specialization	Communication
1.	Dr. M. JunaidBushri(MJB Professor& Head	Semiconducting Thin Films Nanomaterials, Laser Spectroscopy	9495348631 junaidbushri@cusat.ac.in
2.	Dr. M.K. Jayaraj (MKJ) Professor	Optoelectronic Devices, Transparent Electronics, Nanomaterials	0484-2575543 mkj@cusat.ac.in
3.	Dr. Titus K Mathew(TKM) Associate Professor	Cosmology, Gravitation, Quantum Mechanics	9995438460 titus@cusat.ac.in
4.	Dr.K.P. Vijayakumar (KPV) Emeritus Scientist	Thin Film Solar Cells	0484-2577103 kpv@cusast.ac.in
5.	Dr. C. SudhaKartha Emeritus Professor	Holography, Semiconducting Thin Films	0484-2577103 csk@cusat.ac.in
6.	Dr. Ramesh Babu T Emeritus Scientist	Nuclear and Particle Physics, Quantum Optics	0484 – 2576194 rbt@cusat.ac.in
7.	Dr. M.R. Anantharaman (MRA) Professor (Rtd.) UGC-BSR Fellow	Condensed Matter Physics, Polymer Physics, Nano Structured Materials	0484-2577404 mra@cusat.ac.in
8.	Dr.Pradeep V.S. (PVS) DST-Inspire Faculty	Materials Science, Energy Storage Devices	8547733325 Pradeep.variyar@gmail.com

DEPARTMENT OF STATISTICS

M.Sc. STATISTICS

Semester I

Course Code	Course	C/E	Credits
19-322-0101	Mathematical Methods for Statistics	C	4
19-322-0102	Probability Theory I	C	4
19-322-0103	Probability Distributions	C	4
19-322-0104	Sampling Theory and Methods	C	4

Elective I

Course Code	Course	C/E	Credits
19-322-0105	Data Analytics using R	E	3

Semester II

Course Code	Course	C/E	Credits
19-322-0201	Statistical Inference I	C	4
19-322-0202	Probability Theory II	C	4
19-322-0203	Stochastic Processes	C	4
19-322-0204	Practical – I and Viva Voce	C	2

Elective II

Course Code	Course	C/E	Credits
19-322-0205	**	E	3

Semester III

Course Code	Course	C/E	Credits
19-322-0301	Statistical Inference II	C	4
19-322-0302	Multivariate Analysis	C	4
19-322-0303	Applied Regression Analysis	C	4
19-322-0304	Practical –II using SPSS/,MATLAB, and Viva Voce	C	2

Elective III

Course Code	Course	C/E	Credits
19-322-0305	Basic Industrial Statistics using R	E	3

Semester IV

Course Code	Course	C/E	Credits
19-322-0401	Design and Analysis of Experiments	C	4
19-322-0402	Practical –III using SAS/R and Viva Voce	C	3
19-322-0403	Project	C	3

Electives in Semester IV

Course Code	Course	C/E	Credits
19-322-0404	**Elective IV	E	3
19-322-0405	**Elective V	E	3
19-322-0406	**Elective VI	E	3

1. Actuarial Statistics
2. Applied Multivariate Statistical Analysis
3. Life time Data Analysis
4. Official Statistics
5. Operations Research
6. Reliability Modeling and Analysis
7. Statistical Computing
8. Statistical Decision Theory
9. Statistical Forecasting
10. Statistical Quality Assurance
11. Time Series Analysis
12. Topics in Stochastic Finance
13. Data Analytics using R
14. Basic Industrial Statistics using R

M.Tech. ENGINEERING STATISTICS
(Not offering in the Academic Year 2019-20)

Semester I

Course Code	Course	C/E	Credits
STA 3101	Probability	C	4
STA 3102	Reliability and Life Testing	C	4
STA 3103	Practical I and Viva Voce	C	2

Elective I

Course Code	Course	C/E	Credits
STA 3104	Statistical Inference	E	4
STA 3105	Systems and Decision Making	E	4
STA 3106	Elements of Engineering Management	E	4
STA 3107	Total Quality Management	E	4
STA 3108	Operations Research	E	4
STA 3109	Manufacturing Processes and Measurements for Quality	E	4

Minimum Credit for I Sem: 18

Semester II

Course Code	Course	C/E	Credits
STA 3201	Industrial Experimental Design	C	4
STA 3202	Statistical Methods for Quality Assurance	C	4
STA 3203	Practical II and Viva Voce	C	2

Elective II

Course Code	Course	C/E	Credits
STA 3204	Elements of Stochastic Processes	E	4
STA 3205	Statistical Forecasting	E	4
STA 3206	Multivariate Methods	E	4
STA 3207	Engineering Maintainability	E	4
STA 3208	Simulation Modeling and Analysis	E	4

Minimum Credit for II Sem: 18

Semester III

Course Code	Course	C/E	Credits
STA 3301	Project Progress Evaluation	C	18

Semester IV

Course Code	Course	C/E	Credits
STA 3401	Project Dissertation Evaluation and Viva	C	18

DETAILS OF FACULTY

Sl. No.	Name & Designation	Specialization	Communication
1	Dr.Asha Gopalakrishnan Professor	Reliability Theory Survival Analysis	0484-2862475(O) 0484-2335390 ® 9447220353(M) asha@cusat.ac.in asha.gopalakrishnan@gmail.com
2	Dr.N.Balakrishna Professor	Stochastic Processes and Inference, Time Series Models, Data analysis, Chaos and nonlinear time series	0484-2555497® 9446605682(M) nb@cusat.ac.in
3	Dr.K.C.James Professor	Industrial Engineering, DE Simulation, Reliability, TQM	0484-2475767(R) 9446605183(M) jamesmech@cusat.ac.in
4	Dr.P.G.Sankaran Professor (Now on Deputation as PVC)	Distribution Theory, Reliability Theory, Data Analysis, Survival Analysis	0484-2741693® 9847348528(M) sankaranpg@yahoo.com
5	Dr.S.M.Sunoj Professor	Distribution Theory, Reliability Theory	0487-2428214® 9446627103(M) smsunoj@cusat.ac.in smsunoj@gmail.com
6	Dr. Rajesh G **Associate Professor and Head**	Distribution Theory, Information Theory	9447280968(M) rajeshgstat@gmail.com
7	Dr.Irshad M.R. Assistant Professor	Order Statistics, Distribution Theory	9497240876(M) irshadm24@gmail.com irshadmr@cusat.ac.in

FACULTY OF SOCIAL SCIENCES

Dean:	Dr.S Harikumar Govind,Geethanjali Opp.Changampuzha Library Edappally P O Kochi- 682 024

DEPARTMENT OF APPLIED ECONOMICS

MA APPLIED ECONOMICS

Semester I

Course Code	Course	C/E	Credits
ECO 2101	Micro Economics I	C	4
ECO 2102	Macro Economics I	C	4
ECO 2103	Mathematical Methods for Economics	C	4
ECO 2104	Statistics for Economic Analysis	C	4
ECO 2105	Indian Economy	C	4

Semester II

Course Code	Course	C/E	Credits
ECO 2201	Micro Economics II	C	4
ECO 2202	Macro Economics II	C	4
ECO 2203	Econometrics	C	4
ECO 2204	Optional	E	4
ECO 2205	International Economics	C	4

Semester III

Course Code	Course	C/E	Credits
ECO 2301	Development Economics	C	4
ECO 2302	Quantitative Optimisation Techniques	C	4
ECO 2303	Public Economics	C	4
ECO 2304	Optional	E	4
ECO 2305	Research Methodology	C	4

Semester IV

Course Code	Course	C/E	Credits
ECO 2401	Optional	E	4
ECO 2402	Optional	E	4
ECO 2403	Optional	E	4
ECO 2404	Project Report	C	4
ECO 2405	Comprehensive Viva Voce	C	4

Electives

1. Advanced Econometrics Studies-DR
2. Agricultural Economics
3. Industrial Economics-MB PKM
4. Kerala Economy
5. Portfolio Management
6. Project Planning & Appraisal
7. Social Exclusion and Inclusive Policy
8. Marketing Management
9. Human Resources Management
10. International Finance –PA
11. Environmental Economics-SH
12. Financial institutions and Markets
13. Economic Theory

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1.	Dr. S. Harikumar(SH) Professor& Head	Agricultural Economics Environmental Economics	0484-2338289 9446578289 vinvij2003@gmail.com, shari@cusat.ac.in
2.	Dr. D. Rajasenan(DR) Professor	Econometrics and Resource Economics	0484-2575479 rajasenan@cusat.ac.in
3.	Dr. P. Arunachalam(PA) Professor	Quantitative Techniques and International Trade	0484-2290376 arunachalam@cusat.ac.in
4.	Dr. Manoj P. K. (PKM) Lecturer	Production Engineering and Management, Accountingand Law, MIS,Financial and Risk Management, Management Science	0484-2645233 I 09447664949 (M) manoj_p_K2004@yahoo.co.in

SCHOOL OF MANAGEMENT STUDIES

MBA (FULL-TIME)

Semester I

Course code	Name of Course	C/E	Credits
SMS 2101	Management Concepts and Organizational Behaviour	C	3
SMS 2102	Quantitative Techniques	C	3
SMS 2103	Managerial Economics	C	3
SMS 2104	Business Communication	C	3
SMS 2105	Financial Accounting	C	3
SMS 2106	Business Environment	C	3
SMS 2107	Indian Ethos and Business Ethics	C	3
	Managerial Skill Development –I	NC	Nil
	Total		**21**

Semester II

Course code	Name of Course	C/E	Credits
SMS 2201	Financial Management	C	3
SMS 2202	Marketing Management	C	3
SMS 2203	Operations Management	C	3
SMS 2204	Human Resource Management	C	3
SMS 2205	Management Accounting	C	3
SMS 2206	Research Methodology	C	3
SMS 2207	Business Law	C	3
SMS 2208	Information Technology for Managers	C	3
	Total		**24**

Semester III

Course code	Name of Course	C/E	Credits
SMS 2301	Management Science	C	3
SMS 2302	Organisational Analysis and Processes	C	3
SMS 2303	Entrepreneurial Development	C	3
	Elective – 1	E	3
	Elective – 2	E	3
	Elective – 3	E	3
	Elective – 4	E	3
	Managerial Skill Development –II	NC	Nil
	Report Based summer Internship/Organizational study**		Nil
	Total		**21**

Semester IV

Course code	Name of Course	C/E	Credits
SMS 2401	Business Policy and Strategic Management	C	3
SMS 2402	Environment Management	C	3

SMS 2403	Project Work ***	C	3
	Elective – 5	E	3
	Elective – 6	E	3
	Elective – 7	E	3
	Comprehensive Viva-Voce with external examiners	C	3

*   U/E – University/External Examination

**   Report based on summer Internship/Organizational study to be carried out by the students for a period not less than 30 days and the same has to be treated as a non – credit course, during the summer break after the second semester examination under the guidance of a Teacher. A pass/successful completion of the same is a must. It carries no marks in the mark list.

*** Each student should carry out a project work during the final year and submit a report at the end of the fourth semester based on an organization based project/industry related project/research study under the supervision of a guide assigned by the Department. The project work need not be attached to an organization.

Note: For all courses the list of cases and specific references including recent articles and reports will be announced in the class at the time of launching of the course by the teacher teaching the course.

MBA (PART-TIME)

Semester I

Course code	Name of Course	C/E	Credits
SMP 2101	Management Concepts and Organizational Behaviour	C	3
SMP 2102	Quantitative Techniques	C	3
SMP 2103	Managerial Economics	C	3
SMP 2104	Indian Ethos and Business Ethics	C	3
SMP 2105	Financial Accounting	C	3
	Total		**15**

Semester II

Course code	Name of Course	C/E	Credits
SMP 2201	Business Environment	C	3
SMP 2202	Marketing Management	C	3
SMP 2203	Human Resource Management	C	3
SMP 2204	Management Accounting	C	3
SMP 2205	Financial Management	C	3
	Total		**15**

Semester III

Course code	Name of Course	C/E	Credits
SMP 2301	Business Communication	C	3
SMP 2302	Management Science	C	3
SMP 2303	Organizational Analysis and Processes	C	3
SMP 2304	Information Technology for Managers	C	3
SMP 2305	Business Law	C	3
	Total		**15**

Semester IV

Course code	Name of Course	C/E	Credits
SMP 2401	Research Methodology	C	3
SMP 2402	Operations Management	C	3
SMP 2403	Environment Management	C	3
	Elective – 1	E	3
	Elective – 2	E	3
	Total		**15**

Semester V

Course code	Name of Course	C/E	Credits
SMP 2501	Entrepreneurial Development	C	3
SMP	Elective – 3	E	3
SMP	Elective – 4	E	3
SMP	Elective – 5	E	3
	Report Based summer Internship/Organizational Study**		Nil
	Total		**12**

Semester VI

Course code	Name of Course	C/E	Credits
SMP 2601	Business Policy and Strategic Management	C	3
SMP 2602	Project Work***	C	3
	Elective – 6	E	3
	Elective – 7	E	3
	Comprehensive Viva-Voce with external examiners	C	3
	Total		**15**

*   U/E – University/External Examination

 **   Report based on summer Internship/Organizational study to be carried out by the students for a period not less than 30 days and the same has to be treated as a non – credit course, during the summer break after the fourth semester examination under the guidance of a Teacher. A pass/successful completion of the same is a must. It carries no marks in the mark list.

***   Each student should carry out a project work during the final year and submit a report at the end of the sixth semester based on an organization based project/industry related project/research study under the supervision of a guide assigned by the Department. The project work need not be attached to an organization.

Note: For all courses the list of cases and specific references including recent articles and reports will be announced in the class at the time of launching of the course by the teacher teaching the course.

Faculty Members

Sl. No	Name & Designation	Specialization	Communication (Contact No. & e- mail id)
1	Dr. D. Mavoothu Professor &Director	HRM ,Industrial Relations and Business Ethics	9400076884 mavoothu@rdiffmail.com
2	Dr. M. Bhasi Professor	Logistics, Quality, Safety & Crisis Management	9447419863 mbhasi@gmail.com
3	Dr. Jagathy Raj V. P. Professor	Systems and Operations Management – Logistics, Supply Chain Management, IT Applications in Business and Management, ERP, MIS, Engineering and Technology Management.	9847220016 jagathy@cusat.ac.in
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14	Dr.Remya Ramachandran Assistant Professor	Commerce/Finance	9446035607 remya.rc2323@gmail.com
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DEEN DAYAL UPADHYAY KAUSHAL KENDRA

M.Voc. (Master of Vocation) in Technology and Management Consulting.

SEMESTER I

Course Code	Course	Core/Elective	Credits
KMC 2101	Business Communication Skills - I	C	3
KMC 2102	Contemporary Management	C	3
KMC 2103	Introduction to Technology and Management Consulting	C	3
KMC 2104	Economics for Business Decisions	C	3
KMC 2105	Accounting and Financial Management for Consultants	C	3
KMC 2106	Research Skills for Consulting	C	3
KMC 2107	Quantitative Techniques	C	3
KMC 2108	Professional Skills Development (Training Programme)	C	3
Total			**24**

SEMESTER II

Course Code	Course	Core/Elective	Credits
KMC 2201	Operations Management	C	3
KMC 2202	Integrated Management Systems	C	3
KMC 2203	Management of Consulting Firms and Developing Consulting Career	C	3
KMC 2204	New Age Marketing for Business Consulting	C	3
KMC 2205	Project Management	C	3
KMC 2206	Business Analysis	C	3
KMC 2207	Business Communication Skills - II	C	3
KMC 2208	Case Development Skills for Consultants (Training Programme)	C	3
KMC 2209	Internship : Initial diagnosis of client issues in a consulting project (40 working days duration, 50 marks for continuous assessment & Report; and 50 marks for Viva Voce by a Board or Internal Examiners)	C	12
Total			**36**

SEMESTER III

Course Code	Course	Core/Elective	Credits
KMC 2301	Business, Government and Society	C	3
KMC 2302	Business Model Analysis and Strategy	C	3
KMC 2303	Managing Change in Organisations	C	3
KMC 2304	Entrepreneurship and New Venture Planning	C	3
KMC 2305	Elective - I	E	3
KMC 2306	Elective - II	E	3
KMC 2307	Elective - II	E	3
KMC 2308	Elective - IV	E	3
Total			**24**

List of Elevtives offered in III Semester

1. HR Analyties
2. Corporate Training Consulting
3. Technology Enabled HR
4. HR Strategies for the New World
5. Consulting Expertise in Performance Management.
6. Total Roward Management
7. Strategie Branding
8. Consulting in CRM Design and Management
9. Consulting in Marketing Research
10. Strategic Consulting for Service Organisations
11. Strategic Marketing
12. Marketing Communication Consulting
13. Retail Management
14. Technology and Innovation Management
15. Environmental Consulting (Impact Assessment & Certification)
16. Enterprise Resource Planning
17. Supply Chain Management
18. Investment Banking & Financial Services
19. Financial Risk Management
20. Banking and Financial Services and Insurance
21. Securities Market.
22. Tax Consulting
23. Corporate Governance and Social Responsibility of Business

24. Consulting for Mergers, Acquisitions and Corporate Restructuring

25. Consulting for Public Private Partnership Projects

SEMESTER IV

Course Code	Course	Core/Elective	Credits
KMC 2401	*Major Project (Duration – 90 working days during Semester IV in a consulting firm o any other business organization where the student can undertake a consulting project in management or technology. (Continuous assessment – 100, Final report – 100 marks & Viva – Voce – 100 Marks	C	24
Total			**24**

B.VOC. IN BUSINESS PROCESS & DATA ANALYTICS

SEMESTER I

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	**T**	**P**		**Internal**	**External**	**Total**
KBD 1101	English Language Skills	4	1	0	4	50	50	100
KBD 1102	Principles of Management and Organizations	5	0	0	5	50	50	100
KBD 1103	Statistics for Business	5	0	1	5	50	50	100
KBD 1104	Functional Management for Business	5	0	0	5	50	50	100
KBD 1105	Programming Languages for Data Analytics	5	0	2	5	50	50	100
KBD 1106	Business Environment Analysis	4	1	0	4	50	50	100
KBD 1107	5 Days Workshop Programme (Skills in business presentation, writing and documentation	30 hrs / Semester			2	50		50

SEMESTER II

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	**T**	**P**		**Internal**	**External**	**Total**
KBD 1201	Strategic Communication for Workplaces	5	1	0	5	50	50	100
KBD 1202	Information Systems for Business	5	0	2	5	50	50	100
KBD 1203	Operations Research	6	1	1	6	50	50	100

Course Code	Subject	L	T	P	Credits	Internal	External	Total
KBD 1204	Fundamentals of Business Process Management	5	1	1	5	50	50	100
KBD 1205	Database Fundamentals	5	0	2	5	50	50	100
KBD 1206	Project I (Organization Study – 15 working days. 50 marks for continuous assessment and 50 for written report after completion of the project	120 hrs / Semester			4	50	50	100

SEMESTER III

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
KBD 1301	Managerial Skill Development & Design Thinking	5	1	0	5	50	50	100
KBD 1302	Financial Accounting	5	0	0	5	50	50	100
KBD 1303	Business Ethics and Cyber law	4	0	0	4	50	50	100
KBD 1304	Production and Operations Management	4	0	1	4	50	50	100
KBD 1305	Data Visualization for Analytics	5	0	2	5	50	50	100
KBD 1306	Data Mining Techniques	5	0	1	5	50	50	100
KBD 1307	5 Days Workshop Programme (Personal Productivity Improvement)	30 hrs / Semester			2	50		50

SEMESTER IV

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
KBD 1401	Research Methodology	4	1	1	4	50	50	100
KBD 1402	Environmental Management	4	0	0	4	50	50	100
KBD 1403	Modern Project Management Practices	4	0	1	4	50	50	100
KBD 1404	Econometrics for Decision Making	5	0	1	5	50	50	100
KBD 1405	Predictive Modelling	5	0	2	5	50	50	100
KBD 1406	Elective 1	4	0	1	4	50	50	100
KBD 1407	Project II (Business Process Mapping) Duration – 15 working days, 50 marks for continuous assessment, 50 for written report after completion of the project)	120 hrs / Semester			4	100		100

SEMESTER V

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
KBD 1501	Entrepreneurship Development and Management of Startups	5	0	1	5	50	50	100
KBD 1502	Strategic Self Marketing & Personal Branding	5	0	0	5	50	50	100
KBD 1503	Case Development Skills for Analysis	5	0	1	5	50	50	100
KBD 1504	Big Data Analytics	4	0	2	4	50	50	100
KBD 1505	Text and Web Analytics	5	0	2	5	50	50	100
KBD 1506	Business Model Analytics	5	0	1	4	50	50	100
KBD 1507	Elective 2	5	0	2	5	50	50	100

SEMESTER VI

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
KBD 1601	Project III - Main Project & Viva-Voce (Duration – 80 days) Evaluation scheme will consist of i) Continuous assessment – 100 marks ii) Final report 100 marks & iii) Viva-Voce – 100 marks) This project intends to provide students with real hands-on-experience on data analytics. Students can attach themselves to an organization or work independently for this project. However, the project requires real business data for analytics.				22	50	50	100
KBD 1602	10 Days Workshop Programme (Personal Branding and Career Planning, Awareness/Training programmes on current trends in Industry & economy				4	100		100

LIST OF ELECTIVES

Course
Practical Accounting in Business Organizations
Computational Finance
Investment Analysis and Portfolio Management
HR Analytics
Introduction to Machine Learning
Digital Marketing and Social Media Analytics

	Credits
Skill Component	108
General Component	72
Total Credit	180

DETAILS OF FACULTY

Sl.No.	Name & Designation	Specialization	Communication (Contact No. & e-mail id)
1.	Dr. K.A. Zakkariya Director	OB, HRM & Marketing	9846554444 zakkariya@gmail.com
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3.	Dr. Sindhumol S, Assoc. Professor	Video/Image Processing Data Mining, Cross Platform / IOS App Development	9961558506 Sindhumol09@gmail.com
4.	Dr. George Joseph Assistant Professor	Project Management, Entrepreneurship, Orientation Management Strategy	9995468697 cgeorgejoseph@gmail.com
5.	Vinod V. Nair Asst. Professor	Operation Management, Technology Consulting	9447620973 vinodvnair@ ieee.org
6.	Dr. Smarty Mukundan Assistant Professor	HRM/HRD	9249940415 smaremin@gmail.com
7.	Vinu Varghese V.V, Assistant Professor	Android App Development, Data Mining, Network security	9446655362 vinuvarghese@gmail.com

FACULTY
OF
TECHNOLOGY

Dean:

Dr.C K Aanandan
Professor(Retd)
Department of Electronics
Cochin University of Science and Technology

DEPARTMENT OF COMPUTER APPLICATIONS

M.Sc. COMPUTER SCIENCE
with specialization in Soft Computing

Course Structure (2018 admission onwards)

Semester I

Course Code	Course	C/E	Credit
18-3232-0101	Mathematical Foundations for Computer Science	C	4
18-323-0102	Operating System Concepts	C	4
18-323-0103	Data Structures and Algorithms	C	3
18-323-0104	Programming in Python	C	3
18-323-0105	Artificial Intelligence	C	3
18-323-0106	Data Structures and Programming Language Lab	C	1
18-323-0107	Mini Project	C	1
			19

Semester II

Course Code	Course	C/E	Credit
18-323-0201	Networks and Data Communications	C	4
18-323-0202	Database Management System	C	4
18-323-0203	Software Engineering	C	3
18-323-0204	Data Mining	C	3
	Elective I	E	3
18-323-0206	DBMS and Networks Programming LAB	C	1
18-323-0207	Mini Project	C	1
			19

Semester III

Course Code	Course	C/E	Credit
18-323-0301	Machine Learning	C	3
	Elective II	E	3
	Elective III	E	3
	Elective IV	E	3
	Elective V	E	3
18-323-0306	Seminar	C	1
18-323-0307	Mini Project	C	1
Total			17

Semester IV

Course Code	Course	C/E	Credit
18-323-0401	Internship/Project Work	C	18
	Total		18

Note: Students are expected to do at least 20 programs covering all the units of the prescribed syllabi of the concerned subjects. During the examination one or two programs are expected to be asked from the above topics which can be completed in three hours of time.

LIST OF ELECTIVES (M.Sc. Computer Science with specialization in Soft Computing)	
Second Semester 18-323- 0211 Distributed Computing 18-323- 0212 Intelligent System 18-323- 0213 Grid and Cloud Computing 18-323- 0214 Quantum Computing 18-323- 0215 Cryptography and Network Security Third Semester 18-323- 0311 Big Data Analytics (Syllabus from MCA) 18-323- 0312 Deep Learning 18-323- 0313 Swarm Intelligence 18-323- 0314 Wireless Networks	18-323- 0315 WeB.Tech.nology and Web Programming 18-323- 0316 Knowledge Based Systems 18-323- 0317 Fuzzy Logic 18-323- 0318 Evolutionary algorithms 18-323- 0319 Rough Set 18-323- 0320 Cyber Forensics 18-323- 0321 Pattern Recognition 18-323- 0322 Artificial Neutral Networks (Syllabus from MCA) 18-323- 0323 Information Retrieval systems 18-323- 0324 Digital Signal Processing 18-323- 0325 Natural Language Processing

Master of Computer Applications (MCA)

Course Structure (2019 admission onwards)

Semester I

Course Code	Course	C/E	Credit
19-381-2101	Programming in C	C	3
19-381-0102	Mathematical Foundations for Computer Applications	C	3
19-381-0103	Computer Organization and Architecture	C	3
19-381-0104	Data Base Management System	C	3
19-381-0105	Digital Electronics and Microprocessors	C	3
19-381-0106	C Programming LAB	C	2
19-381-0107	DBMS LAB	C	2
	Total		19

Semester II

Course Code	Course	C/E	Credit
19-381-0201	Data Structures.	C	3
19-381-0202	Object Oriented Programming with C++.	C	3
19-381-0203	Operating Systems.	C	3
19-381-0204	Data Communication and Networks.	C	3
19-381-0205	Software Engineering.	C	3
19-381-0206	C++ Programming LAB.	C	2
19-381-0207	Data Structures LAB.	C	2
	Total		19

Semester III

Course Code	Course	C/E	Credit
19-381-0301	Design and Analysis of Algorithms	C	3
19-381-0302	Applied Probability and Statistics.	C	3
19-381-0303	JAVA Programming	C	3
	Elective I.	E	3
	Interdisciplinary Elective/ Elective II (for other campuses)	E	3
19-381-0306	Mini Project	C	1
19-381-0307	JAVA LAB	C	2
	Total		18

Semester IV

Course Code	Course	C/E	Credit
19-381-0401	Technical Communications	C	3
19-381-0402	Data Mining and Machine Learning	C	3
19-381-0403	WeB.Tech.nology and Internet Programming.	C	3
19-381-0404	Python Programming.	C	3
19-381-0405	Information Security.	C	3
19-381-0406	Web and Internet programming LAB	C	2
19-381-0407	Mini Project	C	2
19-381-0408	Seminar.	C	1
	Total		20

Semester V

Course Code	Course	C/E	Credit
19-381-0501	Applied Artificial Intelligence.	C	3
	Elective III	E	3
	Elective IV	E	3
	Elective V	E	3
	Elective VI	E	3
19-381-0506	Python Programming LAB	C	2
Total			17

Semester VI

Course Code	Course	C/E	Credit
19-381-0601	Project Work and Course Viva Voce.	C	16
Total			16

Note: Students are expected to do at least 20 programs covering all the units of the prescribed syllabi of the concerned laboratory papers. During the examination one or two programs are expected to be asked from the above topics which can be completed in three hours of time.

Minimum required credit total for MCA Programme: 108

LIST OF ELECTIVES

Elective I & Elective II

19-381-0311 Computer Graphics
19-381-0312 Theory of Computation
19-381-0313 Mobile Computing
19-381-0314 Embedded System
19-381-0315 Real Time Systems
19-381-0316 Multicore Processing
19-381-0317 Introduction to Cryptography
19-381-0318 Object Oriented Analysis and Design

Elective III

19-381-0511 Web Enabled JAVA Programming
19-381-0512 Visual Programming VB.NET
19-381-0513 Android Application Development
19-381-0514 Web Application Design using PHP
19-381-0515 Linux and Shell Programming

Elective IV

19-381-0521 Software Testing
19-381-0522 Distributed and Cloud Computing
19-381-0523 Software Project Management
19-381-0524 Business Analytics
19-381-0525 Software Quality
19-381-0526 Design Patterns

Elective V

19-381-0531 System Software and Compiler Design
19-381-0532 Network Security and Wireless Security
19-381-0533 Wireless Sensor Networks
19-381-0534 Software Defined Networks
19-381-0535 Security Threats and Vulnerabilities
19-381-0536 Block Chain Technology

Elective VI

19-381-0541 Big Data Analytics
19-381-0542 Natural Language Processing
19-381-0543 Digital Image Processing
19-381-0544 Deep Learning
19-381-0545 Bio Informatics
19-381-0546 Internet of Things
19-381-0547 Data Science and Analytics

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1	Dr. Sabu M. K. Associate Professor & Head	Artificial Intelligence Data Mining	0484-2576253/2577602 (O) 0484-2518861(R) 9446128197 (M) sabu.mes@gmail.com sabu.mes@rediffmail.com
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3	Dr. B. Kannan Professor	Graph Algorithms Artificial Intelligence Image Processing Indic Processing	0484-2576253 (O) 0485 – 2824859 (R) 09895363612 (M) bkannan@cusat.ac.in mullayilkannan@gmail.com
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COCHIN UNIVERSITY COLLEGE OF ENGINEERING KUTTANADU

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester I

Course Code	Course	Credit
CAS 2101	Introduction to Computer Science	3
CAS 2102	Programming in C	4
CAS 2103	Computer Organization	4
CAS 2104	System Software	3
CAS 2105	Discrete Structures and Graph Theory	3
CAS 2106	C Programming LAB	1
CAS 2107	Mini Project	1
Total		**19**

Semester II

Course Code	Course	Credit
CAS 2201	Data Base Management Systems	4
CAS 2202	Object Oriented Programming with C++	4
CAS 2203	Operating System	3
CAS 2204	Data Structures and Algorithms	3
	Elective	3
CAS 2206	C++ Programming LAB	1
CAS 2207	Mini Project	1
Total		**19**

Semester III

Course Code	Course	Credit
CAS 2301	Advanced Data Structures & Algorithms	3
CAS 2302	Computer Graphics	3
CAS 2303	Software Engineering	4
	Elective	3
	Elective	3
CAS 2306	Data Structures LAB	1
CAS 2307	Mini Project	1
Total		**18**

Semester IV

Course Code	Course	Credit
CAS 2401	Networks and Data Communications	4
CAS 2402	Applied Numerical Techniques	3
	Elective	3
	Elective	3
CAS 2405	Programming LAB	1
CAS 2406	Minor Project	3
Total		**17**

Semester V

Course Code	Course	Credit
CAS 2501	Simulation and Modelling	4
	Elective	3
	Elective	3
	Elective	3
	Elective	3
CAS 2506	Seminar	1
CAS 2507	Course Viva	2
Total		**19**

Semester VI

Course Code	Course	Credit
CAS 2601	Project Work and Viva Voce	16
Total		**16**

List of Electives
Changes in the electives and changes in grouping in electives are applicable to current batches also.

Semester II
CAS 2221 – Number Theory
CAS 2222 – Web Commerce Technologies
CAS 2223 – Multimedia System Design
CAS 2224 – Digital Electronics

Semester III

CAS 2331 – Number Theory and Cryptography
CAS 2332 – Applied Probability and Statistics
CAS 2333 – JAVA Programming
CAS 2334 – Object Oriented Design
CAS 2335 – Operations Research

Semester IV

CAS 2441 – Web Enabled JAVA Programming#
CAS 2442 – Advanced JAVA Programming.#
CAS 2443 – Principles of Programming Languages
CAS 2444 – Advanced JAVA Mobile Programming
CAS 2445 – Visual Programming VB.NET
CAS 2446 – Android Application Programming
CAS 2447 – Web Application Design using PHP
CAS 2448 – Security in Computing
CAS 2449 – Cryptography and Network Security
 # - Only one elective can be selected among them

Semester V
CAS 2561 – Software Project Management
CAS 2562 – Intelligent Systems
CAS 2563 – Digital Image Processing.

CAS 2564 – Web Application Development with advanced PHP and Zend Framework.
CAS 2565 – Artificial Intelligence
CAS 2566 – Data Mining
CAS 2567 – Theory of Computation
CAS 2568 – Software Quality
CAS 2569 – Wireless Security
CAS 2570 – Natural Language Processing
CAS 2571 – Object Oriented Software Engineering
CAS 2572 – Secure Software Engineering
CAS 2573 – Security threats and Vulnerabilities
CAS 2574 – Software Testing
CAS 2575 – Steganography and Digital Water marking
CAS 2576 – Security Measures in Computing Systems
CAS 2577 – Compiler Design
CAS 2578 – Business Analytics

Details of Faculty

Sl. No	Name &Designation	Communication	Intercom No.
1.	Smt.Preetha Mathew K. Associate Professor & Head	0474-2747258 9444565647 preethamathewk@gmail.com	0477-2707500 (O)

DEPARTMENT OF COMPUTER SCIENCE

M. Tech. COMPUTER AND INFORMATION SCIENCE

Semester I

Course Code	Course	C/E	Credits
CSC 3101	Mathematical Concepts for Computer Science	C	4
CSC 3102	Machine Learning Algorithms	C	4
CSC 3103	Design and Analysis of Algorithms	C	3
CSC 3104	Algorithms Lab	C	1
	Elective I	E	3
	Elective II	E	3

Electives (Semester I)

CSC 3105	Virtualized Systems
CSC 3106	Computational Linguistics
CSC 3107	Advanced Optimization Techniques
CSC 3108	Algorithms for Modern Data Models
CSC 3109	Wireless Communications &Networking
CSC 3110	Digital Image and Video Processing

Semester II

Course Code	Course	C/E	Credits
CSC 3201	Algorithms for Massive Datasets	C	4
CSC 3202	Probabilistic Graphical Models	C	4
CSC 3203	Seminar	C	1
	Elective III	E	3
	Elective IV	E	3
	Elective V	E	3

Electives (Semester II)

CSC 3204	Bioinformatics
CSC 3205	Programming Massively Parallel Processors
CSC 3206	Computer Vision
CSC 3207	Modelling Cyber Physical Systems
CSC 3208	Number Theory and Cryptography
CSC 3209	Algorithmic Game Theory
CSC 3210	Deep Learning
CSC 3211	Image and Video Coding
CSC 3212	Visual Quality Assessment
CSC 3213	Reinforcement Learning

Semester III

Course Code	Paper	C/E	Credits
CSC 3301	Project & Viva Voce	C	18

Semester IV

Course Code	Paper	C/E	Credits
CSC 3302	Project & Viva Voce	C	18

M.TECH. SOFTWARE ENGINEERING

Semester I

Course Code	Course	C/E	Credits
CSS 3101	Mathematical Concepts for Computer Science	C	4
CSS 3102	Advances in Databases	C	4
CSS 3103	Design and Analysis of Algorithms	C	3
CSS 3104	Algorithms Lab	C	1
	Elective I	E	3
	Elective II	E	3

Electives (Semester I)

CSS 3105	Artificial Intelligence
CSS 3106	Human Computer Interaction
CSS 3107	Information Retrieval and Web search
CSS 3108	Functional Programming
CSS 3109	Software Quality Management
CSS 3110	Patterns in Software Engineering

Semester II

Course Code	Course	C/E	Credits
CSS 3201	Software Architecture	C	4
CSS 3202	Agile Software Engineering	C	4
CSS 3203	Seminar	C	1
	Elective III	E	3
	Elective IV	E	3
	Elective V	E	3

Electives (Semester II)

CSS 3204	Design of Real Time/Embedded Software
CSS 3205	Software Agent Systems
CSS 3206	Network Forensics
CSS 3207	Enterprise Application Integration & Business Process Management
CSS 3208	Advanced Data Mining
CSS 3209	Fuzzy Set Theory: Foundations &Applications
CSS 3210	Complex Networks: Theory & Applications
CSS 3211	Data Science & Big Data Analytics

Semester III

Course Code	Course	C/E	Credits
CSS 3301	Project & Viva Voce	C	18

Semester IV

Course Code	Course	C/E	Credits
CSS 3302	Project & Viva Voce	C	18

M. Tech. COMPUTER SCIENCE
with Specialization in Embedded Systems (2017)

Semester I

Course Code	Course	C/E	Credits
CSE 3101	Embedded Systems	C	4
CSE 3102	Programming Embedded Systems	C	4
	Total		8

Semester II

Course Code	Course	C/E	Credits
CSE 3201	Programming Massively Parallel Processors	C	4
	Elective I	E	4
	Total		8

Electives (Semester II)

CSE 3202	Programming Smart Devices
CSE 3203	Machine Learning for Multimedia Analysis

Semester III

Course Code	Course	C/E	Credits
CSE 3301	Real Time Digital Signal Processing	C	4
CSE 3302	Real Time Operating Systems	C	4
	Total		8

Electives (Semester III)

CSE 3203	Control Systems Engineering
CSE 3204	High Performance Embedded Computing
CSE 3305	Embedded Communication Software
CSE 3306	Massively Parallel Programming

Semester IV

Course Code	Course	C/E	Credits
CSE 3401	Embedded Security	C	4
	Elective II	E	4
	Total for Semester IV		8

Electives (Semester IV)

CSE 3402	Modelling Cyber Physical Systems
CSE 3403	Advanced Fuzzy Theory

Semester V

Course Code	Course	C/E	Credits
CSE 3501	Advanced Optimization Techniques	C	4
CSE 3502	Project & Viva Voce	C	16
	Total for Semester V		20

Semester VI

Course Code	Course	C/E	Credits
CSE 3601	Project & Viva Voce	C	20
	Total for Semester VI		20

M.Tech. COMPUTER SCIENCE AND ENGINEERING (Data Science and Artificial Intelligence) [Part-Time]

Semester I

Course Code	Course	C/E	Credits
19-475-0101	Probability and Statistics for Data Science	C	4
19-475-0102	Artificial Intelligence	C	4
	Total		8

Semester II

Course Code	Course	C/E	Credits
19-475-0201	Foundations of Data Science	C	4
19-475-0202	Machine Learning Algorithms	C	4
	Total		8

Semester III

Course Code	Course	C/E	Credits
19- 475- 0301	Probabilistic Graphical Models	C	4
	Elective I	E	4
	Total		8

Electives

Course Code	Course
19- 475-0302	Image and Video Processing
19- 475- 0303	Complex Networks: Theory and Applications
19- 475- 0304	Advanced Optimization Techniques

Semester IV

Course Code	Course	C/E	Credits
19 - 475-0401	Deep Learning Architectures	C	4
	Elective II	E	4
	Total		8

Electives

Course Code	Course
19- 475-0402	Natural Language Processing with Deep Learning
19- 475- 0403	Real- time Video Analytics
19- 475- 0404	Bioinformatics

Semester V

Course Code	Course	C/E	Credits
19 - 475-0501	Project & Viva Voce	C	16
	Elective III	E	4
	Total		20

Electives

Course Code	Course
19- 475-0502	Parallel Computing with GPU
19- 475-0503	Mining of Massive Datasets
19- 475-0504	Reinforcement Learning

Semester VI

Course Code	Course	C/E	Credits
19 - 475-0601	Project & Viva Voce	C	20

Total credits for Degree: 72

Details of Faculty

Sl. No	Name & Designation	Specialization	Communication	Intercom No.
1	Dr. G. Santhosh Kumar Professor & Head	Cyber Physical Systems/ Computer Vision/NLP	9447305879 0484-2862300 san@cusat.ac.in	2300
2	Dr. Sumam Mary Idicula Professor	Natural Language Processing/Software Engineering	9447167850 sumam@cusat.ac.in	2772
3	Dr. Philip Samuel Professor	Object Oriented Modelling/Artificial Intelligence/Big Data	9495467252 philipcusat@gmail.com	2307
4	Dr.Madhu S Nair Associate Professor	Computer Vision/Image Processing/Machine learning/Pattern Recognition	9447364158 msn@cusat.ac.in	2302
5	K.B. Muralidharan Assistant Professor	Information Management, Software Engineering	0484-2862303 kbmuralidharan@ cusat.ac.in	2303
6	Dr.Jereesh A S Assistant Professor	Bioinformatics/Data Mining/Image Processing	9495576665 04842862316 jereesh@cusat.ac.in	2316
7	Jyothis V Assistant Professor	Artificial Intelligence/ Logic in Computer Science	9444807947 0484-2862308 jyothis@cusat.ac.in	2308

DEPARTMENT OF ELECTRONICS

M.Tech. ELECTRONICS & COMMUNICATION ENGINEERING

Semester I

Course Code	Course	C/E	Credits
ELE 3101	Embedded Architecture and Interfacing	C	3
ELE 3102	Digital Communication	C	3
ELE 3103	Advanced Digital Signal Processing	C	3
ELE 3101L	Embedded Systems Laboratory	C	1
ELE 3102L	Communication Laboratory	C	1
	Elective-I (Specialization)	E	3
	Elective-II (General)	E	3
	Elective-Lab (Specialization)	E	1
	Total Credits		18

Specialization Electives

VLSI and Embedded Systems

ELE 3104	VLSI Technology and Design	E	3
ELE 3104 L	VLSI Laboratory	E	1

Microwave and Radar Engineering

ELE 3105	Microwave Devices and Circuits	E	3
ELE 3105L	Microwave Laboratory	E	1

Robotics and Intelligent Systems

ELE 3106	Robotics and Automation	E	3
ELE 3106L	Robotics Laboratory	E	1

General Electives

ELE 3104L	Wireless Communications	E	3
ELE 3105L	Neural Networks	E	3
ELE 3106L	Wireless Communications Laboratory	E	1
ELE 3108L	Neural Networks Laboratory	E	1
Total			**18**

Semester II

Course Code	Course	C/E	Credits
ELE 3201	Advanced Digital System Design	C	3
ELE 3202	Digital Image Processing	C	3
ELE 3203	Seminar	C	1
ELE 3202L	Signal and Image Processing Laboratory	C	1
	Elective -I(Specialization)	E	3
	Elective-II(Specializaton)	E	3
	Elective-III(General)	E	3
	Elective-Lab(Specialization)	E	1
	Total Credits		18

Specialization Electives

VLSI and Embedded Systems

ELE 3204	Hardware Software Code sign	E	3
ELE 3025	Real Time Operating Systems	E	3
ELE 3206	Analog Integrated Circuit Design	E	3
ELE 3204 L	Hardware Software Code sign Lab	E	1
ELE 3025 L	Real Time Operating Systems Lab	E	1
ELE 3206 L	Analog Integrated Circuit Design Lab	E	1

Microwave and Radar Engineering

ELE 3207	Antenna Theory	E	3
ELE 3208	Radar Systems	E	3
ELE 3207 L	Antenna Lab	E	1

Robotics and Intelligent Systems

ELE 3209	Machine Learning	E	3
ELE 3210	Mobile Robotics	E	3
ELE 3209 L	Machine Learning Lab	E	1
ELE 3210 L	Mobile Robotics Lab	E	1

Semester III

Course Code	Course	C/E	Credits
ELE 3301	Project Evaluation& Viva Voce	C	18

Semester IV

Course Code	Course	C/E	Credits
ELE 3401	Project Evaluation& Viva Voce	C	18
Grand Total			72

Total Credits for the Course -18+18+18+18=72

M.Sc. ELECTRONIC SCIENCE

Semester I

Course Code	Course	C/E	Credits
ELE 2101	Electronic Circuits	C	3
ELE 2102	Signals & Systems	C	3
ELE 2103	Digital System Design	C	3
ELE 2104	RF & Microwave Technology	C	3
ELE 2101L	Electronic Circuits Lab	C	2
ELE 2102L	Signals & Systems Lab	C	2
	Elective I	E	3
	Minimum credits		**19**

List of Electives

Course Code	Course	C/E	Credits
ELE 2105	Computational Techniques	E	3
ELE 2106	Microprocessors & Microcontrollers	E	3

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Identified Electives from other Departments as per CBCS*

Course Code	Course	C/E	Credits
ELE 2107/SMS	Management for Scientists and Engineers(SMS)	E	3

Semester II

Course Code	Course	C/E	Credits
ELE 2201	Introduction to Embedded Systems	C	3
ELE 2202	Control Systems	C	3
ELE 2203	Digital Signal Processing	C	3
ELE 2201L	Embedded Systems Lab	C	2
ELE 2202L	Control Systems Lab	C	2
	Elective II	E	3
	Elective III	E	3
Minimum credits			**19**

List of Electives II & III

Course Code	Course	Pre-requisite	C/E	Credits
ELE 2204	Robotics Technology	ELE 2202	E	3
ELE 2205	Microwave Integrated Circuits	ELE2104	E	3
ELE 2206	Computer Organisation& Architecture		E	3
ELE 2207	Wireless Communication		E	3
ELE 2208	Data Structures		E	3

Identified Electives from other Departments as per CBCS*

Course Code	Course	C/E	Credits
ELE 2209/ CAS 2205 E2	Number Theory & Cryptography (DCA)	E	3
ELE 2210/ CAS 2205 E3	Applied Probability & Statistics (DCA)	E	3
ELE 2211/ CAS 2202	Object Oriented Programming with C++ (DCA)	E	3
ELE 2212/ MAM 2447	Coding Theory And Cryptography(Maths)	E	3

SemesterIII

Course Code	Course	C/E	Credits
ELE 2301	Seminar	C	2
ELE 2302	VLSI Design	C	3
ELE 2303	Digital Communication Systems	C	3
ELE 2303L	Digital Communications Lab	C	2
	Elective IV	E	3
	Elective V	E	3
	Elective Lab	E	2
Minimum credits			18

List of Electives IV & V

Course Code	Course	Pre-requisite	C/E	Credits
ELE 2304	Robotics and Intelligent Systems	ELE 2204	E	3
ELE 2304L	Robotics and Intelligent Systems Lab		E	2
ELE 2305	Radar and Satellite Communication		E	3
ELE 2306	Antennas	ELE 2104	E	3
ELE 2305L	Radar and Satellite Communication /Antenna Lab		E	2
ELE 2307	Embedded Software and Real Time Systems		E	3
ELE 2307L	Embedded System Design Lab		E	2
ELE 2308	Computer Networks		E	3
ELE 2308L	Computer Networks Lab		E	2

Identified Electives from other departments as per CBCS*

Course Code	Course	C/E	Credits
ELE 2309/ CAS 2502 E23	Artificial Intelligence (DCA)	E	3
ELE 2310/ MAM	Wavelet Theory (Maths)	E	3
ELE 2311/CAS 2504 E23	Artificial Neural Networks(DCA)	E	3
ELE 2311/MAM	Integral Transforms (MATHS)	E	3

Semester IV

Course Code	Course	C/E	Credits
ELE 2401	Project Evaluation and Viva Voce	C	16
	Minimum credits		**16**

Total Credits for the Programme   = **19**+**19**+**18**+**16** = **72**

Details of Faculty

Sl. No.	Name	Specialisation	Communication
1.	Dr. James Kurian Professor& Head	Robotics/Instrumentation	9447291196 james@cusat.ac.in
2.	Dr. C. K. Aanandan Professor(rtd)	Microwave Electronics / Communications	9447667267 anand@cusat.ac.in
3.	Dr.Supriya M.H Professor	Digital Signal Processing/Ocean Electronics	9947379396 supriyadoe@gmail.com
4.	Arun A. Balakrishnan Asst.Professor	Signal Processing	9496346370 arunab@cusat.ac.in
5.	Dr.Bijoy Antony Jose Asst.Professor	Embedded System	9900634422 bijoyjose@cusat.ac.in
6.	MithunHaridas T P Asst.Professor	Embedded System	9447096888 mithunharidastp@gmail.com
7.	Dr. Nalesh S Asst.Professor	VLSI	9535163008 nalesh@cusat.ac.in
8.	Dr. Tripti S Warrier Asst.Professor	VLSI Design	9495585383 tripti@cusat.ac.in
9.	Dr. Deepti Das Krishna Asst.Professor	Electronics & Communication	9846420928 deeptidas@cusat.ac.in
10.	Mrs. Kumary V Y Vidhu Asst.Professor	Microwave	9645735550 vyvidhu@cusat.ac.in

Emeritus Professors

1	Dr. P. Mohanan	Microwave Electronics/ Communications	9447325765 drmohan@cusat.ac.in
2	Dr. K. Vasudevan	Microwave Electronics / Communications	94473557328 vasudevan@cusat.ac.in
3	Dr.Tessamma Thomas KSCSTE Emeritus Scientist	Image Processing	9446970659 tessamma1@gmail.com

DEPARTMENTOF INSTRUMENTATION

B.TECH. INSTRUMENTATION TECHNOLOGY

Semester I

Course Code	Course	C/E	Credits
IN 1101	Engineering Mathematics - I	C	3
IN 1102	Engineering Physics	C	3
IN 1103	Engineering Chemistry	C	3
IN 1104	Basic Electronics	C	4
IN 1105	Electrical Engineering – I	C	3
IN 1106	Technical Communication	C	2
IN 1107	**Practicals**		
IN 1107.1	Engineering Graphics	C	2
IN 1107.2	Mechanical and Electrical Workshop	C	2
	Total		**22**

Semester II

Course Code	Course	C/E	Credits
IN 1201	Engineering Mathematics – II	C	3
IN 1202	Ana log Electronics	C	3
IN 1203	Electrical Engineering – II	C	3
IN 1204	Engineering Mechanics	C	4
IN 1205	Material Sciences	C	3
IN 1206	Ecology and Environmental Science	C	2
IN 1207	**Practicals**		
IN 1207.1	Basic Electronics Lab	C	2
IN 1207.2	Computer Programming	C	2
	Total		**22**

Semester III

Course Code	Course	C/E	Credits
IN 1301	Engineering Mathematics – III	C	4
IN 1302	Digital Electronics	C	4
IN 1303	Linear Integrated Circuits	C	3
IN 1304	Electrical and Electronics Instruments	C	3
IN 1305	Mechanical Engineering	C	3
IN 1306	**Practicals**		
IN 1306.1	Ana log Electronics Lab	C	2
IN 1306.2	Electrical Machines and Measurement Lab	C	2
IN 1307	Viva-Voce	C	1
	Total		**22**

Semester IV

Course Code	Course	C/E	Credits
IN 1401	Engineering Mathematics – IV	C	3
IN 1402	Principles of Measurement and Instrumentation	C	4
IN 1403	Control Engineering – I	C	4
IN 1404	Power Electronics	C	3
IN 1405	Pneumatic and Hydraulic System	C	3

IN 1406	**Practicals**		
IN 1406.1	Digital Electronics Lab	C	2
IN 1406.2	Material Science Lab	C	2
IN 1407	Viva-Voce	C	1
	Total		**22**

Semester V

Course Code	Course	C/E	Credits
IN 1501	Control Engineering II	C	4
IN 1502	Transducers and Industrial Instrumentation - I	C	4
IN 1503	Microprocessors and Applications	C	3
IN 1504	Analytical Instruments	C	3
IN 1505	Digital Instruments	C	3
IN 1506	**Practicals**		
IN 1506.1	Control System Lab	C	2
IN 1506.2	Transducers Lab	C	2
IN 1507	Viva-Voce	C	1
	Total		**22**

Semester VI

Course Code	Course	C/E	Credits
IN 1601	Transducers and Industrial Instrumentation – II	C	4
IN 1602	Signals and Systems	C	3
IN 1603	Optoelectronic Instrumentation	C	3
IN 1604	Process Control - I	C	4
IN 1605	Engineering Management	C	3
IN 1606	**Practicals**		
IN 1606.1	Microprocessor and Microcontroller Lab	C	2
IN 1606.2	Industrial Instrumentation	C	2
IN 1607	Viva-Voce	C	1
	Total		**22**

Semester VII

Course Code	Course	C/E	Credits
IN 1701	Bi-Medical Instrumentation	C	3
IN 1702	Process Control - II	C	4
IN 1703	Power Plant Instrumentation	C	3
IN 1704	Telemetry and Remote Control	C	3
IN 1705	Elective - I	E	3
IN 1706	**Practicals**		
IN 1706.1	Process Control Lab	C	3
IN 1707	Mini Project	C	1
IN 1708	Seminar	C	1
IN 1709	Viva-Voce	C	1
	Total		**22**

Semester VIII

Course Code	Course	C/E	Credits
IN 1801	Vacuum and Cryogenic Instrumentation	C	3
IN 1802	Microcontroller and Microcomputer based Instrumentation	C	3
IN 1803	Elective - II	E	3
IN 1804	Comprehensive Viva-Voce	C	2

IN 1805	Project		
	1. Project Work	C	9
	2. Project Viva-Voce	C	2
	Total		**22**

Total for Eight Semesters		**176**

List of Electives

1. Aerospace and Navigational Instrumentation.
2. Adaptive control and Learning systems.
3. Digital Signal Processing.
4. Advanced analytical instruments.
5. Environmental monitoring instruments.
6. Robotics and expert systems.
7. Process Dynamics.
8. Nonlinear control systems.
9. Chemical plant instrumentation.
10. Reliability and Safety Engineering.
11. Advanced Biomedical Instruments.
12. Non destructive evaluation of materials.
13. MEMS and Microsystems.

M.Sc. INSTRUMENTATION

SEMESTER I

Course Code	Course	C/E	Credit
INS 2101	Applied Mathematics	C	3
INS 2102	Introduction to Instrumentation systems	C	3
INS 2103	Sensors, Transducers and Actuators	C	3
INS 2104	Electronic Devices and Circuits	C	3
INS 2105	Digital Electronics	C	3
INS 2101L	Computer Science Lab.	C	2
INS 2102L	Analog Electronics Lab.	C	2
	Total		**19**

SEMESTER II

Sl.No	Course Code	Course	C/E	Credit
1	INS 2201	Microprocessors and Instrumentation	C	3
2	INS 2202	Optical Instrumentation	C	3
3	INS 2203	Control System	C	3
4	INS 2204	Elective – 1	E	3
5	INS 2205	Elective – 2	E	3
6	INS 2201L	Sensors and signal conditioning Lab	C	2
7	INS 2202L	Digital Electronics Lab	C	2
		Total		**19**

SEMESTER III

Course Code	Course	C/E	Credit
INS 2201	Microprocessors and Instrumentation	C	3
INS 2202	Optical Instrumentation	C	3
INS 2203	Control System	C	3
INS 2204	Elective - 1	E	3
INS 2205	Elective - 2	E	3
INS 2201L	Sensors and signal conditioning Lab	C	2
INS 2202L	Digital Electronics Lab	C	2
	Total		**19**

SEMESTER IV

CourseCode	Course	C/E	Credit
INS 2401	Project work and Viva-Voce	C	16

List of Electives

1. Materials Science
2. VacuuM.Tech.niques and Instrumentation
3. Biomedical Instrumentation
4. MEMS and Microsystems
5. Modern Control Systems
6. Process Control
7. Microcontroller and Computer based Instrumentation.

M.Tech. in Instrumentation Technology

Course Structure

SEMESTER I

Sl. No.	Course Code	Name of the Course	Core/ Elective	Credits	Marks
1	INS 3101	Intelligent Techniques in Instrumentation	C	3	100
2	INS 3102	Advanced Sensor Technology	C	3	100
3	INS 3103	Adaptive and Robust Control	C	4	100
4	INS 3104	Elective 1	E	3	100
5	INS 3105	Elective 2	E	3	100
6	INS 3101L	Sensor Technology Lab	C	1	50
7	INS 3102L	Control System and Computing Lab	C	1	50
Total				**18**	**600**

List of Electives
1. Advanced Digital Signal Processing
2. Process Dynamics and Control

3. Advanced Analytical Instruments

4. Optimization Techniques

5. Robotics and Automation

6. Non Linear Control Systems

7. Advanced Biomedical Engineering

SEMESTER II

Sl. No.	Course Code	Name of the Course	Core/ Elective	Credits	Marks
1	INS 3201	Multi Sensor Data Fusion	C	3	100
2	INS 3202	PC Based Instrumentation	C	3	100
3	INS 3203	Seminar	C	1	50
4	INS 3204	Elective 3	E	3	100
5	INS 3205	Elective 4	E	3	100
6	INS 3206	Elective 5	E	3	100
7	INS 3201L	Soft Computing Lab	C	1	50
8	INS 3202L	Advanced Process Control Lab	C	1	50
Total				**18**	**650**

List of Electives
1. Digital Image Processing

2. Mechatronics

3. MEMS and Microsystems

4. Wireless Sensor Networks

5. Optoelectronics and Instrumentation

6. Non Destructive Testing and Analysis

7. Navigation Guidance and Control

8. Embedded System Design

9. Remote Sensing and Geographical Information Systems

10. Internet of Things

SEMESTER III

Sl. No.	Course Code	Name of the Course	Core/ Elective	Credits	Marks
1	INS 3301	Project Progress Evaluation	C	18	500

SEMESTER IV

Sl. No.	Course Code	Name of the Course	Core/ Elective	Credits	Marks
1	INS 3401	Project Dissertation Evaluation	C	18	500

Total credits for the course = 18+18+18+18 = 72

M.Tech. Programme in Instrumentation Technology (4 Semesters)

Programme	Eligibility Criteria for Admission	Intake	Nature of Programme
M.Tech. in Instrumentation Technology (4 Semesters)	a) B.Tech.. or equivalent Degree in Instrumentation/ Instrumentation Technology/ Instrumentation and Control/ Applied Electronics and Instrumentation/ Electronics and Instrumentation/ Electronics and Communication / Electrical and Electronics or M.Sc. Degree in Instrumentation/ Electronics with a minimum of 60% marks or CGPA 6.5 in 10-point scale from any recognized University or Institution b) A valid GATE score (in the concerned branch of study) or pass in DAT if sufficient number of GATE score holders are not available c) For sponsored candidates: In addition to the above two conditions, 3 years teaching/ research experience in Government/ Government Aided /Quasi Government Institutions or 3 years experience in Public Sector Units/ Public Limited Companies is required.	18 (15+3 Sponsored)	Full Time Professional

DETAILS OF FACULTY

Sl.No.	Name & Designation	Specialization	Communication
1.	Dr. K.N. Madhusoodanan Professor	Analytical Instrumentation	madhu@cusat.ac.in
2.	Dr. Johney Isaac, Associate Professor and Head	Control Systems	johney@cusat.ac.in 8281535741
3.	Dr. Reju V.G Associate Professor	Digital Signal Processing	reju@cusat.ac.in 7558065958
4.	Sri. Ratheesh P.M, Assistant Professor	Signal/Image Processing	ratheeshpm@cusat.ac.in 9447634188
5.	Smt. Amily B. Assistant Professor (on contract)	Electronics and Embedded Systems	aamilybasheer@cusat.ac.in 9495516168
6.	Smt. Susmitha Rajan Assistant Professor (on contract)	Process Control	susmitharajan88@gmail.com 9747383995
7.	Sri. Sanoj K.P Assistant Professor (on contract)	Industrial and Process Instrumentation	sanjo@cusat.ac.in 8547854816
8.	Smt. Namitha Venugopal Assistant Professor (on contract)	Instrumentation and control	vg.namitha@cusat.ac.in 9539749496
9.	Smt. Darsana V Assistant Professor (on contract)	Electronics and Communication Systems	darsanavijay@cusat.ac.in 9400528681

DEPARTMENT OF POLYMER SCIENCE AND RUBBER TECHNOLOGY

B.TECH. POLYMER SCIENCE AND ENGINEERING

SEMESTER I

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1101/ 12-214-0101	Engineering Mathematics I	3	1	0	3	50	50	100
PE 1102/ 12-214-0102	Engineering Physics	3	1	0	3	50	50	100
PE 1103/ 12-214-0103	Engineering Chemistry	3	1	0	3	50	50	100
PE 1104/ 12-214-0104	Engineering Graphics	3	3	0	4	50	50	100
PE 1105 12-214-0105	Basic Electrical Engineering and Electronics	3	1	0	3	50	50	100
PE 1106/ 12-214-0106	Technical Communication	2	1	0	2	50	50	100
PE 1107/ 12-214-0107	Mechanical Workshop	0	0	3	2	100	0	100
PE 1108/ 12-214-0108	Basic Electrical and Electronics Lab	0	0	3	2	100	0	100

Elective I - Nil

SEMESTER II

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1201/ 12-214-0201	Engineering Mathematics II	3	1	0	3	50	50	100
PE 1202/ 12-214-0202	Engineering Mechanics	4	1	0	4	50	50	100
PE 1203/ 12-214-0203	Ecology and Environment	2	1	0	3	50	50	100
PE 1204/ 12-214-0204	Mechanical Engineering	3	1	0	3	50	50	100
PE 1205/ 12-214-0205	Introduction to Macromolecular Science and Engineering	3	1	0	3	50	50	100
PE 1206/ 12-214-0206	Physical and Inorganic Chemistry	3	1	0	2	50	50	100
PE 1207/ 12-214-0207	Computer Programming	0	1	2	2	100	0	100
PE 1208/ 12-214-0208	Introduction to Chemical Analysis	0	0	3	2	100	0	100

Elective II - Nil

SEMESTER III

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1301/ 12-214-0301	Engineering Mathematics II	3	1	0	3	50	50	100
PE 1302/ 12-214-0302	Fluid Mechanics	3	1	0	3	50	50	100

Course Code	Subject	L	T	P	Credits	Internal	External	Total
PE 1303/ 12-214-0303	Natural Rubber Production and Technology	3	1	0	3	50	50	100
PE 1304/ 12-214-0304	Strength of Materials	3	1	0	3	50	50	100
PE 1305/ 12-214-0305	Heat and Mass Transfer	3	1	0	3	50	50	100
PE 1306/ 12-214-0306	Organic Chemistry	3	1	0	3	50	50	100
PE 1307/ 12-214-0307	Industrial Chemical Analysis	0	0	3	2	100	0	100
PE 1308/ 12-214-0308	Identification of Polymers	0	0	3	2	100	0	100

Elective III - Nil

SEMESTER IV

Course Code	Subject	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1401/ 12-214-0401	Applied Statistics	3	1	0	3	50	50	100
PE 1402/ 12-214-0402	Quality Management Systems and Safety	3	1	0	3	50	50	100
PE 1403/ 12-214-0403	Polymer Synthesis and Manufacture	3	1	0	3	50	50	100
PE 1404/ 12-214-0404	Science and Engineering of Rubbers	3	1	0	3	50	50	100
PE 1405/ 12-214-0405	Thermodynamics and Reaction Engineering	3	1	0	3	50	50	100
PE 1406/ 12-214-0406	Plastic Materials	3	1	0	3	50	50	100
PE 1407/ 12-214-0407	Polymer Synthesis	0	0	3	2	100	0	100
PE 1408/ 12-214-0408	Chemical Engineering Lab	0	0	3	2	100	0	100

Elective IV - Nil

SEMESTER V

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1501/ 12-214-0501	Plastics Processing	3	1	0	3	50	50	100
PE 1502/ 12-214-0502	Polymer Physics	3	1	0	3	50	50	100
PE 1503/ 12-214-0503	Polymer Rheology	3	1	0	3	50	50	100
PE 1504/ 12-214-0504	Rubber Processing and Products Manufacture	3	1	0	3	50	50	100
PE 1505/ 12-214-0505	Fibre Science and Technology	3	1	0	3	50	50	100
PE 1506/ 12-214-0506	Adhesive and Surface Coatings	3	1	0	3	50	50	100
PE 1507- 12-214-0507	Polymer Characterisation and Properties	0	0	3	2	100	0	100
PE 1508/ 12-214-0508	Polymer Processing	0	0	2	1	50	0	50
PE 1509/ 12-214-0509	Review Seminar	0	0	1	1	50	0	50

Elective V – Nil

SEMESTER VI

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1601 /12-214-0601	Latex Technology	3	1	0	3	50	50	100
PE 1602/ 12-214-0602	Characterisation and Testing Methods	3	1	0	3	50	50	100
PE 1603/ 12-214-0603	Polymer Products Design	3	1	0	3	50	50	100
PE 1604/ 12-214-0604	Polymer Composites and Blends	3	1	0	3	50	50	100
PE 1605/ 12-214-0605	Polymers for Electrical and Electronics Applications	3	1	0	3	50	50	100
PE 1606/ 12-214-0606	Elective 1. Polymers for Packaging Elective 2. Introduction to Biomaterials and Medical Devices	3	1	0	3	50	50	100
PE 1607/ 12-214-0607	Minor Project and Seminar	0	0	3	2	100	0	100
PE 1608- 12-214-0608	Latex Technology Practical	0	0	3	2	100	0	100

Elective VI -

Course Code	Course
PE 1606 A/12-214-06A	Polymer For Packaging
PE 1606 B	Polymer Process Modeling and Simulation
PE 1606 C/12-214-06C	Introduction to Biomaterials and Medical Devices
PE 1606 D	Disaster Management

SEMESTER VII

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		Internal	External	Total
PE 1701/ 12-214-0701	Polymers and Environment	3	1	0	3	50	50	100
PE 1702/ 12-214-0702	Introduction to Mould and Die Design	3	1	0	3	50	50	100
PE 1703/ 12-214-0703	Failure Analysis of Polymers	3	1	0	3	50	50	100
PE 1704/ 12-214-0704	Industrial Management	3	1	0	3	50	50	100
PE 1705/ 12-214-0705	Tyre Technology	3	1	0	3	50	50	100
PE 1706/ 12-214-0706	Elective (Polymer Nanocomposites)	3	1	0	3	50	50	100
PE 1707/ 12-214-0707	Polymer Product Testing	0	0	3	2	100	0	100
PE 1708/ 12-214-0708	Elective Based Seminar	0	0	3	2	100	0	100

Elective VII -

Course Code	Course
PE 1706 A	Polymers in Space
PE 1706 B/12-214-07B	Polymer Nanocomposites
PE 1706 C	CAD/CAM in Polymer Processing

M. TECH POLYMER TECHNOLOGY

SEMESTER I

Course Code	Course	C/E	Credit
POL 3101/ 16-440-0101	Advanced Polymer Science	C	3
POL3102/ 16-440-0102	Applied Mathematics	C	3
POL3103/ 16-440-0103	Operation Management & Management Information Systems	C	2
POL 3104/ 16-440-0104	Polymer Materials	C	2
POL 3105/ 16-440-0105	Rubber Processing & Product Manufacture	C	2
POL 3106/ 16-440-0106	Elective (Speciality Polymers)	E	3
POL 3207/ 16-440-0107	Polymer Technology Lab I	C	2
POL 3108/ 16-440-0108	Review Seminar	C	1

SEMESTER II

Course Code	Course	C/E	Credit
POL 3201/ 16-440-0201	Plastics Processing	C	3
POL 3202/ 16-440-0202	Advanced Polymer Rheology	C	3
POL 3203/ 16-440-0203	Polymer Products Design	C	3
POL 3204/ 16-440-0204	Characterization and Testing	C	3
POL 3205/ 16-440-0205	Introduction to Mould and Die Design	C	2
POL 3206/ 16-440-0206	Tyre Technology	E	3
POL 3207/ 16-440-0207	Polymer Technology Lab II	C	1

SEMESTER III

Course Code	Course	C/E	Credit
POL 3301/ 16-440-0301	Project Work Report and Viva Voce	C	18

SEMESTER IV

Course Code	Course	C/E	Credit
POL 3401/16-440-0401	Project Work Report and Viva Voce	C	18

DETAILS OF FACULTY

Sl.No.	Name & Designation	Specialization	Communication
1.	Dr. Honey John Professor & Head	Polymer Science/ Technology	9446372997 honey@cusat.ac.in
2.	Dr. Sunil K. Narayanankutty Professor(On Deputation)	Polymer Science/ Technology	0484-2551922, 9995300093 sncusat@gmail.com
3.	Dr. Thomas Kurian Professor	Polymer Science/ Technology	0484 – 2575144 9847872209 drtkurian@gmail.com
4.	Dr. Prasanth R. Associate Professor	Polymer Science/ Technology	9497205352 dr.prasanthr@gmail.com
5.	Dr. Sailaja G.S. Associate Professor	Polymer Science/ Technology	0471-2595136, 9744799643 sailajags@gmail.com
6.	Dr. Jayalatha Gopalakrishnan G Assistant Professor	Polymer Science/ Technology	9847672916 gjayalatha@gmail.com
7.	Dr. Jinu Jacob George Assistant Professor	Polymer Science/ Technology	0481-2598155, 9497792092 jinujac@gmail.com
8.	Dr. Abhitha K. Assistant Professor	Polymer Science/ Technology	9847654544 abhithak80@gmail.com/ abhithak80@cusat.ac.in
9.	Dr. C.P. Reghunadhan Nair Emeritus Professor		9496020080 cprnair@gmail.com
10.	Dr. Sherin Joseph Assistant Professor (On contract)		8089116683 joseph.sherin@gmail.com
11	Ms. Meenu N Assistant Professor (On contract)		9497368814 meenunarayanan2012@gmail.com

DEPARTMENT OF SHIP TECHNOLOGY

M. Tech. Computer Aided Structural Analysis & Design

Semester I

Course Code	Course	C/E	Credits
ST18 3101	Advanced Engineering Mathematics	C	4
ST18 3102	Computer Aided Design in offshore Engineering	C	4
ST18 3103	Advanced Structural Analysis	C	4
	Elective I	E	4
	Elective II	E	4
	Total		20

ST18 3104 Marine Hydrodynamics
ST18 3105 Fracture Mechanics
ST18 3106 Application of Stochastic Process Theory in Ocean Engineering
ST18 3107 Stability of Structures
ST18 3108 Marine Corrosion and Prevention
ST18 3109 Marine Pollution and its effect
ST18 3110 Pollution Control Technique
ST18 3111 Advanced Joining Techniques

Semester II

Course Code	Course	C/E	Credits
ST18 3201	Dynamics of Structures	C	4
ST18 3202	Finite Element Methods Applied to Offshore Engineering	C	4
	Elective III	E	4
	Elective IV	E	4
	Elective V	E	4

ST18 3203 Ocean Waves and Effects
ST18 3204 Analysis of Special Structures
ST18 3205 Design of Offshore Structures
ST18 3206 Fatigue Problems in Ships and Marine Structures
ST18 3207 Computer Application in Ship Manoeuvring

Semester III

Course Code	Course	C/E	Credits
ST 18 3301	Project Progress Evaluation	C	18

Semester IV

Course Code	Course	C/E	Credits
ST 18 3401	Project Dissertation Evaluation and Viva Voce	C	18

Details of Faculty

Sl. No.	Name & Designation	Specialisation	Communication
1.	Dr. Mariamma Chacko Associate Professor	Electrical Engineering and Electronics	mariamma@cusat.ac.in 9446077226
2.	Dr. K. Sivaprasad Associate Professor	Ship Building Technology	sivaprasad@cusat.ac.in 9349265677
3.	Dr. A. Mathiazhagan Associate Professor	Material Science and Corrosion Engineering	alagan@cusat.ac.in 9400336441
4.	Dr. C.B. Sudheer Assistant Professor	Production Engineering, Ship Production and CAD/CAM	sudheer@cusat.ac.in 9895074930
5.	Dr. Rajesh P. Nair Assistant Professor	Finite Element Method and Impact Analysis	rajeshpnair@cusat.ac.in 9744297106
6.	Dr. Manoj T. Issac Assistant Professor	Hydrodynamics of underwater vehicles	m.issac@gmail.com 9495519287
7.	Dr.Jayaram S(contract)	Naval architecture and ship building	jayaramsomarajan@gmail.com 9495434885
8.	Najdan Waris C P(contract)	Naval architecture and ship building	najdanwariscp@gmail.com 9746284803
9.	Dr.Beena Mary John (contract)	Civil Engg./Applied mechanics	Beena.marie.john@gmail.com 9497276435

INTERNATIONAL SCHOOL OF PHOTONICS

M.Tech. OPTO-ELECTRONICS & LASER TECHNOLOGY

SEMESTER I

Course Code	Course	C/E	Credits
ISP 3101	Modern Optics	C	4
ISP 3102	Laser Technology	C	4
ISP 3103	Optoelectronics	C	4
SMS 2340	Management for Scientist and Engineers	E	4
ISP 3105	Lab Course I	C	3
ISP 3106	Optical Communication Technology	E	3
Total for semester			22

SEMESTER II

Course Code	Course	C/E	Credits
ISP 3201	Fibre Optics & Applications	C	4
ISP 3202	Lab Course II	C	3
ISP 3203	Mini Project, Seminar	E	1
Any 3 of the following electives			
ISP 3204	Laser Applications	E	3
ISP 3205	Non-Linear Optics OSP & OC	E	3
ISP 3206	Digital Communication	E	3
ISP 3207	Industrial Photonics	E	3
ISP 3208	Advanced Laser Systems	E	3
ISP 3209	Biophotonics	E	3
ISP 3210	Nanophotonics	E	3
ISP 3211	Digital Signal Processing	E	3
ISP 3212	Laser Spectroscopy	E	3
ISP 3213	Photonics Materials and Devices	E	3
ISP 3214	Science and Technology of Plasma	E	3
ISP 3215	Integrated Optics	E	3
Total for semester			17

Semester III

Course Code	Course	C/E	Credits
ISP 3301	Project	C	18

Semester IV

Course Code	Course	C/E	Credits
ISP 3401	Project	C	18
Total			75

M.Sc. PHOTONICS (FIVE YEAR INTEGRATED)

SEMESTER I

Course Code	Subject	Work/Week			Credits	Marks		
		Lecture	Lab	Tutorial		IE	SEl	Total
ISP 1101	Mechanics and Wave Phenomena	3		1	3	50	50	100
ISP 1102	Electricity and Magnetism	3		1	3	50	50	100
ISP 1103	Optics I Geometrical Optics	3		1	3	50	50	100
ISP 1104	Mathematics I	3		1	3	50	50	100
ISP 1105	Statistican Methods	3		1	3	50	50	100
ISP 1106	Lab+Course Viva		6		3	100+50		150
ISP 1107	Communicative English	2		1	2	100		100
	Total for Semester I	17	6	6	20	500	250	750

SEMESTER II

Course Code	Subject	Work/Week			Credits	Marks		
		Lecture	Lab	Tutorial		IE	SEl	Total
ISP 1201	Electronics I- Basic Electronics	3		1	3	50	50	100
ISP 1202	Optics II – Physical Optics	3		1	3	50	50	100
ISP 1203	Mathematics II	3		1	3	50	50	100
ISP 1204	Thermodynamics and Therman Physics	3		1	3	50	50	100
ISP 1205	Nuclear and Particle Physics	3		1	3	50	50	100
ISP 1206	Lab+Course Viva		6		3	100+50		150
ISP 1207	History of Seience and Technology	1		1	1	50		50
	Total for Semester II	16	6	6	19	450	250	700

SEMESTER III

Course Code	Subject	Work/Week			Credits	Marks		
		Lecture	Lab	Tutorial		IE	SEl	Total
ISP 1301	Electronics II- Analog Electronics	3		1	3	50	50	100
ISP 1302	Classical Mechanics	3		1	3	50	50	100
ISP 1303	Optcis III Optical Instrumentation	3		1	3	50	50	100
ISP 1304	Mathematics III	3		1	3	50	50	100
ISP 1305	Atomic Spectroscopy	3		1	3	50	50	100
ISP 1306	Lab+Course Viva		6		3	100+50		150
ISP 1307	Seminar	1		0	1	50		50
	Total for Semester III	16	6	5	19	450	250	700

SEMESTER IV

Course Code	Subject	Work/Week			Credits	Marks		
		Lecture	Lab	Tutorial		IE	SEl	Total
ISP 1401	Electronics III Digital circuits and Microprocessors	3		1	3	50	50	100
ISP 1402	Mathematical Modeling and Computational techniques	3		1	3	50	50	100
ISP 1403	Quantum Mechanics I	3		1	3	50	50	100
ISP 1404	Electromagnetic Theory and Relativistic Phenomena	3		1	3	50	50	100
ISP 1405	Mathematics IV	3		1	3	50	50	100
ISP 1406	Computer Lab+Course Viva		6		3	100+50		150
ISP 1407	Workshop		2	0	1	100		100
ISP 1408	Seminar	1			1	50		50
	Total for Semester IV	16	8	5	20	550	250	800

SEMESTER V

Course Code	Subject	Work/Week			Credits	Marks		
		Lecture	Lab	Tutorial		IE	SEl	Total
ISP 1501	Optics IV – Applied Optics	3		1	3	50	50	100
ISP 1502	Electronics IV – Electronic Instrumentation	3		1	3	50	50	100

ISP 1503	Quantum Mechanics II	3		1	3	50	50	100
ISP 1504	Materials Science	3		1	3	50	50	100
ISP 1505	Molecular Spectroscopy	3		1	3	50	50	100
ISP 1506	Lab + Course Viva		6		3	100 +50		150
ISP 1507	Seminar	1			1	50		50
	Total for Semester V	16	6	5	19	450	250	700

SEMESTER VI

Course Code	Subject	Work/Week			Credits	Marks		
		Lecture	Lab	Tutorial		IE	SEl	Total
ISP 1601	Photonics I- Optoelectronics	3		1	3	50	50	100
ISP 1602	Photonics II- Fiber Optics	3		1	3	50	50	100
ISP 1603	Photonics III- Laser Physics	3		1	3	50	50	100
ISP 1604	Statistical Mechanics	3		1	3	50	50	100
ISP 1605	Project& Project Viva		9		3	150		150
ISP 1606	Lab + Course Viva		6		3	100+50		150
	Total for Semester VI	12	15	4	18	500	200	700
	Total for SemesterI - VI				115	2900	1400	4300

SEMESTER VII

(Course number of electives 2 EXI – 2 EX7 correspond to course number of electives chosen from the list of electives given separately. For example if 2E0I Advanced Quantum Mechanics and 2E03 Nanophotonics are given as the Elective I and Elective II respectively in the VII semester then ISP 2EXI and ISP 2EX2 will be ISP 2EOI and 2EO3 respectively)

Code	Title	Work/Week			Credits	Marks		
		Theory	Lab	Tutorial		IE	SEl	Total
ISP 2701	Advanced Solid state theory	4		1	4	50	50	100
ISP 2702	Laser Systems and applications	4		1	4	50	50	100
ISP 2EXI	Elective I	3		1	3	50	50	100
ISP 2EX2	Elective II	3		1	3	50	50	100
ISP 2703	Lab I Electronics+Course Viva		4		2	100+50		150
ISP 2704	Lab II- Photonics Lab		4		2	100		100
ISP 2705	Seminar	1			1	50		50
	Total for Semester I - VII	15	8	4	19	500	200	700

SEMESTER VIII

Code	Title	Work/Week			Credits	Marks		
		Theory	Lab	Tutorial		IE	SEl	Total
ISP 2801	Nonlinear Optics	4		1	4	50	50	100
ISP 2802	Digital Signal Processing and Optical Signal Processing	4		1	4	50	50	100
ISP 2EX3	Elective III	3		1	3	50	50	100
ISP 2EX4	Elective IV	3		1	3	50	50	100
ISP 2803	Lab I Electronics+Course Viva		4		2	100+50		150
ISP 2804	Lab II- Photonics Lab		4		2	100		100
ISP 2805	Seminar	1			1	50		50
	Total for Semester VIII	15	8	4	19	500	200	700

SEMESTER IX

Code	Title	Work/Week			Credits	Marks		
		Theory	Lab	Tutorial		IE	SEl	Total
ISP 2901	Optical Communication	4		1	4	50	50	100
ISP 2902	Lab I Fiber Optics Lab + Course Viva		4		2	100+50		100
ISP 2903	Lab II Photonics Lab		4		2	100		100
ISP 2904	Seminar	1			1	50		100
ISP 2EX5	Elective V	3		1	3	50	50	150
ISP 2EX6	Elective VI	3		1	3	50	50	100
ISP 2EX7	Elective VII	3		1	3	50	50	50
	Total for Semester VIII	15	8	4	18	500	200	700

LIST OF ELECTIVES

ISP 2E01	Advanced Quantum Mechanics
ISP 2E02	Biophotonics
ISP 2E03	Nanophotonics
ISP 2E04	Microwave Photonics
ISP 2E05	Network Analysis and Communication Engineering
ISP 2E06	Advanced Laser Systems
ISP 2E07	Quantum Optics
ISP 2E08	Optomechanical Engineering
ISP 2E09	Optical Sensor Technology
ISP 2E10	Solar Cells: Concepts and Theory

ISP 2E11	Discrete mathematics and Wavelets Theory	
ISP 2E12	Optical Computing	
ISP 2E13	Atom Optics	
ISP 2E14	Laser Spectroscopy	
ISP 2E15	Advanced Electromagnetic Theory	
ISP 2E16	Photonic bandgap structures and Metamaterials	
ISP 2E17	Holography and speckle metrology	
ISP 2E18	Industrial Photonics	

SEMESTER X

Code	Title	Work/Week			Credits	Marks		
		Theory	Lab	Tutorial		IE	SEl	Total
*ISP 2X01	Project & project viva				16	200+100	200+100	600
	TOTAL for Semester X				16	300	300	600

*Project guidance of tenth semester shall be considered as equivalent to 6 lab hours (for project) for workload calculation

Total Credit for the Course

Semesters	Credits	Marks		
		IE	SEl	Total
Total for VII-X	72 (Core 51 and Electives 21 credits)	1800	900	2700
Total for I-VI	115	2900	1400	4300
Total for I-X	187	4700	2300	7000

DETAILS OF FACULTY

Sl.No.	Name & Designation	Specialization	Communication
1.	Dr. PramodGopinath Professor & Director	Laser Plasma Spectroscopy, Non-linear optics, Nano Photonics	9446069743 pramod@cusat.ac.in
2.	Dr. A Mujeeb Professor	Opto electronics, Biophotonics, Optical NDT	9447419205,0471-2455786 mujeebpoovar@gmail.com mujeeb@cusat.ac.in
3.	Dr. M. Kailasnath Professor	Optical fibre devices, Nano Photonics	0484-2711525 kailas@cusat.ac.in
4.	Dr. Sheenu Thomas Professor	Amourfous solid fibre optics material optics Non-linear Optics	0484-2577505 9349405537 st@cusat.ac.in

5.	Dr. Saji K.J. Assistant Professor	Condensed matter Physics, Optoelectronics	9400217723 kjsaji@gmail.com saji@ cusat.ac.in
6.	Dr. Manu Vaishakh Assistant Professor	Microscopy, Bio photonics Non-linear Optics	9496061610 manu.vaishaki@gmail.com
7.	Mr. Muhammad Rishad Assistant Professor	Ultrafast Photonics Meta materials	9400876955 kpmrishad@gmail.com
8.	Dr. Priya Rose T Assistant Professor	Ultrafast Photonics, Ultrafast Lasers, Laser Plasma	8281982228 priya.rose@gmail.com priyarose@cusat.ac.in
9.	Dr. C,.P. Girijavallabhan Visiting Professor	Nano Photonics, Optical Instrumentation	9847040842 gvallabhan@gmail.com
10.	Dr. V.P.N. Nampoori Visiting Professor	Laser Plasma Spectroscopy, Non-linear optics, Nano Photonics, Fibre Optics	0484-2576263 nampoori@gmail.com
11.	Dr.P. Radhakrishnan Visiting Professor	Laser Spectroscopy, Non-linear Optics	0484-2604811 radhak@cusat.ac.in
12.	Dr. Bini P Pathrose Assistant Professor (Contract)	Electronics/ Opto electronics	9446061126 binivibin@gmail.com
13.	Dr. Manickam V Assistant Professor (Contract)	Sensor fabrication and instrumentation	8778013805 m.v.manickam@gmail.com
14.	Dr. Praveen C.S. DST-INSPIRE Faculty Fellow	Computational Physics / material Science	7510511129 8078078087 mnr.praveen@cusat.ac.in
15.	Dr.Retheesh R Assistant Professor(contract)	Electronic Speckle Interferometry	9496129087 mailtoretheesh@gmail.com

DEEN DAYAL UPADHYAY KAUSHAL KENDRA

M.Voc. (Master of Vocation) in Mobile Phone Application Development

SEMESTER I

Course Code	Course	Core/Elective	Credits
KAD 2101	Communication Skills Development (G-T)	C	3
KAD 2102	Fundamentals of Management (G-T)	C	3
KAD 2103	Object Oriented Programming with Java and SQL (G-P)	C	4
KAD 2104	Introduction to Mobile Application Development and WeB.Tech.nologies (D-T)	C	3
KAD 2105	Software Engineering and Testing (D-T)	C	3
KAD 2106	User Interface Design and User Experience (D-P)	C	3
KAD 2107	Android App Development for Beginners (D-P)	C	3
KAD 2108	Software Lab I (Android I, Java & SQL) (LAB)	C	2
Total			**24**

SEMESTER II

Course Code	Course	Core/Elective	Credits
KAD 2201	Professional Skills Development (Training Programme) (G-T)	C	3
KAD 2202	Project Management (G-T)	C	3
KAD 2203	Database and Backend Technologies (G-P)	C	3
KAD 2204	Android App Development – Advanced (D-P)	C	3
KAD 2205	Cloud and Advanced Technologies (D-P)	C	4
KAD 2206	Elective – I (G-T/D-T)*	E	3
KAD 2207	Elective – II (D-T)	E	3
KAD 2208	Software Lab II (Android II and Databse) (LAB)	C	2
KAD 2209	Internship – Android App Development	C	12
Total			**36**

SEMESTER III

Course Code	Course	Core/Elective	Credits
KAD 2301	Entrepreneurship and New Venture Planning) (G-T)	C	3
KAD 2302	Software Product Design and Agile Process Management (G-T)	C	3
KAD 2303	Programming with Swift (D-P)	C	3
KAD 2304	iOS App Development – Fundamentals (D-P)	C	3
KAD 2305	iOS App Development - Applied Methodologies (D-P)	C	3
KAD 2306	Elective – III (G-T/D-T)*	E	3
KAD 2307	Elective – IV (D-T)	E	3
KAD 2308	Software Lab III (iOS and Swift) (LAB)	C	3
Total			**24**

SEMESTER IV

Course No.	Course	Core/Elective	Credits
KMC 2401	*Major Project (90 working days during Semester IV in an IT firm where students contribute to a live iOS/Android/Cross-platform app development) and Viva voce (Continuous assessment – 100 marks, Final report – 100 marks & Viva - Voce – 100 Marks	C	24
Total			**24**

LIST OF ELECTIVES

E-1.   Wearable Technologies in Android

E-2.   Cross Platform App Development Using React Native

E-3.   iOS App Development – Advanced Technologies

E-4.   Watch OS Programming

E-5.   Healthkit and Homekit programming

E-6.   Retail App Development Frameworks

E-7.   Programming with Objective – C

E-8.   Programming with Python

E-9.   Data Analytics

E-10.   Kotlin Programming

E-11.   Internet of Things (IoT)

E-12.   Low Code Platform

DETAILS OF FACULTY

Sl.No.	Name & Designation	Specialization	Communication (Contact No. & e-mail id)
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PROFORMA – A

(For Student Registration)

School / Department of …………………………………………………………………..

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Registration Form

Name of Teacher   :

Course Code   :

Name of the Course   :

Number of Credits   :

Sl. No.	Name of Student	Semester	C/E	Programme	Department of study	Signature of Student

PROFORMA – B

School / Department of ……………………………………………………………..

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

I / II / III / IV Semester M.Sc. / M.Tech. / ………………...

Name of Student: ....

Sl. No.	Course Code	C/E	Name of Course	No. of Credits	Name of the Teacher &Department	Signature of Teacher

Number of Credits (Core)   :

Number of Credits (Elective)   :

Total Credits   :
Student Advisor

Scheme of allotting unique registration numbers to students of various programmes of the University directly by the departments: - A Proposal

Department	Code	Research Scholar	M.Sc./MBA/ MCA/MA/ LLB/ B.Tech.	M.Tech./LLM	M.Phil.	Diploma/ M.Voc.	Certificate Course
Applied Chemistry	AC	17ACRS001	17ACMS001	17ACMT001	17ACMP001		
Applied Economics	AE	17AERS001	17AEMA001		17AEMP001		
Atmospheric Sciences	AS	17ASRS001	17ASMS001	17ASMT001			
Biotechnology	BT	17BTRS001	17BTMS001				
Chemical Oceanography	CO	17CORS001	17COMS001		17COMP001		
CUCEK	CU	17CURS001		17CUMT001			
Computer Applications	CA	17CARS001	17CAMC001				
Computer Science	CS	17CSRS001		17CSMT001			
Electronics	EL	17ELRS001	17ELMS001	17ELMT001			
English & Foreign Languages	EF	17EFRS001				17EFDI001	
School of Engineering	SE	17SERS001		17SEMT001			
Environmental Studies	ES	17ESRS001	17ESMS001				
National Centre for Aquatic Animal Health	AA	17AARS001		17AAMT001			
Hindi	HI	17HIRS001	17HIMA001		17HIMP001	17HIDI001	17HICC001
Industrial Fisheries	IF	17IFRS001	17IFMS001		17IFMP001		
Instrumentation	IS	17ISRS001	17ISMS001	17ISMT001			
Legal Studies	LS	17LSRS001	17LSLB001	17LSLL001			
IUCIPR	IP	17IPRS001		17IPLL001		17IPDI001	
Management Studies	MS	17MSRS001	17MSMB001		17MSMP001		
Marine Biology	MB	17MBRS001	17MBMS001		17MBMP001		

Marine Geology	MG	17MGRS001	17MGMS001				
Mathematics	Ma	17MARS001	17MAMS001		17MAMP001		
Photonics	PT	17PTRS001	17PTMS001	17PTMT001			
Physical Oceanography	PO	17PORS001	17POMS001	17POMT001			
Physics	PH	17PHRS001	17PHMS001		17PHMP001		
Polymer Science	PS	17PSRS001	17PSBT001	17PSMT001			
Ship Technology	SH	17SHRS001	17SHBT001	17SHMT001			
Statistics	ST	17STRS001	17STMS001	17STMT001			
DDUKK	DD	17DDRS001				17DDMV001	
KMSME	KM	17KMRS001	17KMBT001	17KMMT001			17KMCC001
Centre for Social Inc.	SI	17SIRS001					

Scheme of allotting unique registration numbers to students of various programmes of the University directly by the Departments:-A Proposal

Course Nomenclature

Research Scholar/PhD	RS
Diploma	DI
M.Sc.	MS
M.A	MA
M.B.A	MB
M.C.A	MC
LLB	LB
LLM	LL
B.Tech.	BT
M.Phil.	MP
Certificate Course	CC
M.VOC.	MV
M.Tech.	MT

If a particular Department has two parallel programmes in the same category (say two M.Sc./M.Tech.) then it can be accommodated the last three digits (say 001 to 015 to the first programme and 015 to 030 to the second programme). Or, one more digit can be introduced at the sixth place as 1, 2, 3 etc., which indicates the different programmes of similar nature of the same Department. As an example if the Computer Science Department has two M.Tech, it can be numbered as either of the following which can be decided.

17 CSMT001 to 17CSMT015 to the first programme 17CSMT015 to 17CSMT030 to the second programme

OR

17CSMT100 to 17CSMT199 to the first programme 17CSMT200 to 17CSMT299 to the second programme**Most Suitable** 17CSMT300 to 17CSMT399 to the third programme etc.

OR

17CSMT1001 to 17CSMT10015 for the first programme 17CSMT2001 to 17CSMT20015 for the second programme

Disclaimer: *The information provided in the Bulletin is general in nature and does not have any legal authenticity. The official information which may change from time to time can be obtained from the office concerned.*