ACADEMIC BULLETIN

2020-2021

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
KOCHI 682 022, KERALA, INDIA
Phone: 0484 2575396
Website: www.cusat.ac.in

\

CONTENTS

		Page No.
1	Preface	3
2	The Academic Committee	4
3	Regulations of Post Graduate (CBCS) Programme	5
4	Regulations of M.Tech. Programme	11
5	Regulations of Integrated M.Sc.Programme	28
6	Regulations of M.Phil. Programme	33
7	Regulations of B.Voc. M.Voc. , Integrated M.Sc. (Photonics)Programmes	38
8	Regulations of UG programme	77
9	Details of Courses offered in the various Departments/Schools	

Faculty of Engineering	1. Kunjali Marakkar School of Marine Engineering 2. Cochin University College of Engineering, Kuttanadu 3. School of Engineering	82 96 163
Faculty of Environmental Studies	1. School of Environmental Studies 2. National Centre for Aquatic Animal Health	184 187
Faculty of Humanities	1. Department of Hindi 2. Department of English & Foreign Languages	191 194
Faculty of Law	1. School of Legal Studies 2. Inter University Centre for IPR Studies	201 216
Faculty of Marine Sciences	1. School of Industrial Fisheries 2. School of Marine Sciences: i. Department of Atmospheric Sciences ii. Department of Chemical Oceanography iii. Department of Marine Biology, Microbiology & Biochemistry iv. Department of Marine Geology and Geophysics v. Department of Physical Oceanography	221 225 229 232 236 240
Faculty of Science	1. Department of Applied Chemistry 2. Department of Biotechnology 3. Department of Mathematics 4. Department of Physics 5. Department of Statistics	245 251 254 258 261
Faculty of Social Sciences	1. Department of Applied Economics 2. School of Management Studies 3. DDU Kaushal Kendra-Programme 1	265 267 271
Faculty of Technology	1. Department of Computer Applications 2. Department of Computer Applications (CUCEK) 3. Department of Computer Science 4. Department of Electronics 5. Department of Instrumentation 6. Department of Polymer Science & Rubber Technology 7. Department of Ship Technology 8. International School of Photonics 9. DDU Kaushal Kendra-Programme 2	278 283 286 291 296 303 308 310 317

10. Student Registration forms 320-321

11. Unique Registration Numbers to students of various programmes of the University. 322-324

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 Sectionfor their administrative help and support.

Dr. Thomas Kurian

Dr. G.Santhosh Kumar

Dr. Suja Haridas

Dr. S.M. Sunoj(Convenor)

Academic Committee 2020-2022

1	Pro- Vice Chancellor :	:	Chairman
2	Dr. S. M. Sunoj, Professor, Department of Statistics	:	Vice Chairman
3	Registrar	:	Secretary
4	Controller of Examinations	:	
5	Dr. Suja Haridas	:	Assistant Professor, Department of Applied Chemistry
6	Dr. P. Arunachalam	:	Professor, Department of Applied Economics
7	Sri. Baby Chakrapani	:	Associate Professor, Department of Atmospheric Sciences
8	Dr. Sarita G. Bhat	:	Professor & Head, Department of Biotechnology
9	Dr. Habeeb Rahman K.	:	Assistant Professor, Department of Chemical Oceanography
10	Smt. Malathi S.	:	Assistant Professor, Department of Computer Applications
11	Dr. G. Santhosh Kumar	:	Professor, Department of Computer Science
12	Dr. Supriya M. H.	:	Professor, Department of Electronics.
13	Dr. Brinda Bala Sreenivasan	:	, Assistant Professor, Department of English and Foreign Languages
14	Dr. V. Sivanandan Achari	:	Associate Professor& Director, School of Environmental Studies.
15	Dr. K. Ajitha	:	Professor, Department of Hindi.
16	Dr. S. Sabu	:	Assistant Professor, School of Industrial Fisheries
17	Dr. Reju V G	:	Associate Professor, Department of Instrumentation
18	Dr. P. S. Seema	:	Associate Professor, School of Legal Studies
19	Dr. A. Mujeeb	:	Professor, International School of Photonics
20	Dr. Jagathy Raj V.P	:	Professor, School of Management Studies
21	Dr. A. A. Mohamed Hatha	:	Professor, Department of Marine Biology, Microbiology, Biochemistry.
22	Sri. Roy V. Paul	:	Associate Professor, Kunjali Marakkar School of Marine Engineering
23	Dr. P. S. Sunil	:	Associate Professor, Department of Marine Geology and Geophysics.
24	Dr. P. G. Romeo	:	Professor, Department of Mathematics.
25	Dr. P. K. Saji	:	Assistant Professor, Department of Physical Oceanography
26	Dr. M. Junaid Bushiri	:	Professor, Department of Physics
27	Dr. Honey John	:	Professor, Department of Polymer Science & Rubber Technology.
28	Dr. Rajesh P. Nair	:	Assistant Professor, Department of Ship Technology

29	Dr. Zakkariya K. A.	:	Professor&Director , DDU Kaushal Kendra.
30	Dr. Sunil Kumar N.	:	Professor, Cochin University College of Engineering, Kuttanad
31	. Dr. Valsamma Joseph	:	Associate Professor & Director, National Centre for Aquatic Animal Health.
32	Dr. Glory Joseph	:	Professor, Civil Engineering Division, School of Engineering

REGULATION FOR POST GRADUATE PROGRAMMESUNDER 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.

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 **7.5**	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. 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.

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

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, 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*

REGULATION FOR POST GRADUATE PROGRAMMES IN ENGINEERING/TECHNOLOGY UNDER CHOICE BASED CREDIT SYSTEM (CBCS) OFFERED BY THE UNIVERSITY DEPARTMENTS/SCHOOLS

1 SCOPE

1.1 These Regulations shall apply to all M.Tech programmes conducted by the Departments/Schools of the Cochin University of Science and Technology.

1.2 The provisions herein supersede all other Regulations with respect to such programmes unless otherwise provided.

2. DEFINITIONS

Department/School means Departments/Schools instituted in the University as per Statutes and Act.
Core course means a course that the student admitted to a particular programme must successfully complete in order to receive the Degree and which cannot be substituted by any other course. Core course is offered by the Department where the student takes admission.
Elective course means a course, which can be substituted by equivalent courses from the same or other Departments/Schools.
Audited course means a course which can be opted by a student but which will not accrue any credit.

3. ELIGIBILITY AND ADMISSION PROCEDURE

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

4 ADMISSIONS

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

Each student admitted to a program shall be assigned a Unique Registration Number by the department concerned in a format prescribed by the university, which will be valid throughout his/her programme of study in the University.

5 COURSE STRUCTURE

5.1 The course content of M.Tech programmes shall consist of theory courses, practical courses, seminar, industrial training (optional) and project work.

5.2 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 to be approved by the concerned Board of Studies, Faculty and Academic Council

5.3 The curriculum for the first two semesters shall generally consist of theory courses, practical courses and seminar. There shall be three kinds of courses: Core, Electives and Audit courses. All core courses shall have three or four credits except in cases where only project/dissertation including seminars are involved in which case the minimum credit shall be sixteen. In all the programmes of study the elective courses (including inter departmental electives) shall have only three credits. Elective courses, if any offered through Massive Open On line Course (MOOC) can have two credits. Practical course / seminar will have one or two credits.

5.4 In the case of online courses attended by the student, a certificate of satisfactory completion and marks/ grade if any issued by the authority who conducted the course must be submitted to the Head of the Department. The Department can conduct a viva on the subject of the online course if necessary. On the completion of this, department council can award the respective weightage/grade to the student.

5.5 The number of credits for the project work in third and fourth semesters shall be in the range of 15 – 18 each.

6. COURSE REGISTRATION

6.1 Every Department/School shall have Faculty Members as Student Advisors. Each student will be assigned to an Advisor/Mentor, by the Department council within one week from the commencement of the classes, who will counsel the student on the choice of elective 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 within the time prescribed by the University. The student should have completed the prescribed prerequisites if any for a course before registration.

6.2 The Department offering a course shall prescribe the maximum number of students that can be admitted taking into consideration the facilities available.

6.3 The student can drop any elective/audit course(s) within 15 working days after the commencement of the classes.

6.4 University shall publish 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. Each course shall have a code consisting of first two digits indicating the year of revision of syllabus/curriculum, following three digits denoting the program code, the next two digits indicating the semester and last two digits denote the serial number of the course.

6.5 A student shall register and complete at least one Interdisciplinary / industry based/online course as one of the Electives before registering for the final semester of the Programme.

6.6 Each Department/School will announce at least one interdisciplinary course (Elective) to be offered by them, in the "E" slot of the Common Time-table.This interdisciplinary course (Elective) shall not have any prerequisite.

6.7 No regular student shall register for more than 24 credits per semester and less than 16 credits per semester

7. EVALUATION

7.1 A student would be considered to have progressed satisfactorily at the end of a semester if he/she has a minimum of 75 % attendance. The evaluation is completely internal.

7.2 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 student shall be evaluated continuously throughout the semester and marks shall be awarded on the basis of tests / assignments as detailed below:

7.3 There shall be two class tests, assignment 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. A maximum of 10 marks will be awarded for the assignments

7.4 The end semester examination will be for 50 marks and shall contain questions from the entire syllabus of the course. The duration of the end semester examination shall be three hours.

7.5 All practical examinations will also be internally evaluated as per the procedures laid down by the Department Councils concerned.

7.6 Marks obtained in the continuous assessment shall be displayed on the notice board and grievances if any may be addressed to the teacher concerned/Head of the Department with supporting documents. 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.

7.7 There shall be only a single evaluation for the semester end examination. Immediately after the end semester examination is over, the Head of the Department shall make arrangements to complete the evaluation and finalize the results within 10 working days.

7.8 The pass minimum in a subject is 50 %, with a separate minimum of 45% for end semester examination

7.9 The final marks and grade in all the courses obtained by the students in that semester will be displayed in the notice board. Those who could not obtain 50% marks (Grade D) in total for a course will be declared as failed in that course.

Those who fail in any course shall approach the teacher concerned if necessary, for a reexamination 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 pass the examination 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 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 along with the subsequent batches, or re-register and repeats the course. In this case he/she will be awarded whatever grade he/she has secured.

8. PROJECT WORK

8.1 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.

8.2 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.

8.3 At the end of IV or VI semester, the students will have to submit a dissertation on his / her project work to the Head of the Department/School within the last date prescribed for the purpose

8.4 The dissertation will be evaluated by an examination committee consisting of the head of the department / school / division, another faculty member and the project guide. The candidate shall make an open presentation of his/her dissertation which will be followed by a viva-voce examination.

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%

9. DECLARATION OF RESULTS

9.1 The result of the examinations will be finalised and published 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. The University shall issue mark lists/grade card at the end of each semester.

9.2 GRADE CARD

9.2.1 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 grades awarded for each course along with the course credit.

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.

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

Range of marks	**Grade**	**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.

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

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, 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

9.3 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.

9.4 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.

9.5 A student who wishes to take up professional employment after completing the second semester shall obtain permission from the Head of the Department/School. The student will be permitted to carry out the project work in the institution / organisation where they are employed on production of a certificate from the Head of that institution/organisation to the effect that the student is permitted to carry out the project at the institution/organisation.

Such candidates shall carry out the project work under the joint supervision of a project guide from the Department/School and an external guide from the Institution/Organization concerned. The Department / School Council shall verify the academic/ research credentials of the proposed external guide before granting permission.

In the case of students who propose to carry out their project work in National Laboratories on full time basis, the provision regarding having a project guide from the Department/School concerned may be exempted by the Department / School Council, if the situation warrants.

9.6 This clause will be applicable to the sponsored candidates also if they wish to carry out their project work in their parent organisation.

10 MONITORING AND MANAGEMENT OF PROGRAMMES

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.

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.

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 10^{th} 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 2^{nd} 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 3^{rd} 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 i^{th} course and G1 is the grade point scored by the students in the i^{th} 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 i^{th} 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:

$$GPA = \frac{G_1C_1 + G_2C_2 + G_3C_3 + \ldots\ldots\ldots\ldots GnCn}{C_1 + C_2 + C_3 + \ldots\ldots\ldots\ldots\ldots\ldots Cn}$$

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 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. Mode of Evaluation and Eligibility for Pass

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 thepassing requirements within three years of securing admission to the course. And thesame will be four years in the case of Advanced Diploma.

8.11 For Advanced Diploma in Business Process and Data Analytics, a student shallcomplete 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:

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

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.

II. 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. Butthe 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 givenonly 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 daysfrom the last date of examinations by the department council, which will act as thepassing board and the minutes shall be sent to the controller of examinations forthe issues of grade card. In case of second semester and fourth semester whereinternships are there, the results shall be finalized and published within 15working days after the Viva-Voce examination.

7.11 A student shall complete his/her M.Voc. program within four years from thedate of admission by acquiring the total credit requirements as specified for theaward of the degree. In case of candidates who take lateral entry during the thirdsemester of the course shall complete his/her M.Voc. program within three yearsfrom 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:

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

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

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, howeverthe 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 = Gl'Cl+G2C2+G3C3+.....+GnCn/
Cl+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	CGPA
First class with Distinction	8 and above
First class	6.5 and above
Second class	6 and above

Classification for the Degree diploma will be as follows:

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 thecourse, 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-Falled	0

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

(GPA) calculated as follows,

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

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, 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.

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. 7thsemester 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 registrationwill 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 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, 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 Eligibility to appear for the Semester End Examination

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 Eligibility to write the Supplementary examination

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. 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 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 II^{nd} semesters for considering the promotion to V^{th} semester and one regularchance and one supplementary chance for semester end examinations of III^{rd} and IV^{th} semesters forconsidering the promotion to the VII^{th} 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 = 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 percentagemarks.

Percentage marks = (SGPA/CGPA – 0.5) 10

1.11 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 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 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:

• 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 orthree 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, misbehaviourincluding 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

B.TECH. MARINE ENGINEERING

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
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

Details of Faculty

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

B.SCHOOL OF ENGINEERING

I DIVISION OF CIVIL ENGINEERING

Sl. No.	Name & Designation	Specialization	Communication
1.	Dr. Glory Joseph Associate Professor & Head	Structural Engineering	9745229596 josephglory1@gmail.com
2.	Dr. Abdul Rahman K.U. Professor	Water Resources Engineering	9497683196, arku@cusat.ac.in
3	Mr. Arun Kumar T. Associate professor	Environmental Engineering	9946510679
4.	Dr. K.S. Beena Professor	Geotechnical Engineering	9447329888, beenavg@gmail.com
5.	Dr. Benny Mathews Abraham , Professor	Geotechnical Engineering.	9446409897, bennymabraham@gmail.com
6.	Dr. Bindu C.S. Associate Professor	Transportation Engineering	9495429703 binduromeo@gmail.com
7.	Dr. Deepa Balakrishnan Associate Professor		9495221727
8.	Dr. Deepa G.Nair Associate Professor	Cost effective Building Materials and housing	9846249839, deepalavanya1@gmail.com
9.	Dr. Job Thomas Associate Professor	Structural Engineering	9846545824 job_thomas@cusat.ac.in
10.	Dr. Narasimha D.S. Associate Professor	Structural Engineering	8547775943, narasimhadhongdi@gmail.com
11.	Sri. Ramadass S., Associate Professor	Structural Engineering	9446925748, subramanian.raamadass@gmail.com
12.	Dr. Renu Pawels, Associate Professor	Environmental Engineering	9446556494 renupawels@gmail.com
13.	Dr. Roy M. Thomas, Associate Professor	Environmental Engineering	9447147194, roymthomas2007@gmail.com
14.	Dr. Sobha Cyrus Professor	Geotechnical Engineering	9846146198, sobharoymthomas@gmail.com
15.	Dr. Subha V. Associate Professor	Habitat Technology	9447292584 subhakamal@gmail.com

On Contract:

Sl. No.	Name & Designation	Specialization	Communication
1.	Ms. Neethu Vinod Assistant Professor	Structural Engineering & Construction Management	9495183409 neethuvinodm@gmail.com
2.	Ms. Rani Tenison Assistant Professor		9995877374
3.	Ms. Rinu Tenison Assistant Professor	Structural Engineering	9995877376 rinuagnes@gmail.com
4.	Ms. Tintu Joy M. Assistant Professor	Environmental Engineering	9961850837 tintubijo16@gmail.com
5.	Viji A.J. Assistant Professor	Civil Engineering	9947738887 aj_viji@yahoo.co.in

II DIVISION OF COMPUTER SCIENCE AND ENGINEERING

Sl. No.	Name & Designation	Specialization	Communication
1.	Mr. V. Damodaran, Associate Professor & Head	Computer hardware and Assembly Language Programming	9447001195 dams72@gmail.com
2.	Ms. Ancy Zachariah, Associate Professor	Information Processing	9544884424 ancy.za@gmail.com
3	Dr. David Peter S. Professor		9446366805
4.	Dr. Latha R Nair Assistant Professor	Information Processing	9567489098 latharnair@cusat.ac.in
5.	Mr. Pramod Pavithran, Associate Professor	Neural Networks	9447106663 pramodpavithran@gmail.com
6.	Ms.Preetha S. Assistant Professor	Networking	9947468348 preethamiss@gmaill.com
7.	Dr. Sheena Mathew, Professor	Data Security	9446509508 sheenamathew@cusat.ac.in
8.	Sheena S. Assistant Professor	Software Engineering	9446457531 sheenababuraj@gmail.com
9.	Dr. Sudheep Elayidom M., Associate Professor	Information Processing	9895049399 sudheepelayidom@hotmail.com
10.	Mr. Vinod Kumar P.P., Associate Professor	Networking and Communication	9447222647 ppvinod@gmail.com

On Contract:

Sl. No.	Name & Designation	Specialization	Communication
1	Ms. Abitha P.G., Assistant Professor	Computer Science and Engineering	9048049877 pgabitha@gmail.com
2	Ms. Anu M., Assistant Professor	Computer Science and Engineering	9447248008 anumadanan@gmail.com
3	Ms. Asha Cheriyan, Assistant Professor	Information System Security	8547158769 ashacherian14@gmail.com
4	Ms. Deepa Paul E.P., Assistant Professor	Information Processing	9447701778 deepapaulep@gmail.com
5	Ms. Divya Prakash, Assistant Professor	Computer Science and Engineering	9446538615 divya.sctce@gmail.com
6	Ms. Girija O.K., Assistant Professor	Computer Science and Engineering	9961030027 girijaok@gmail.com
7.	Ms. Lino Murali, Assistant Professor	Networks, Machine Learning	9145526027 linomurali@gmail.com
8.	Ms. Neena Elsa Jose Prakash, Assistant Professor	Information Processing	9656437688 neenelsa@gmail.com
9.	Ms. Neethu S. Kumar, Assistant Professor	Hardware and Networking	9746055954 neethusk@gmail.com
10.	Ms. Nitha C. Pankajakshan, Assistant Professor	Computer Science and Engineering	9946279656 nithacp17@gmail.com
11.	Ms. Suja C. Nair, Assistant Professor	Computer Science and Engineering	9895024229 sanjayrjv@gmail.com

III DIVISION OF ELECTRICAL & ELECTRONICS ENGINEERING

Sl. No.	Name & Designation	Specialization	Communication
1.	Dr. C.A. Babu, Professor & Head	Power & Energy System	9447349571 drcababu@gmail.com
2.	Dr.Asha Elizabeth Daniel, Professor	Communication Engineering	9446128079, ashapalal@gmail.com
3.	Dr.P.G. Latha, Associate Professor	Energetics	9446147780, pglatha@gmail.com
4.	Ms.Sheena K.M., Associate Professor	Electrical Machines	9495970110, sheenameerankunju@gmail.com
5.	Dr. Usha Nair, Professor	Control System	9847147689, ushanair4@gmail.com

On Contract:

Sl. No.	Name & Designation	Specialization	Communication
1.	Ms. Bini M.C., Assistant Professor	Power Electronics and Drives	9496372754, binichandran.mc@gmail.com
2.	Ms.Jeena John, Assistant Professor	Power Electronics and Drives	9746244311, jeena.domettilda.john@gmail.com
3.	Ms. Jisha Joseph, Assistant Professor	Electrical and Electronics Engineering	9495495099, jishaanmaria@gmail.com
4.	Ms. Kochurani Peter Assistant Professor	Digital Electronics	9895169340 Kr_kanat@hotmail.com
5.	Ms. Mareena Francis, Assistant Professor	Electrical and Electronics Engineering	7561075379, mareenapanackal@gmail.com
6.	Ms. Prema R. Chandran, Assistant Professor	Electrical and Electronics Engineering	9048542521, preemar21@gmail.com
7.	Ms. Rangy Sunny, Assistant Professor	Electrical Engineering	9895022823, rangy121@gmail.com
8.	Ms. Reenu Mathew, Assistant Professor	Power Electronics	9895115470, reenumc@gmail.com
9	Ms. Rosamma Thomas, Assistant Professor	Power Electronics and Drives	9495848456, rosamma.tk@gmail.com
10.	Ms. Viji J. Vikram, Assistant Professor	Power System	9496468744, vijijvikram@gmail.com
11.	Mr. Vipin A.M., Assistant Professor	Power Electronics	9446207142, vipin.am@gmail.com

IV DIVISION OF ELECTRONICS AND COMMUNICATION ENGINEERING

Sl. No.	Name & Designation	Specialization	Communication
1.	Dr. Abdulla P., Professor & Head	Microwave Electronics	9496445235 abdulla@cusat.ac.in
2.	Dr. Anju Pradeep, Associate Professor	Microwave Electronics	9446337660 anjupradeep@gmail.com
3.	Dr. Babitha Roslind Jose, Associate Professor	Micro Electronics	9846222168 babitajose@yahoo.com
4.	Dr. Binu Paul, Associate Professor	Microwave, CEM	8547015950 binumpaul@gmail.com
5.	Dr. Deepa Sankar Associate Professor	Image Processing	9447432568 deepasunesh@gmail.com
6.	Dr. Rekha K. James, Professor	Micro Electronics	9745182001 rekhalola@gmail.com

7.	Dr. R. Gopikakumari, Professor	Image Processing, Signal Processing, Neural Networks	9446129193, gopikakumari@gmail.com
8.	Dr. Jibukumar M.G., Associate Professor	Wireless Technology	9497683331 jibuthattakuzha@gmail.com
9.	Dr. S. Mridula, Professor	Microwave, Metamaterials	9567883856 mridulahari@gmail.com
10.	Dr. P. Mythili, Associate Professor	Microwave, Genetic Algorithm & Signal processing	9400939416 mythili9999@gmail.com
11.	Mr. Premkumar C.V., Assistant Professor	Digital Signal Processing	9447171544 cvpremkalady@gmail.com
12.	Dr. Shahana T.K., Associate Professor	Micro Electronics	9895839629 shahanazakir@gmail.com
13.	Mr. Unni A.M., Associate Professor	Electronics Design Microwave & Radar	9447233120 amunni@gmail.com

On Contract:

Sl. No.	Name & Designation	Specialization	Communication
1.	Ms. Angel John Assistant Professor		9995395576
2.	Ms. Febina Iqbal Assistant Professor		9496337229
3.	Ms. Jayarani M.A. Assistant Professor	VLSI Design	9495235313 jayarani90@gmail.com
4.	Ms.Jesintha Francis, Assistant Professor	Network Engineering	8281251986 jesinthadixon@gmail.com
5.	Ms. Nelin Mathew, Assistant Professor	Electronics Design & Technology	9656925021 nelin.soni@gmail.com
6.	Ms. Sreejisha K.P. Assistant Professor	Electronics & Communication Engineering	9497262900 sreejisha1986@gmail.com
7.	Ms. Sumi Baby, Assistant Professor	Electronics & Communication Engineering	9895114220 sumibaby@gmail.com
8.	Ms. Vani Devi P., Assistant Professor	Applied Electronics	9961586161 kausthubham27@gmail.com
9.	Ms. Visanthi V.P., Assistant Professor	Electronics & Communication Engineering	8891756331 visanthivpillai@gmail.com

V DIVISION OF INFORMATION TECHNOLOGY

On Contract:

Sl. No.	Name & Designation	Specialization	Communication
1.	Mr. Akhil P.V., Assistant Professor	Information Technology	9447785097 pv.akhil@gmail.com
2.	Ms. Jiby T.C., Assistant Professor	Computer and Information Science	9446422443 jibbabin@gmail.com
3.	Ms. Nafsiya C.A., Assistant Professor	Computer Science and Information Science	9037222420 nafsiyaca33@gmail.com
4.	Ms. Nismi Mol E.A., Assistant Professor	Information Technology	9048060308 nismiea@gmail.co.in

5.	Ms. Nithya S. Prasad, Assistant Professor	Computer and Information Science	8547042823 nithyasivom@gmail.com
6.	Ms. Renjusha Aravind, Assistant Professor	Information Technology	9895391785 rejushaaravind@gmail.com
7.	Ms. Seethe Parameswaran, Assistant Professor	Information Technology	9400883351 76otmai.param19@gmail.com
8.	Ms. Shani Sivadas, Assistant Professor	Information Technology	9847851563 shanisivadas8@gmail.com
9.	Ms. Shilpa Elsa Abraham, Assistant Professor	Computer Science	7403287546 shilpamat75@gmail.com

VI DIVISION OF MECHANICAL ENGINEERING

Sl. No.	Name & Designation	Specialization	Communication
1.	Dr. Gireesh Kumaran Thampi B.S. Associate Professor	Thermal Engineering, Fluid Mechanics	9447054074 gireesh2526@gmail.com
2.	Dr. Ajithkumar G., Professor	Industrial Engineering	9446495639 ajithkumarg2001@gmail.com
3.	Dr. Bhasi A.B., Associate Professor	Management/Production Engineering	8891745950 bhasiab@gmail.com
4	Dr. Biju N., Associate Professor	Non Destructive Evaluation, Production Engineering	9496215993 bijuncusat@gmail.com
5.	Dr. Franklin Robert John, Associate Professor	Industrial Engineering	9496978546 frankcusat@gmail.com
6.	Dr. Jacob Elias, Associate Professor	Cryogenics	9447475268 jacobcusat@gmail.com
7.	Dr. James Varghese, Associate Professor	Thermal Science	9496904280 jamesvar@gmail.com
8.	Dr. Jayadas N.H. Professor	Tribology	9447291641 jayadasnh@gmail.com
9.	Mr.Joshy P.J., Associate Professor	Fluid Mechanics	9496904280 pjjoshy1969@gmail.com
10.	Dr. V.N. Narayanan Namboothiri, Associate Professor	Metrology and Measurement	9349895949 nnamboothirivn@gmail.com
11.	Dr. M.R. Radhakrishna Panicker, Professor	Material Science	9447411827 mrrpanicker@gmail.com
12	Dr. Saju K.K, Professor	Material Science	9895593988 kksaju1970@gmail.com
13.	Dr. P.S. Sreejith, Professor	Manufacturing	9447812820 pssreejith2002@gmail.com
14.	Dr. Tide P.S., Professor	Compressible flows	9497366401 tideps@gmail.com

On Contract

Sl. No.	Name & Designation	Specialization	Communication
1.	Ms. Angel Thomas, Assistant Professor	Mechanical Engineering	9446608041angelthomas1989@gmail.com.
2.	Mr. Alwyn Jose, Assistant Professor	Mechanical Engineering	9446219041 alwynjose1989@gmail.com
3.	Mr. Dheeraj R., Assistant Professor	Mechanical Engineering	9496351404 dheeraj.raghunathan@gmail.com

4.	Mr. Faizal K., Assistant Professor	Industrial Engineering	8129261686 faizal18888@gmail.com
5.	Mr. Unnikrishnan M.M., Assistant Professor	IC Engines and Turbomachinery	9946758545 unni8545@gmail.com
6.	Mr. Nithin M. Joy, Assistant Professor	Mechanical Engineering	9447349229 nithinmjoy@yahoo.in
7.	Mr. Rakesh Chandra B., Assistant Professor	Manufacturing Engineering	9496827273 rakesh6164@gmail.com
8.	Mr. Jayesh S., Assistant Professor	Mechanical Engineering	9947291868 Jayesh.jhe@gmail.com
9.	Mr. Jibi Job, Assistant Professor	Dynamics	9495820660 jibijob@yahoo.co.in
10.	Mr. Rashid Kareem, Assistant Professor	Mechanical Engineering	9048108651 rashidkareem342@gmail.com
11.	Mr. Roshith K. Assistant Professor	Mechanical Engineering	9746666483 kalathingalroshith@yahoo.co.in
12.	Mr. Thilakan T.B., Assistant Professor		9496867084 ttbal1009@gmail com

VII DIVISION OF SAFETY & FIRE ENGINEERING

Sl. No.	Name & Designation	Specialization	Communication
1.	Dr. Dipak Kumar Sahoo, Professor	Structural Engineering, Fire Engineering	9496215851 dksahoo@gmail.com
2.	Dr. George Mathew, Professor	Structural Engineering, Fire Engineering	9447726194 cusat.george @gmail.com
3.	Dr. G. Madhu, Professor	Process Safety, Environmental Engineering	9447366900 profmadhugopal@gmail.com
4.	Mr. Nirmal Job A., Associate Professor	Mechanical Engineering	9446740057 nirmaljob@gmail.com
5.	Dr. V.R. Renjith, Associate Professor	Industrial Safety Engineering	9447108856 renjithvr75@gmail.com

On Contract:

Sl. No.	Name & Designation	Specialization	Communication
1	Mr. Anish Job Kurian, Assistant Professor	Mechanical Engineering	8606707991 anishjob1919@gmail.com
2	Ms. Anju Roy, Assistant Professor	Industrial Drives And Control	9946114216 anjurkp@gmail.com
3.	Ms. Lila Bhai T.S., Assistant Professor	Chemical Engineering	9495094252 liladaspr@gmail.com
4.	Dr. Naveen S., Assistant Professor	Chemical Engineering	9895364872 naveensankaran@gmail.com
5.	Mr. Praveen Vijayan, Assistant Professor	Mechanical Engineering	9495201193 praveenvijayankzm@hotmail.com

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
18-454-0101	Mathematical Foundations of Computer Science	C	4
18-454-0102	Parallel and Distributed Computing	C	4
18-454-01**	Elective I	E	3
18-454-01**	Elective II	E	3
18-454-0109	Core L1 – Network Programming and Simulation Lab	C	1
18-454-0110	Core L2-Seminar I	C	1
18-454-0111	Core Common: Research Methodology & IPR	C	2
Total			18

Semester II

Course Code	Course	C/E	Credits
18-454-0201	Cluster and Grid Computing	C	4
18-454-0202	Cloud Computing	C	4
18-454-02**	Elective III	E	3

18-454-02**	Elective IV	E	3
18-454-0209	Core L3- Parallel Computing Lab	C	1
18-454-0210	Core L4- Seminar II	C	1
18-454-0211	Core L5- Mini Project	C	2
Total			18

Semester III

Course Code	Course	C/E	Credits
18-454-03**	Elective IV	E	3
18-454-03**	Elective V (CBCS)	E	3
18-454-0307	Dissertation Phase I	C	12
Total			18

Semester IV

Course Code	Course	C/E	Credits
18-454-0401	Dissertation Phase II	C	18
Total			18

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. 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

Semester III

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

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

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**

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
2.	Dr.Sasi Gopalan Associate Professor	2577437, 9995376115 sasigopalan@cusat.ac.in
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 bindurmeo@cusat.ac.in
10.	Dr.Deepa Balakrishnan S. Associate Professor	2577362, 9495021727 Deepa-balu@cusat.ac.in
11.	Dr.Deepa G.Nair Associate Professor	2543437, 9846249839 deepagnair@cusat.ac.in

12.	Glory Joseph Associate Professor	2110113, 9745229596 glorybaby@cusat.ac.in
13.	Dr.Job Thomas Reader	2575125, 9846545824 Job-thomas@cusat.ac.in
14.	Sri.Narasimha D.S Associate Professor	2576443, 8547775943 narasimha@cusat.ac.in
15.	Sri.Ramdass S. Associate Professor	0477-2263770, 9446925748 csramdass@cusat.ac.in
16.	Dr.Renu Pawels Reader & Head	2315208, 9446556494 renupawels@cusat.ac.in
17.	Dr.Roy M.Thomas Associate Professor	2575286, 9447147194 roymthomas@cusat.ac.in
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
27.	Smt.Sheena S. Assistant Professor	2577531, 9446457531 sheenas@cusat.ac.in
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

31.	Smt.Anju Pradeep Assistant Professor	2577660, 9446337660 anjupradeep@cusat.ac.in
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
34.	Dr.Deepa Sankar Associate Professor	2424101, 9447432568 deepasankar@cusat.ac.in
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
42.	Sri.Unni A.M. Reader	0485-2823606, 9447233120 unniam@cusat.ac.in
VI.Electrical & Electronics Engineering Division		
43.	Dr.Asha Elizebeth Daniel Associate Professor	2424213, 9446128079 ashapalal@gmail.com
44.	Dr.C.A Babu Professor & Head	2540475, 9447349571 drcababugmail.com, cababu@cusat.ac.in
45.	Dr.Latha P.G. Reader	2575207, 9446147780 pglathagmail.com pglatha@cusat.ac.in
46.	Smt.K.M.Sheena Associate Professor	2575599, 949570110 sheenakm10@gmail.com sheena@@cusat.ac.in
47.	Dr.Usha Nair Reader	2577534, 9847147689 sshanair4@gmail.com un@cusat.ac.in
VII.Mechanical Engineering Division		
48.	Dr.Ajith Kumar G Reader	9446495639 ajithkumar@cusat.ac.in
49.	Dr.A.B. Bhasi Associate Professor(on	2577554/2801192 9744138985

	deputation as CE, CUSAT)	bhasiab@cusat.ac.in
50.	Dr.Biju N. Reader & Head	9496215993 bijun@cusat.ac.in
51.	Sri.Franklin Robert John Associate Professor	9496978546 frankrj@cusat.ac.in
52.	Sri.Gireesh Kumaran Thampi B.S. Associate Professor	9447054074 gireesh2526@gmail.com
53.	Dr.Jacob Elias Associate Professor	9447475268 jacob@cusat.ac.in
54.	Dr.James Varghese Assistant Professor	9495672695 jamesvar@cusat.ac.in
55.	Dr.Jayadas N.H. Associate Professor	9447291641 jayadasnh@cusat.ac.in
56.	Sri.Joseph Alexander Associate Professor	9446427542 josephalexander@cusat.ac.in
57.	Sri.Joshy P.J. Associate Professor	9496904280 pjjoshy1969gmail.com
58.	Dr.V.N. Narayanan Namboothiri Associate Professor	9349895949 nnamboothiri@cusat.ac.in
59.	Dr.M.R.Radhakrishna Panicker Associate Professor	2622033, 9447411827 mrrpanicker@cusat.ac.in
60.	Dr.Saju K.K., Reader (on deputation as Director, IRAA)	9895593988 kksaju@cusat.ac.in
61.	Dr.Tide P.S. Professor	2544864, 9497366401 tideps@cusat.ac.in
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		
64.	Smt.Binsu C.Kovoor Assistant Professor	9847788551 binsu@cusat.ac.in
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 92otmai-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.V Sivanandan Achari
Associate Professor
School of Environmental Studies
Cochin University of Science and Technology.

SCHOOL OF ENVIRONMENTAL STUDIES

M. Sc. Environmental Science & Technology [SCHEME]

SEMESTER I						
Course Code	**Course**	**C/E**	**Credits**	**Internal Marks**	**External Marks**	**Total**
THEORY CORE						
20-306-2101	Environmental Biology	C	3	50	50	100
20-306-2102	Environmental Chemistry	C	3	50	50	100
20-306- 2103	Environmental Physics	C	2	50	50	100
20-306-2104	Applied Mathematics &Statistics	C	2	50	50	100
20-306-2105	Environmental Microbiology	C	3	50	50	100
THEORY ELECTIVE						
20-306- 2106	Environmental Pollution	E	2	50	50	100
20-306- 2107	Chemometrics & Good Laboratory Practices	E	2	50	50	100
20-306- 2108	Contemporary Environmental Issues and Laws	E	2	50	50	100
LAB CORE						
20-306- 2109	Environmental Chemistry Lab	C	2	50	-	50
20-306- 2110	Environmental Microbiology Lab	C	1	50	-	50
Total Credits:22	Core- 16; Elective-06;	05*C(T)* *03E(T)* 03*C(L)*	22	500	400	900
NOTE: After the completion of the courses and examination of the SEMESTER I, students can join for **industry bound- based** INTERNSHIP in a recognized institute/ university/ organization/ **industry**/ government department/ in their home institution laboratory under the guidance of a research guide (certificate has to be issued by the head of the institution after the successful completion of the program).						

SEMESTER II

Course Code	Course	C/E	Credits	Internal Marks	External Marks	Total
THEORY CORE						
20-306- 2201	Methods in Environmental Analysis	C	2	50	50	100
20-306- 2202	Environmental Engineering – Paper 1	C	2	50	50	100
20-306- 2203	Fluid Mechanics	C	2	50	50	100
20-306- 2204	Geo informatics	C	2	50	50	100
20-306-2205	Environmental Toxicology	C	2	50	50	100
20-306- 2206	Applied Environmental Microbiology	C	2	50	50	100
20-306- 2207	Environmental Biotechnology	C	2	50	50	100
THEORY ELECTIVE						
20-306- 2208	Environmental Modeling	E	2	50	50	100
20-306- 2209	Environmental Management and Legal Aspects	E	2	50	50	100
20-306-2210	Industrial Ecology	E	2	50	50	100
20-306-2211	Energy Resources and Management	E	2	50	50	100
LAB CORE						
20-306- 2212	Environmental Engineering Lab	C	1	50	-	50
20-306-2213	Chemical and Biological Methods in Environmental Analysis –Lab	C	1	50	-	50
20-306- 2214	Environmental Toxicology Lab	C	1	50	-	50
Total Credits:23	Core- 17; Elective-06;	06*C(T)* *03E(T)* 03*C(L)*	23	700	550	1250

NOTE*:* After the completion of the courses and examination of the SEMESTER II, students can join for an **industry bound-based** SKILL DEVELOPMENT PROGRAM in a recognized institute/ university/ organization/ **industry**/ government department/ in their home institution laboratory under the guidance of a research guide / scientist/ engineer/ technological personality (certificate has to be issued by the head of the institution on the successful completion of the program)

SEMESTER III

Course Code	Course	C/E	Credits	Internal Marks	External Marks	Total
THEORY CORE						
20-306- 2201	Chemistry of Water and Wastewater Treatment	C	3	50	50	100
20-306- 2202	Environmental Engineering- Paper II	C	2	50	50	100
20-306- 2203	Biodiversity and Conservation	C	1	50	50	100
20-306- 2204	Applied Eco- Toxicology	C	1	50	50	100
20-306-2205	Environmental Impact And Risk Assessment	C	1	50	50	100
THEORY ELECTIVE						
20-306- 2206	Bioremediation	E	2	50	50	100
20-306- 2207	Solid and Hazardous Waste Management	E	2	50	50	100
20-306- 2208	Bio-nanotechnology	E	2	50	50	100
20-306- 2209	Applied Eco Toxicology – Tests and Evaluation Methods	E	2	50	-	50
THEORY *IDE*	***INTER DEPARTMENTAL ELECTIVE-* IDE**	E	3	50	50	100
LAB CORE						
20-306- 2210	Environmental Engineering Graphics Lab	C	1	50	-	50
20-306- 2211	Environmental Biotechnology and Bioremediation Lab	C	1	50	-	50
20-306- 2212	Biodiversity Lab	C	1	50	-	50
Total Credits : 22	Core- 11; Elective-08; IDE-03	08*C(T)* 04*E(T)* 01*IDE(T)* 03C*(L)*	22	650	450	1100

SEMESTER IV

Course Code	Course	C/E	Credits	Marks
PROJECT WORK				
20-306- 2401	Final Semester Project Work Interim Report- Presentation [Internal] Project – Dissertation [External]-	C	14	 50 100 150
20-306- 2401	Viva – Voce [Internal]	C	2	50
Total Credits	Core - 16	02C	16	350

Skill Development Programme in M Sc. Environmental Science& Technology – AREAS PROPOSED

1. Waste management technologies
2. Water, wastewater and air quality assessment and monitoring
3. Environment Impact assessment
4. Environmental Biotechnology
5. Environmental Toxicology
6. Biodiversity Conservation
7. Geographical Information System
8. Carbon sequestration technologies
9. Bio-resource management
10. Instrumentation in environmental management

Note : –

1. **COMPULSORY INTERNSHIP** *for two months during summer vacation in industries/ institutions after SEMESTER I Examination, before the start o f SEMESTERII.*
2. *Compulsory internship as* **SKILL DEVELOPMENT PROGRAME** *for two months during summer vacation in industries/ institutions after SEMESTER II Examination, before the start o f SEMESTERIII.*
3. *INHOUSE research program during the fourth semester.*
4. *The topic of research has to be fixed in the beginning of the third semester after the internship.*
5. *Candidates must submit interim report of the project at mid-term which will be evaluated as part of the internal assessment as* **PROJECT- INTERIM REPORT**.

INTERDEPARTMENTAL ELECTIVE- *IDE* OFFERED BY SCHOOL OF ENVIRONMENTAL STUDIES DURING 2020-2023.

Course Code	**Course**	**C/E**	**Credits**	**Internal Marks**	**External Marks**	**Total**
SEMESTER I						
20-306-2111	Introduction to Environmental Studies	IDE	3	50	50	100
SEMESTER II						
20-306-2215	Natural Resource Management	IDE	3	50	50	100
20-306-2216	Intellectual Property Right, Biosafety and Bioethics	IDE	3	50	50	100
20-306-2217	Bio-nanotechnology	IDE	3	50	50	100
SEMESTER III						
20-306-2313	Industrial Ecology	C	3	50	50	100
20-306-2314	Energy Resources and Management	C	3	50	50	100

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
20-431-0101	Biotechnological Interventions in Marine Biodiversity Conservation	C	2
20-431-0102	Marine Genomics and Proteomics	C	3
20-431-0103	Marine Bioprospecting and Drug Discovery	C	3
20-431-0104	Bioprocess Engineering -1	C	3
20-431-0105	Cell and Hybridoma Technology	E	2
20-431-0106	Marine Microbiology	E	2
20-431-0107	Bio informatics, Systems and Computational Biology	E	3
20-431-0108	Nano-biotechnology	E	2
20-431-0109	Skill Development in Recombinant DNA Technology (Lab)	C	2
20-431-0110	Skill Development in Marine Microbial Diversity Determination (Lab)	C	2
20-431-0111	Skill Development in Cell culture and hybridoma/Antibody Technology (Lab)	C	1
Total Credit: Core 16; Elective 9			25

Semester II

Course Code	Course	C/E	Credits
20-431-0201	Biotechnological interventions in Aquatic Animal Health	C	3
20-431-0202	Bioprocess Engineering (Marine Natural Products, Biomaterials and Probiotics)-II	C	3
20-431-0203	Marine Algal Biotechnology	C	2
20-431-0204	Genetic Improvement for High health brood stock	C	2
20-431-0205	Model systems, Molecular Genetics and Genome engineering	E	2
20-431-0206	Advances in marine drug discovery	E	2
	Inter disciplinary Elective	DE	4
20-431-0208	Enzyme Engineering & Technology	E	2
0-431-0209	Skill Development in Biotechnological Interventions in Aquatic Animal Health Management	C	2
20-431-0210	Skill Development in Maine Bioprospecting and Bioprocess Engineering.	C	2
20-431-0211	Skill Development in Model systems, Molecular genetics and Genome engineering	C	1
Total Credit: Core 15; Elective 10			25

Semester III

Course Code	Course	C/E	Credits
20-431-0301	Bioentrepreneusrhip and industry management	C	2
20-431-0302	Research Methodology and Scientific Communication	C	2
20-431-0303	Intellectual Property Rights, Biosafety and Bioethics	C	2
20-431-0304	Project proposal preparation and submission	C	2
	Skill Development Programme in the Area of Specialization (Any one of the programmes per student)		
20-431-0305	Drug discovery from marine biologicals	E	5
20-431-0306	Model systems, molecular genetics and Genome engineering	E	5
20-431-0307	Marine algae for bio-fuel production and animal nutrition	E	5
20-431-0308	Molecular diagnostics and therapeutics/ health management strategies	E	5
20-431-0309	Bioprocess engineering and computational modeling	E	5
20-431-0310	Research Project in the Area of Specialization: Progress Review 1	C	10
Total Credit: Core 18; Elective 5			23

Semester IV

Course Code	Course	C/E	Credits
20-431-0401	Research Project in the Area of Specialization: Progress Review 2 and Report Submission and Presentation	C	12
20-431-0402	Viva Voce Examination (Comprehensive)	C	6
Total Credit			**18**

Credits

Total credits: 91 (Core: 67 Elective: 24)

Semester 1: 25; Semester 2: 25; Semester 3: 23; Semester 4: 18.

DETAILS OF FACULTY

Sl. 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

FACULTY OF HUMANITIES

Dean:

Dr.K.Ajitha
Professor
Department of Hindi
Cochin University of Science and Technology
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**

List of electives offered

(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
5	Dr. Girish Kumar K.K Assistant Professor	Modern and Contemporary Hindi Literature, Comparative Literature, Contemporary Hindi Poetry	0484-2575954 (O) 2496 (Intercom) girish372@gmail.com

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) (Unseen passage) 10x2 – 20

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 106otmail106ed 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-Verbagreement
- Preposition
- Adjective–degreeofComparison
- Tagquestions
- Prefixes,Suffixes,Roots
- PhrasalVerbs

(pickup,workout, catchon, keepup,getacross, findout, lookup,get by, putthrough, holdonspeakup, calloff, putoff, getthrough, callback, counton, let down, pullthrough, laidup, comeoutin, passout, comedownwith, wornouttakeoff, carry out, gooff, blowup, breakinto, letout, putdown, giveout, pulloff, comeacross, clearup, telloff, takeoff, getupto, getdown to, geton, pickon, makeup, ownup, takeup, lookafter)

ModuleII

- Reading Skills-PreparationofGlossary

ModuleIll

WritingSkills

- Letters–FriendlyLetters
  FormalLetters
- DialogueWriting
- ParagraphWriting

ModuleIV

- EnglishConversationPracticebasedonSituationsReferences

1) EnglishConversationPractice-GrantTaylor,TataMcGrawHill.

2) EnglishVocabularyinUse-MichaelMcCarthyFelicityO'Dell,CUP

3) HighSchoolEnglishGrammarComposition-Wren&Martin,NewDelhi.

4) HelpwithPhrasalVerbs–RichardAcklam,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
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
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			Credits	Marks		
		L	T	P		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			Credits	Marks		
		L	T	P		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			Credits	Marks		
		L	T	P		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			Credits	Marks		
		L	T	P		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
P. II	Professional Ethics & Professional Accounting System	5	1		NA	100	--	100

Semester V

Course Code	Course	Hrs/Week			Credits	Marks		
		L	T	P		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			Credits	Marks		
		L	T	P		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

	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
4.	Sri. Harigovind P.C. (Assistant Professor)	Jurisprudence, Human Rights Law & Criminal Law	harigovindpc@gmail.com , harigovindpc@cusat.ac.in 9446633249
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
11.	Dr. P.S. Seema (Associate Professor)	Jurisprudence, Criminal Law, Constitutional Law & Human Rights Law	pss_sls@yahoo.co.in, drpsseema@gmail.com Ph: 0484-2233411 9496943875
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

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

CourseCode	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

CourseCode	Course	C/E	Credits
	Transfer of Technology	C	4
	Electives (2) a. Electives 1 b. Electives 2 Or Project Work/Internship	 E E E	 4 4 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

CourseCode	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

CourseCode	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 (Applicablefrom2020Admission)

SEMESTER I

CourseCode	TitleofthePaper	Credits	Core/ Elective	Marks		
				CA	EndSem.	Total
20-308-0101	Taxonomy and Life history traits ofcommerciallyimportantfinfishesand shellfishes	3	C	50	50	100
20-308-0102	PrinciplesofFishingTechnology	2	C	50	50	100
20-308-0103	Foodchemistry andFishBiochemistry	3	C	50	50	100
20-308-0104	ManagerialEconomics	3	C	50	50	100
20-308-0105	Principles of Fisheries Business Management	3	E	50	50	100
20-308-0106	Research methodologyand Quantitative techniques	2	E	50	50	100
20-308-0107	Taxonomy and life history traits ofcommerciallyImportant FinFishes And ShellFishes(Practical)	1	C	100		100
20-308-0108	Foodchemistry and Fish Biochemistry (Practical)	1	C	100		100
20-308-0109	Climatechangeimpacton marine ecosystemandfisheries	2	E	50	50	100
MaximumTotalCreditOfferedin1St Semester:20 (13creditsforCoreand07 creditsforElectiveCourses)						

SEMESTER II

CourseCode	TitleofthePaper	Credit	Core/Elective	Marks		
				CA	ES	Total
20-308-0201	FisheriesResourcesand Management	3	C	50	50	100
20-308-0202	FishingCraftandGear Technology	3	E	50	50	100
20-308-0203	Freezing,CanningandPackagingTechnology	3	C	50	50	100
20-308-0204	ProductionandOperations Management inFisheriesIndustry	3	C	50	50	100
20-308-0205	EconomicsofFisheriesProduction& Marketing	3	C	50	50	100
20-308-0206	Analyticalmethodsfor Seafood qualityassurance	2	E	50	50	100
20-308-0207	FisheriesResourcesand Management(Practical)	1	E	100	-	100
20-308-0208	Fishprocessingandqualitycontrol (Practical)	1	C	100		100

20-308-0209	FishingCraftandGear Technology (Practical)	1	C	100	-	100
20-308-0210	FieldstudyofEconomicsof FisheriesProductionandMarketing(Practical)	1	E	100	-	100
20-308-0211	OceanicandDeepSea fisheries	3	E	50	50	100
20-308-0212	FoodScienceandNutrition	3	E	50	50	100
20-308-0213	AquacultureEconomics	3	E	50	50	100
MaximumTotalCredits offeredinSecondSemester:30Credits (14CreditsforCoreand16CreditsforElectiveCourses)						

SEMESTER III

Course Code	Title of the Paper	Credit	Core/Elect-ive	Marks		
				CA	EndSem.	Total
20-308-0301	Seed Production and Hatchery Management of Cultivable Finfishes And Shellfishes	3	C	50	50	100
20-308-0302	Aquaculture Systems and Practices	3	E	50	50	100
20-308-0303	Fishing operation,Seamanship and Navigation	2	C	50	50	100
20-308-0304	Byproducts andValue Added Products Technology	3	C	50	50	100
20-308-0305	Quality Assurance and Seafood Safety	3	E	50	50	100
20-308-0306	Fisheries Management for Sustainable Development	3	C	50	50	100
20-308-0307	Marketing Management	2	C	50	50	100
20-308-0308	Management Accounting and Finance Management for Fisheries	3	E	50	50	100
20-308-0309	Aquaculture Systems and practices (Practical)	1	E	100	-	100
20-308-0310	Byproducts, Valueaddedproducts andMicrobiology(Practical)	1	C	100	-	100
20-308-0311	Fishingoperation/OnboardTraining (Practical)	1	E	100	-	100
20-308-0312	FishGeneticsandHybridization	3	E	50	50	100
20-308-0313	InlandFishingGears,Designsand Operation	3	E	50	50	100
20-308-0314	FisheriesandRuralDevelopment	3	E	50	50	100
MaximumTotalCreditsofferedinThirdSemester:34Credits(14 Credits for Core and 20 Credits for Elective Courses)						

SEMESTER IV

CourseCode	TitleofthePaper	Credit	Core/ Elect-ive	Marks		
				CA	End Sem.	Total
20-308-0401	Internship inSeafoodIndustry& Reportevaluation	4	C	100		100
20-308-0402	InternshipinHatchery/Farm/Aquaculture industry	4	E	100		100
20-308-0403	Entrepreneurship/Startups/Business IncubationInitiatives	2	E	100		100
20-308-0404	Dissertation/ProjectReport Evaluation	8	C	100 100		100 100
20-308-0405	CourseViva-voce	1	C	100		100
MaximumTotalCreditOfferedin4thSemester:19(13creditsforCoreand6 creditsforElectives)						

TOTALCREDIT

SOFFERED INDIFFERENT SEMESTERS

Maxi-mumCreditsOffered	Semester1	Semester2	Semester3	Semester4	TotalCredits
CORE	13	14	14	13	**54**
ELECTIVE	07	16	20	06	**49**
TOTAL	20	30	34	19	**103**

TOTAL CREDITS OF BOTH ELECTIVES AND CORE PAPERS FOR THE AWARD OF THE DEGREEWILL BE ADJUSTED ACCORDING TO THE PROVISIONS IN THE CHOICE AND CREDIT BASEDSYSTEMADOPTEDBYTHEUNIVERSITYFROMTIMETOTIME.

FORTHEAWARDOFM.Sc.DEGREEININDUSTRIALFISHERIESSTUDENTSHALLACQUIREMINIMUM OF72CREDITS.

- StudentsarefreetoselecttheElectiveCoursesofferedbytheSchoolinasemesterdependingontheirchoicesandtheadviceof theStudentadvisor
- StudentsfromotherDepartments/SchoolsoftheUniversityarealsofreetotaketheElectiveCoursesofferedintheSchool

**In addition, it is mandatory for the students to register for a suitable MOOC (as recommended bythe faculty members of the department from time to time), available in the SWAYAM platform(www.swayam.gov.in).The students can avail the courses at anytime during the first three semesters, based on the availability of suitable courses at www.swayam.gov.inand should procure the required credits for MOOC before completion of the fourth semester. Grading of MOOC will be decided by the Department council and University based on the results obtained from www.swayam.gov.in

MASTER OF FISHERIES SCIENCE (M.F.Sc.) IN SEAFOOD SAFETY AND TRADE

Applicablefrom2020 Admission

SEMESTER I

CourseCode	Title of the Paper	Credits	Core/Elect-ive	Marks		
				CA	EndSem.Exam.	Total
20-386-0101	Taxonomy and LifeHistory Traits ofCommerciallyImportantFinFishesandShell Fishes	3	E	50	50	100
20-386-0102	ManagerialEconomics	3	C	50	50	100
20-386-0103	Food Chemistry andFishBiochemistry	3	C	50	50	100
20-386-0104	PrinciplesofFishBusiness Management	3	C	50	50	100
20-386-0105	Market Research forSeafoodBusiness	3	E	50	50	100
20-386-0106	ResearchMethodologyand QuantitativeTechniuqes	2	E	50	50	100
20-386-0107	Fish HarvestTechnologies and Onboard Facilities	2	C	50	50	100
20-386-0108	Taxonomy and LifeHistory Traits ofCommerciallyImportant FinFishes and ShellFishes (Practical)	1	E	50	50	100
20-386-0109	FoodchemistryandFish Biochemistry(Practical)	1	C	50	50	100
MaximumTotalCreditOfferedin1St Semester:21 (12creditsforCoreand09creditsforElectiveCourses)						

SEMESTER II

Course Code	TitleofthePaper	Credit	Core/Elective	Marks		
				Continuous assessment	EndSem. Exam.	Total
20-386-0201	Freezing,Canning and Packaging Technology	3	C	50	50	100
20-386-0202	Fundamentals ofFood Microbiology	2	E	50	50	100
20-386-0203	EconomicsofSeafood Production andMarketing	3	C	50	50	100
20-386-0204	Supply ChainManagementinSeafood Industry	3	C	50	50	100
20-386-0205	InternationalTradeand Development	3	E	50	50	100
20-386-0206	Food Science and Nutrition	3	E	50	50	100
20-386-0207	Freezing,Canning and Packaging Technology(Practical)	1	C	50	50	100
20-386-0208	FundamentalsofFood Microbiology (Practical)	1	E	50	50	100
20-386-0209	Economics of SeafoodProduction andMarketing(Practical)	1	C	50	50	100
MaximumTotalCreditsofferedinSecondSemester:20Credits (11CreditsforCoreand09CreditsforElectiveCourses)						

SEMESTER III

CourseCode	TitleofthePaper	Credit	Core/Elect-ive	Marks		
				Continuous assessment	End Sem.Exam.	Total
20-386-0301	SustainableAquaculture for SafeFoodProduction	3	C	50	50	100
20-386-0302	Byproducts and Valueadded ProductsTechnology	3	C	50	50	100
20-386-0303	Food Safety	3	C	50	50	100
20-386-0304	Environmental andNatural ResourceEconomics	3	E	50	50	100
20-386-0305	International BusinessEnvironment andFinance Management	3	C	50	50	100
20-386-0306	InternationalMarketing	3	C	50	50	100
20-386-0307	Food SafetyManagementSystems	3	C	50	50	100
20-386-0308	Analytical methods forSeafood QualityAssurance	2	E	50	50	100
20-386-0309	Value Added Productstechnology and FoodSafety(Practical)	1	C	50	50	100
20-386-0310	SustainableAquaculture for SafeFood Production(Practical)	1	E	50	50	100
Maximum Total Credits offered in ThirdSemester:25 Credits(19Creditsfor Coreand06CreditsforElectiveCourses)						

SEMESTER IV

CourseCode	Title ofthePaper	Credit	Core/			Marks	
20-386-0401	Internship in SeafoodIndustry and ReportEvaluation	4	C		100		100
20-386-0402	Entrepreneurship/Startups/Business IncubationInitiatives	2	E		100		100
20-386-0403	Dissertation/Projectreport Evaluation	8	C		100 100		100 100
20-386-0404	CourseViva-voce	1	C		100		100
MaximumTotal CreditOfferedin 4thSemester: 15 (13 credits for Core and 02creditsfor Electives)							

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 136otma_rama@hotmail.com
3.	Dr.M.Harikrishnan Associate Professor and Director	Industrial Fisheries	0484-29637149447327804 mahadevhari@cusat.ac.in. mahadevhari@ 136otmail.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

Semester1

Course Code	Paper	Core/Elective	Credits
20-302-0101	GeophysicalFluidDynamics	C	4
20-302-0102	PhysicalMeteorology	C	4
20-302-0103	ObservationalTechniques	C	3
20-302-0104	ComputingandProgramming-I(Practical)	C	3
20-302-0105	SemesterEndSeminarandViva– Voce	C	1
20-302-0106	IntroductoryPhysicalOceanography	E	4
20-302-0107	AdvancedMathematics	E	4
20-302-0108	Numericaland StatisticalMethods	E	4
20-302-0109	GeneralMeteorology	E	3

Semester2

Course Code	Paper	Core/Elective	Credits
20-302-0201	DynamicMeteorology	C	4
20-302-0202	SynopticMeteorologyandWeatherForecasting	C	3
20-302-0203	TropicalMeteorology	C	3
20-302-0204	ComputingandProgrammingII(Practical)	C	2
20-302-0205	SemesterEndSeminarandViva– Voce	C	1
20-302-0206	GlobalClimateandClimateChange	E	4
20-302-0207	RemoteSensingand SatelliteMeteorology	E	4

Semester3

Course Code	Paper	Core/Elective	Credits
20-302-0301	NumericalWeatherPrediction	C	4
20-302-0302	AdvancedDynamicMeteorology	C	4
20-302-0303	MeteorologicalAnalysis(Practical)	C	2
20-302-0304	ComputationalMeteorology(Practical)	C	2

20-302-0305	SemesterEndSeminarandViva– Voce	C	1
20-302-0306	AppliedMeteorology	E	4
20-302-0307	CloudPhysicsandAtmosphericElectricity	E	3
20-302-0308	Air–SeaInteraction	E	3
20-302-0309	AtmosphericChemistryAndAirPollution	E	3
20-302-0310	DisasterManagement	E	3

Semester4

CourseCode	Paper	Core/Elective	Credits
20-302-0401	ProjectandProjectPresentation	C	15
20-302-0402	ComprehensiveViva	C	3

M.TECH. ATMOSPHERIC SCIENCE

Semester1

CourseCode	Paper	Core/Elective	Credits
20-433-0101	AtmosphericDynamics	C	4
20-433-0102	GeneralCirculationandClimateDynamics	C	4
20-433-0103	PhysicsofAtmosphereandOcean	C	4
20-433-0104	WeatherAnalysisandForecasting Techniques	C	3
20-433-0105	IntroductiontoComputing(Practical)	C	2
20-433-0106	SemesterEndSeminarandVivaVoce	C	1
20-433-0107	AppliedStatistics	E	4
20-433-0108	AdvancedMathematics	E	4
20-433-0109	AtmosphericChemistry	E	3
20-433-0110	MonsoonDynamics	E	2
20-433-0111	MeteorologicalAnalysis(Practical)	E	2

Semester2

CourseCode	Paper	Core/Elective	Credits
20-433-0201	AtmosphereandOceanModelling	C	4
20-433-0202	Climatechange,MitigationandAdaptation	C	4
20-433-0203	ModellingLaboratory(Practical)	C	2
20-433-0204	SemesterEndSeminarandVivaVoce	C	1
20-433-0205	AdvancedAtmosphericDynamics	E	4
20-433-0206	RemoteSensingApplications	E	3
20-433-0207	AerosolAndClimate	E	2
20-433-0208	AirPollutionMeteorology	E	2
20-433-0209	AgriculturalMeteorology	E	2
20-433-0210	HydroMeteorology	E	2

Semester3

CourseCode	Paper	Core/Elective	Credits
20-433-0301	Mid– TermEvaluation ofProject	C	16

Semester4

CourseCode	Paper	Core/Elective	Credits
20-433-0401	ProjectDissertationEvaluation	C	16
20-433-0402	VivaVoce	C	4

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 C

CE–ContinuousEvaluation;ESE–EndSemesterExamination

Semester	Coursecode	CourseName	Credits	Page
I	20-304-0101	Co-ordinationChemistry	3	2
	20-304-0102	MarineEnvironment	3	4
	20-304-0103	QuantumMechanics	3	7
	20-304-0104	Stereochemistry,PericyclicReactionsandPhotochemistry	3	9
	20-304-0105	Practical I-AnalyticalTechniques	2	12
	20-304-0106	PracticalII-Quantitative ChemicalAnalysis	2	13
		TotalCredits(Core)-ISemester	16	
II	20-304-0201	ChemicalOceanography	3	16
	20-304-0202	GroupTheoryandSpectroscopy	3	18
	20-304-0203	NaturalProductsandOrganicSynthesis	3	20
	20-304-0204	ThermodynamicsandStatisticalMechanics	3	23
	20-304-0205	PracticalIII-SeparationandSynthetic Methods	2	26
	20-304-0206	PracticalIV -Water andSedimentAnalysis	2	28
		TotalCredits(Core)-IISemester	16	
III	20-304-0301	AquaticChemicalResources	2	31
	20-304-0302	OrganicSpectroscopy	3	33
	20-304-0303	SolutionChemistry	3	36
	20-304-0304	PracticalV-InstrumentalTechniques1	2	39
	20-304-0305	PracticalVI -PhysicochemicalMethods	2	41
		TotalCredits(Core)-IIISemester	12	
IV	20-304-0401	Dissertation(ProjectWorkintheDepartment/Universities /ScientificInstitutes/IndustrialOrganizationsetc.)*	14	
	20-304-0402	ProjectViva-Voce*	2	-
		TotalCredits(Core)-IVSemester	16	-

Totalnumberofcreditsforallthefoursemesters(Corecourses)	60
Minimumnumberofcreditsrequiredforthecompletionof M.Sc.(Hydrochemistry)programme	72
Minimumnumberofcreditstobetakenaselectivescourses	12

Electivecourses**offeredbytheDepartment

Coursecode	Coursename	Credits
20-304-0001	AnalyticalChemistry	3
20-304-0002	ApplicationsofCoordination Compounds	2
20-304-0003	AquaticPollution	3
20-304-0004	AtmosphericChemistry	3
20-304-0005	ChemistryofBiomolecules	2
20-304-0006	ChemistryofRadiation,SurfaceandInorganicMaterials	3
20-304-0007	ComputationalChemistry	3
20-304-0008	EnvironmentLawAndEIA	2
20-304-0009	EstuarineChemistry	3
20-304-0010	GeneralChemicalOceanography***	3
20-304-0011	GeneralChemicalOceanographyPractical***	2
20-304-0012	GreenChemistry	2
20-304-0013	InstrumentalTechniques	3
20-304-0014	InstrumentalTechniquesII-PracticalVII	2
20-304-0015	IntroductiontoHydrochemistry	3
20-304-0016	MarineBiogeochemistry	3
20-304-0017	MarineGeochemistry	3
20-304-0018	Marine NaturalProducts	3
20-304-0019	MarineOrganicChemistry	3
20-304-0020	NanomaterialsandSupramolecularChemistry	3
20-304-0021	OrganometallicChemistry	3
20-304-0022	Polar Sciences	2
20-304-0023	SolidStateChemistry	3
20-304-0024	WaterManagement	3

Auditcourses**

Coursecode	Coursename	Credits	TotalTeachingHours	Page
20-304-0025	GoodLaboratoryPractice andsafety	0	12	97
20-304-0026	ResearchMethodology	0	12	99

*Theprojectdissertationswillbeassessed bythedepartment examinationcommitteeconstitutedbytheDepartmentCouncil.
**Dependson faculty/infrastructuralfacilities.
***ThiscourseismeantforM.Sc.programsotherthanM.Sc.Hydrochemistry.

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 COD4105 COD4106 COD4107 COD4108	Marine Pollution Marine Natural Products Marine Chemical Resources Advanced Instrumentation Remote Sensing and GIS	**E** **(Any one)**	5
	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

DEPARTMENT OF MARINE BIOLOGY, MICROBIOLOGY & BIOCHEMISTRY

M.Sc. MARINE BIOLOGY

Semester I

Course Code	Course	C/E	Credits
20-315-0101	Marine Biology	C	3
20-315-0102	Cytology and Fish Genetics	C	3
20-315-0103	Biochemistry	C	3
20-315-0104	Marine Biology Practical	C	2
20-315-0105	Biochemistry and Instrumentation-Practical	C	2
20-315-0106	Planktonology	E	2
20-315-0107	Coral Reef Ecology	E	2
20-315-0108	Ornamental Fish culture	E	2
20-315-0109	Biological Oceanography	E	2

Semester II

Course Code	Course	C/E	Credits
20-315-0201	Marine Microbiology	C	3
20-315-0202	Fish and Fisheries	C	3
20-315-0203	Marine Pollution	C	3
20-315-0204	Marine Biotechnology	C	3
20-315-0205	Marine Microbiology and Biotechnology – Practical	C	2
20-315-0206	Fish and Fisheries – Practical	C	2
20-315-0207	Aquarium plants and culture of live feed organisms	E	2
20-315-0208	Marine Conservation Biology	E	2
20-315-0209	Ornamental fish culture and live food organisms-Practical	E	2

Semester III

Course Code	Course	C/E	Credits
20-315-0301	Fish Pathology	C	3
20-315-0302	Aquaculture	C	3
20-315-0303	General Animal Physiology	C	3
20-315-0304	Marine Ecology	C	3
20-315-0305	Marine Ecology and Aquaculture – Practical	C	2
20-315-0306	Fish Physiology and Pathology – Practical	C	1
20-315-0307	Seafood Microbiology and Quality Control	E	2
20-315-0308	Marine Botany	E	2
20-315-0309	Health Management in Aquaculture	E	2

Semester IV

Course Code	Course	C/E	Credits
20-315-0401	Project work and Dissertation	C	16
	MOOC	E	-

M. Phil LIFE SCIENCES

Semester I

Course Code	Course	C/E	Credits
20-419 -0101	Advances in Life Sciences	C	4
20-419 -0102	Research Methodology	C	4
20-419 -0103	Literature Review & Seminar	C	2
20-419 -0104	Marine Biotechnology	E	4
20-419 -0105	Marine Conservation Biology	E	4
20-419 -0106	Microbial Oceanography	E	4
20-419 -0107	Sea food Microbiology and Quality Control	E	4

Semester II

Course Code	Course	C/E	Credits
20-419-0201	Research Project& Viva voce	C	12
	MOOC	E	-

Details of Faculty

Sl.No.	**Name & Designation**	**Specialisation**	**Communication**
1	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
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, Fish Nutrition & Fish Genetics	Phone: 0484-2505099; 9446866050 mohamedhatha@cusat.ac.in mohamedhatha@gmail.com
4	Dr. S. Bijoy Nandan Professor & Head	Marine Biology	Phone: 9446022880; 7025150844 bijoynandan@yahoo.co.in bioynandan@cusat.ac.in
5	Dr. Priyaja P Assistant Professor	Marine Biology with Invertebrata	Phone: 9447444882 priyaja59@gmail.com
6	Dr. Padmakumar K B Assistant Professor	Algology	Phone: 9847255972 kbpadmakumar@cusat.ac.in kbpadmakumar@gmail.com
7	Dr. Swapna P Antony Assistant Professor	Aquaculture	Phone: 8089131058/ 0484-2863214 swapnapantony@gmail.com swapnapantony@cusat.ac.in
8	Dr. Sreerekha P R Assistant Professor (on contract)	Biochemistry	Phone: 9645090535 prs222@gmail.com sreerekhapr@cusat.ac.in

4. DEPARTMENT OF MARINE GEOLOGY AND GEOPHYSICS

M.Sc. MARINE GEOLOGY

(Effectivefrom2020Academic Year)

Semester I

CourseCode	Paper	Core/Elective	Credit
20-316-0101	Mineralogy	C	3
20-316-0102	IgneousandMetamorphicPetrology	C	3
20-316-0103	StructuralandEngineeringGeology	C	4
20-316-0104	GroundWaterGeology	C	3
20-316-0105	MineralogyandPetrology(Practical)	C	1
20-316-0106	StructuralGeology(Practical)	C	1
20-316-0107	GeneralGeology	E	3
20-316-0108	PhysicalGeology&Geomorphology	E	3
Core(C)Credits:15;Elective(E)Credits: 06			

Semester II

CourseCode	Paper	Core/Elective	Credit
20-316-0201	Geochemistry	C	3
20-316-0202	SedimentaryGeology	C	3
20-316-0203	IndianStratigraphy	C	3
20-316-0204	InvertebrateandMicro Paleontology	C	3
20-316-0205	Geochemistry(Practical)	C	1
20-316-0206	SedimentaryGeology(Practical)	C	1
20-316-0207	InvertebrateandMicroPaleontology (Practical)	C	1
20-316-0208	RemoteSensing&GIS	E	3
20-316-0209	MarineMineralResources	E	3
Core(C)Credits:15;Elective(E)Credits: 06			

Semester III

CourseCode	Paper	Core/Elective	Credit
20-316-0301	MarineGeology	C	3
20-316-0302	CoastalProcess andEvolution	C	3
20-316-0303	PetroleumGeology	C	3
20-316-0304	GeophysicsandOffshoreExploration	C	2
20-316-0305	MarineGeology(Practical)	C	1
20-316-0306	CoastalGeology(Practical)	C	1
20-316-0307	EconomicGeology	E	3
20-316-0308	EnvironmentalGeologyandDisaster Management	E	3
Paleoceanography&Climate		E	3
Core(C)Credits:13;Elective(E)Credits: 09			

Semester IV

CourseCode	Paper	Core/Elective	Credit
20-316-0401	ProjectWorkandPresentation	C	10
	MidTermEvaluation	C	3
20-316-0402	ComprehensiveViva	C	3
Core(C)Credits:16;Elective(E)Credits: 00			

M.Sc. MARINE GEOPHYSICS

(Effectivefrom2020Academic Year)

Semester I

CourseCode	Paper	Core/Elective	Credit
20-317-0101	ElectronicsforInstrumentation	C	3
20-317-0102	PhysicsoftheEarth	C	2
20-317-0103	GravityandMagneticProspecting	C	4
20-317-0104	GroundWaterGeophysics	C	3
20-317-0105	ComputerProgramminginEarthSciences(Practical)	C	2
20-317-0106	Electronics(Practical)	C	1
20-317-0107	Gravity&MagneticComputations(Practical)	C	1
20-317-0108	PhysicalGeologyandGeomorphology	E	2
20-317-0109	GeneralGeology	E	3
Core(C)Credits:16;Elective(E)Credits: 05			

Semester II

CourseCode	Paper	Core/Elective	Credit
20-317-0201	DigitalSignalProcessing	C	3
20-317-0202	Geodynamics	C	3
20-317-0203	Seismology	C	3
20-317-0204	Electrical &ElectromagneticProspecting	C	3
20-317-0205	DigitalSignalProcessing(Practical)	C	1
20-317-0206	Seismology(Practical)	C	1
20-317-0207	RemoteSensing&GIS	E	3
20-317-0208	StructuralGeologyandStratigraphy	E	3
20-317-0209	StructuralGeology(Practical)	E	1
20-317-0210	EngineeringGeology	E	2
Core(C)Credits:14;Elective(E)Credits: 09			

Semester III

CourseCode	Paper	Core/Elective	Credit
20-317-0301	SeismicProspecting	C	3
20-317-0302	WellLogging	C	3
20-317-0303	OffshoreExploration	C	3
20-317-0304	MarineGeology	C	3
20-317-0305	GeophysicalFieldWork(Practical)	C	1
20-317-0306	SeismicProspecting(Practical)	C	1
20-317-0307	PetroleumGeology	E	3
20-317-0308	EnvironmentalGeology&Disaster Management	E	3
MarineMineralResources		E	3
MarineGeologyandOffshore(Practical)		E	1
Core(C)Credits:14;Elective(E)Credits: 10			

Semester IV

CourseCode	Paper	Core/Elective	Credit
20-317-0401	ProjectWorkandPresentation	C	10
20-317-0402	MidTermEvaluation	C	3
20-317-0403	ComprehensiveViva	C	3
Core(C)Credits:16;Elective(E)Credits: 0			

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

(from2020Admissiononwards)

Semester– I(CORECOURSES)

CourseCode	CourseTitle	Credit
20-319-0101	IntroductoryPhysicalOceanography	4
20-319-0102	GeophysicalFluidDynamics	4
20-319-0103	OceanInstrumentation	3
20-319-0104	OceanObservations(Practical)	1
20-319-0105	Physical Oceanographic Computations(Practical)	2
20-319-0106	Oceanographic Application Tools-I(Practical)	2
		C= 16

Semester–II(CORECOURSES)

CourseCode	CourseTitle	Credit
20-319-0201	OceanDynamics	4
20-319-0202	Air-SeaInteraction	3
20-319-0203	CoastalandEstuarineOceanography	3
20-319-0204	DynamicalComputations (Practical)	1
20-319-0205	CoastalOceanography(Practical)	2
20-319-0206	Air-SeaInteraction(Practical)	1
		C= 14

Semester–III(CORECOURSES)

CourseCode	CourseTitle	Credit
20-319-0301	OceanRemoteSensing	4
20-319-0302	NumericalOceanModelling	3
20-319-0303	Ocean andClimate	3
20-319-0304	OceanClimateDataAnalytics (Practical)	2
20-319-0305	OceanModelling(Practical)	2
		C= 14

Semester–IV(CORECOURSES)

CourseCode	CourseTitle	Credit
20-319-0401	ProjectDissertation	**C=16**

LIST OF ELECTIVES

Course Code	Coursetitle	Credits	Pre-requisites
20-319-0001	GeneralOceanography	3	GS
20-319-0002	MarineHazardsandManagement	2	GS
20-319-0003	MarinePollution	3	GS
20-319-0004	OceanOptics	2	20-319-0101
20-319-0005	MarineAcoustics	4	20-319-0101
20-319-0006	CoastalZoneManagement–I	3	GS
20-319-0007	CoastalZoneManagement–II	3	20-319-0006
20-319-0008	BeachDynamics	2	20-319-0101& 20-319-0203
20-319-0009	GIS in Oceanography	2	GS
20-319-0010	AdvancedOceanDynamics	3	20-319-0102& 20-319-0201
20-319-0011	WaveDynamics	3	20-319-0102& 20-319-0201
20-319-0012	MarineBiogeochemistry	3	GS
20-319-0013	OceanCirculation	2	20-319-0102& 20-319-0201
20-319-0014	RemoteSensing(Practical)	2	20-319-0301
20-319-0015	MarineRemoteSensingApplications	3	GS
20-319-0016	RegionalOceanography	3	20-319-0101
20-319-0017	OceanEngineering	4	20-319-0101& 20-319-0203
20-319-0018	AppliedandComputationalMathematics	4	GM/GP
20-319-0019	OceanEcosystemModelling	2	20-319-0101& 20-319-0201
20-319-0020	Statistical Methods in Oceanography(Practical)	1	GM/GP
20-319-0021	PolarOceanography	3	20-319-0101
20-319-0022	Oceanographic Application Tools-II(Practical)	1	GS

GS– GraduateinScience GM–GraduateinMathematics GP–GraduateinPhysics

M. Tech. Ocean Technology

(Applicable from 2020 Admission onwards)

SEMESTER I (CORE COURSES)

Course Code	Course Title	Credit
20-439-0101	Ocean Physics	3
20-439-0102	Coastal Engineering	4
20-439-0103	Marine Hydrodynamics	3
20-439-0104	Coastal Oceanography (Practical)	1
20-439-0105	Computer Programming in Oceanography (Practical)	2
		C= 13

SEMESTER II (CORE COURSES)

Course Code	Course Title	Credit
20-439-0201	Advanced Marine Technology	4
20-439-0202	Environmental Ocean Technology	3
20-439-0203	Ocean Modelling	3
20-439-0204	Ocean Modelling Lab (Practical)	1
		C= 11

SEMESTERIII

20-439-0301	**Project Dissertation- Phase I**	**C= 18**

SEMESTERIV

20-439-0401	**Project Dissertation- Phase II**	**C= 18**

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

CENTRE FOR INTEGRATED STUDIES

Integrated M.Sc. Course in sciences

Semester I

Course Code	Course	C/E	Credits
ENG 1101	English- I	C	2
MAL 1101	Malayalam- I	C	2
HIN 1101	Hindi- I	C	2
FLG 1101	Foreign Language (German)	C	2
CHE 1101	Atomic Structure and Chemical Bonding	C	3
PHY 1101	Mechanics	C	3
MAM 1101	Calculus I	C	4
BTG 1101	Basic Principles of Biology	C	3
CHE 1102	Chemistry Lab - Quantitative Analysis I	C	2
PHY 1102	Physics Lab - Mechanics	C	2
BTG 1102	Basic Principles of Biology Lab	C	2
	Total		**23**

Semester II

Course Code	Course	C/E	Credits
ENG 1201	English II	C	2
MAL 1201	Malayalam-II	C	2
HIN 1201	Hindi- II	C	2
FLG 1201	Foreign Language -II (German)	C	2
CHE 1201	Periodicity, Nuclear Chemistry, Acid Base Chemistry and Metallurgy	C	3
PHY 1201	Waves and Optics	C	3
MAM 1201	Linear Algebra and Group Theory	C	4
BTG 1201	Biomolecules of Life	C	3
CHE 1202	Chemistry Lab - Qualitative Analysis I	C	2
PHY 1202	Physics Lab - Waves and Optics	C	2
BTG 1202	Biomolecules of Life Lab	C	2
	Total		**23**

Semester III

Course Code	Course	C/E	Credits
CHE 1301	Introductory Organic Chemistry	C	3
PHY 1301	Electricity and Magnetism I	C	3

MAM 1301	Calculus II	C	4
MAM 1302	Mathematical Methods I	C	4
BTG 1301	Introduction to Cell Biology and Signaling	C	3
EVS 1301	Environmental Science	C	2
CHE 1302	Chemistry Lab - Qualitative Analysis II	C	2
PHY 1302	Physics Lab –Electricity and Magnetism	C	2
BTG 1302	Cell Biology and Signaling Lab	C	2
	Total		**25**

Semester IV

Course Code	Course	C/E	Credits
CHE 1401	Introductory Physical Chemistry	C	3
PHY 1401	Quantum Physics and Relativity	C	3
MAM 1401	Mathematical Methods - II	C	4
STA 1401	Statistics - I (Probability and Statistics)	C	4
BTG 1401	Fundamental of Molecular Biology and Genetics	C	3
COM 1401	Basic Computer Science	C	2
CHE 1402	Chemistry Lab- Physical Chemistry	C	2
PHY 1402	Physics Lab- Modern Physics	C	2
BTG 1402	Molecular Biology and Genetics Lab	C	2
	Total		**25**

Semester V (CHEMISTRY)

Course Code	Course	C/E	Credits
CHE 1501	Analytical Chemistry	C	2
CHE 1502	Inorganic Chemistry Main Group Chemistry	C	3
CHE 1503	Chemical Kinetics and Thermodynamics	C	3
CHE 1504	Organic Functional Group Chemistry	C	3
CHE 1505	Elements of Symmetry and Molecular Spectroscopy	C	3
CHE 1506	Inorganic Chemistry Lab- Inorganic Synthesis and Separation	C	2
CHE 1507	Organic Chemistry Lab- Synthesis and Separation	C	2
CHE 1508	Open Ended Lab - I	C	2
CHE 1509	Mathematics for Chemists	C	2
	Total		**22**

Semester VI (CHEMISTRY)

Course Code	Course	C/E	Credits
CHE 1601	Instrumental Methods of Analysis	C	2
CHE 1602	Coordination Chemistry and Organometallic Chemistry	C	3
CHE 1603	Electrochemistry, Solid State and Liquid State	C	3
CHE 1604	Organic Reactions and Mechanism	C	3
CHE 1605	Industrial Chemistry	C	3
CHE 1606	Chemistry Lab - Physical	C	2
CHE 1607	Chemistry Lab - Industrial	C	2
CHE 1608	Open Ended Lab - II	C	2
CHE 1609	Computer Programming and Numerical Methods	C	2
	Total		**22**

Semester V (PHYSICS)

Course Code	Course	C/E	Credits
PHY 1501	Thermal Physics	C	4
PHY 1502	Electricity and Magnetism - II	C	4
PHY 1503	Basic Mathematical Physics	C	4
PHY 1504	Basic Solid State Physics	C	4
PHY 1505	Computer Lab	C	4
	Total		**20**

Semester VI (PHYSICS)

Course Code	Course	C/E	Credits
PHY 1601	Modern Optics	C	4
PHY 1602	Electronics	C	4
PHY 1603	Basic Nuclear Physics	C	4
PHY 1604	Minor Project	C	4
PHY 1605	Advanced Experiments in Physics Lab - I	C	4
	Total		**20**

Semester V (MATHEMATICS)

Course Code	Course	C/E	Credits

MAM 1501	Analysis I	C	4
MAM 1502	Linear Algebra and Geometry	C	4
MAM 1503	Algebra I	C	4
MAM 1504	Introduction to Complex Analysis	C	4
	Statistics II	C	4
	Total		**20**

Semester VI (MATHEMATICS)

Course Code	Course	C/E	Credits
MAM 1601	Analysis II	C	4
MAM 1602	Ordinary Differential Equations and Partial Differential Equations	C	4
MAM 1603	Algebra II	C	4
	Elective II (Statistics)	E	4
	Elective III (Statistics)	E	4
	Total		**20**

Semester V (STATISTICS)

Course Code	Course	C/E	Credits
MAM 1501	Analysis I	C	4
MAM 1502	Linear Algebra and Geometry	C	4
MAM 1503	Algebra I	C	4
MAM 1504	Introduction to Complex Analysis	C	4
STA 1501	Statistics and Probability II	C	4
	Total		**20**

Semester VI (STATISTICS)

Course Code	Course	C/E	Credits
MAM 1601	Analysis II	C	4
MAM 1602	Ordinary Differential Equations and Partial Differential Equations	C	4
MAM 1603	Algebra II	C	4
STA 1601	Design of Experiments and Sample Surveys	E	4
STA 1602	Applied Statistics	E	4
	Total		**20**

Additional Elective Course suitable for Semester VI (STATISTICS)

STA 1603	Statistical computing Using R package	**E**	**4**

Details of Faculty

Sl.No.	Name & Designation	Specialization	Communication (Contact No. & e-mail id)
1	Guest Faculty (Dr. Lalitha Mathew)	ENGLISH	
2	Dr. Aneesh K N Assistant Professor	HINDI	9446426447, aneeshkn1@gmail.com
3	Guest Faculty	MALAYALAM	
4	Guest Faculty	GERMAN	
5	Dr. Kuriachan, (Adjunct Faculty)	BIOLOGY	
6	Dr. Thomas Mathew P (Adjunct Faculty)	BIOLOGY	9446479124, tmperak@yahoo.com
7	Dr. Thomas Philip Adjunct Faculty Biotechnology	BIOLOGY	9446214877, pthanuveli@yahoo.com
8	Dr. Asha. A. S.	PHYSICS	9495042275 asha@cusat.ac.in
9	Dr. Manoj. E	CHEMISTRY	
10	Dr. Sebastian Nybin Remello Asst. Professor	CHEMISTRY	8921952631 nybinremello@cusar.ac.in
11	Dr. Sabeena. M. Asst. Professor	PHYSICS	9445884591 sabeenamannilthodi@gmail.com
12	Dr. K P Naveenachandran (Adjunct Faculty)	MATHEMATICS	9447311751 kpnchn@gmail.com
13	Dr.Hitha. N.	STATISTICS	9447291473 Nhitha4@gmail.com
14	Sindhu Mathai,	CHEMISTRY	
15	Dr. Kala R	CHEMISTRY	7373852607 kalaramakrishnan@gmail.com
16	Dr. Leena. R. Asst. Professor	CHEMISTRY	9495818133 leenar@gmail.com
17	Guest Faculty	BASIC COMPUTER SCIENCE	

DEPARTMENT OF APPLIED CHEMISTRY

M.Sc. CHEMISTRY

(FOURSEMESTERS /FULLTIME) (WITH EFFECT FROM 2020-2021)

SEMESTER:1*SemesterCredit:18(Core:16;Elective: 2)CumulativeCredit:18*

Course No.	CourseName	Course Type	Credits	L-T-P	CE	ESE	Total Marks
CHE 2101	ChemistryofMainGroupElements (InorganicChemistry–I)	Core	3	3-1-0	50	50	100
CHE 2102	StructureandReactivity (OrganicChemistry–I)	Core	3	3-1-0	50	50	100
CHE 2103	IntroductiontoQuantumChemistry (TheoreticalChemistry–I)	Core	3	3-1-0	50	50	100
CHE 2104	GroupTheoryandSpectroscopy (TheoreticalChemistry–II)	Core	3	3-1-0	50	50	100
CHE 2105	EquilibriumandNonequilibrium Thermodynamics	Elective	2	2-1-0	50	50	100
CHE 2106	BasicConceptsofAnalytical Chemistry (AnalyticalChemistry–I)	Core	2	2-1-0	50	50	100
CHE 2107	InorganicChemistryLaboratory	Core	2	0-0-6	100	-	100
CHE 2108	Open-endedLaboratory–I	Core	-	-	100	-	100
CHE 2109	EnvironmentalChemistry	Elective	2	2-1-0	50	50	100
CHE 2110	SolidStateChemistry	Elective	2	2-1-0	50	50	100

SEMESTER:2*SemesterCredit: 19(Core: 15;Elective: 4)Cumulative Credit: 37*

Course No.	CourseName	Course Type	Credits	L-T-P	CE	ESE	Total Marks
CHE 2201	Chemistryofd-andf-blockElements (InorganicChemistry–II)	Core	3	3-1-0	50	50	100
CHE 2202	ReactionsandMechanisms (OrganicChemistry–II)	Core	2	2-1-0	50	50	100
CHE 2203	ReagentsandSynthesis (OrganicChemistry–III)	Core	2	2-1-0	50	50	100
CHE 2204	Spectroscopy of Organic Compounds (OrganicChemistry–IV)	Core	2	2-1-0	50	50	100
CHE 2205	StatisticalThermodynamics (Physical Chemistry–I)	Core	2	2-1-0	50	50	100
CHE 2206	Chemical Bonding and Computational Chemistry	Elective	2	2-0-2	50	50	100
CHE 2207	BioanalyticalChemistry	Elective	2	2-1-0	50	50	100
CHE 2208	OrganicChemistryLaboratory	Core	2	0-0-6	100	-	100

CHE 2209	Open-endedLaboratory–II	Core	2	-	50	50**	100
CHE 2210	to Theory of Orbital Interactionsin Chemistry	Elective	2	2-0-2	50	50	100
CHE 2211	Nuclear and Radiation Chemistry	Elective	2	2-0-2	50	50	100
CHE 2212	Supramolecular Chemistry	Elective	2	2-0-2	50	50	100

SEMESTER:3*SemesterCredit:21(Core:13;Elective:8)CumulativeCredit:58*

Course No.	CourseName	Course Type	Credits	L-T-P	CE	ESE	Total Marks
CHE 2301	Instrumental Methods of Analysis (AnalyticalChemistry–II)	Core	2	2-1-0	50	50	100
CHE 2302	Organometallic and Bioinorganic Chemistry (InorganicChemistry–III)	Core	3	3-1-0	50	50	100
CHE 2303	NaturalProducts (OrganicChemistry–V)	Core	3	3-1-0	50	50	100
CHE 2304	Kinetics, Adsorption and Catalysis (Physical Chemistry–II)	Core	3	3-1-0	50	50	100
CHE 2305	ElectrochemistryandCrystallography	Elective	2	2-1-0	50	50	100
CHE 2306	Physical ChemistryLaboratory	Core	2	0-0-6	100	-	100
CHE 2307	Oleochemicals, Nutraceuticals and Surfactant Technology	Elective	2	2-1-0	50	50	100
CHE 2308	MolecularModelinginChemistry	Interdepartmental Elective*	4	4-1-0	50	50	100
CHE 2309	SpectroscopicTechniques	Interdepartmental Elective*	4	4-1-0	50	50	100
CHE 2310	AdvancedPhotochemistry	Elective	2	2-1-0	50	50	100
CHE 2311	PolymerChemistry	Elective	2	2-1-0	50	50	100

SEMESTER:4 *SemesterCredit: 16(Core: 16;Elective: 0)Cumulative Credit: 74*

Course No.	CourseName	CourseType	Credits	L-T-P	CE	ESE	Total Marks
CHE 2401	Project Dissertation	Core	16	-	200	200**	400

*coursesofferedtothestudentsofotherdepartments.

**presentationandviva-voce.

L-T-P≡Lecture-Tutorial-PracticalHours

CE ≡ Continuous Evaluation; ESE ≡ End Semester EvaluationNote:

1HourLectureisequivalentto1credit

3HoursPracticalisequivalentto1credit.

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

Coursesubjects		Instruction				Evaluation		
Courseno.	**Coursename**	**Credits**	**Core/ Elective**	**Hours/week**	**Prerequisites**	**Internal**	**Endsemester**	**Total**
20-303-0101	Metabolism and bioenergetics	4	C	3L+1P+1T	Nil	50	50	100
20-303-0102	Genetics	2	C	2L+0P+1T	Nil	50	50	100
20-303-0103	Molecularbiology	3	C	3L+0P+1T	Nil	50	50	100
20-303-0104	Microbiology	4	C	3L+1P+1T	Nil	50	50	100
20-303-0105	Biostatistics and Principles of analyticaltechniques	4	C	3L+1P+1T	Nil	50	50	100
20-303-0106	Molecular Cell biology	4	C	3L+1P+1T	Nil	50	50	100
	TOTALFORSEM-I		**21C**		-	300	300	600

C-core;E-

elective;AlltutorialclasseswillbeonlineSEMESTER-II

Coursesubjects		Instruction				Evaluation		
Courseno.	**Coursename**	**Credits**	**Core/ Elective**	**Hours/ week**	**Pre-requisites**	**Internal**	**Endsemester**	**Total**
20-303-0201	Enzymology	4	C	3L+1P+1T	Nil	50	50	100
20-303-0202	BioprocessTechnology	4	C	3L+1P+1T	Nil	50	50	100
20-303-0203	Biosafety,Bioethics andIPR	2	C	2L+0P+1T	Nil	50	50	100
20-303-0204	Bioinformatics	3	C	2L+1P+1T	Nil	50	50	100
20-303-0205	ProjectProposalPreparationandPresentation†	1	C	1L+0P+1T	Nil	100	-	100
20-303-0206	Critical Analysisof Classical Papers†	1	C	0L+1P+1T	Nil	100	-	100
20-303-0207	CancerBiology	3	E	3L+0P+1T	Nil	50	50	100
20-303-0208	PlantBiotechnology	3	E	2L+1P+1T	Nil	50	50	100
20-303-0209	Nanobiotechnology	3	E	2L+1P+1T	Nil	50	50	100
20-303-0210	Neurobiology	3	E	2L+1P+1T	Nil	50	50	100
	TOTALFORSEM-		**15C**			400	200	600

C-core;E-elective;Alltutorialclasseswillbeonline

SEMESTER-III

Coursesubjects		Instruction				Evaluation		
CourseNo.	**Coursename**	**Credits**	**Core/ Elective**	**Hours/ week**	**Pre-requisites**	**Internal**	**End semester**	**Total**
20-303-0301	Recombinant DNA technology	4	C	3L+ 1P+1T	Nil	50	50	100
20-303-0302	Immunology and Immunotechnology	4	C	3L+ 1P+1T	Nil	50	50	100
20-303-0303	Biopharmaceuticals	3	C	2L+1P+1T	Nil	50	50	100
20-303-0304	Functional Genomics	2	E	1L+1P+1T	Nil	50	50	100
20-303-0305	Applications of Biotechnology-I(Industrial & Environmental Biotechnology)	4	E	3L+1P+1T	Nil	50	50	100
20-303-0306	Applications ofBiotechnology-II(Medical & Animal Biotechnology)	4	E	3L+1P+1T	Nil	50	50	100
20-303-0307	StemcellBiology&RegenerativeMedicine	2	E	1L+1P+1T	Nil	50	50	100
	TOTALFORSEM-III		**11C 12 E**			150 200	150 200	300 400
Compulsory	Interdepartmentalelective (for otherdepartmentstudents)	3	IDE	3L+0P+0T		50	50	100

C-core;E-elective;

SEMESTER-IV

Coursesubjects		Instruction				Evaluation		
CourseNo.	**Coursename**	**Credits**	**Core/ Elective**	**Hours/ week**	**Pre-requisites**	**Internal**	**End semester**	**Total**
20-303-0401	Innovation and Entrepreneurship forBiologists†	4	E	4	Nil	100	-	100
20-303-0402	Dissertation	12	**C**	-	-	200	200	400
	Comprehensiveviva voce & Seminar	1	**C**	-	-	100	100	200
TotalforsemesterIV			**13C 4E**			300 100	300	600 100
Compulsory	SWAYAM/ NPTELElective	3	E			100	-	100
GRANDTOTALFORM.Sc.BIOTECHNOLOGY PROGRAM			**60C 28E**			1200 500	800 400	2000 900

C-core;E-elective

M.Sc. MICROBIOLOGY

SEMESTER-I

Coursesubjects		Instruction				Evaluation		
Coursen o.(total credits)	**Coursename**	**Credits**	**Core/Elective**	**Hours/week**	**prerequisites**	**Internal**	**Endsemester**	**Total**
20-340-0101	Bacteriology	4	C	3L+1L+1T	Nil	50	50	100
20-340-0102	Fungi	4	C	3L+1L+1T	Nil	50	50	100
20-340-0103	Microbialgenetics	4	C	3L+1L+1T	Nil	50	50	100
20-340-0104	Microbialbiochemistry	4	C	3L+1L+1T	Nil	50	50	100
20-340-0105	Biostatistics&Principlesof analyticaltechniques	4	C	3L+1L+1T	Nil	50	50	100
	TOTALFORSEM-I		**20C**		**-**	**250**	**250**	**500**

C-core;E-elective;Alltutorialclasseswillbeonline

SEMESTER-II

Coursesubjects		Instruction				Evaluation		
Courseno./ .(totalcredits)	**Coursename**	**Credits**	**Core/Elective**	**Hours/ week**	**prerequisites**	**Internal**	**Endsemester**	**Total**
20-340-0201	MicrobialPhysiology	4	C	3L+1L+1T	Nil	50	50	100
20-340-0202	Fermentation technology	4	C	3L+1L+1T	Nil	50	50	100
20-340-0203	Biosafety,bioethicsand IPR	2	C	2L+1T	Nil	50	50	100
20-340-0204	Bioinformatics	3	C	3L+1L+1T	Nil	50	50	100
20-340-0205	Project Proposal Preparation	1	C	1P+ 1T	Nil	100	-	100
20-340-0206	andPresentation Critical Analysis of ClassicalPapers	1	C	1P +0T	Nil	100	-	100
20-340-0207	Enzymology	4	E	3L+1L+1T	Nil	50	50	100
20-340-0208	Foodmicrobiology	3	E	3L+1L+1T	Nil	50	50	100
20-340-0209	Plant – microbeinteractions	3	E	3L+1L+1T	Nil	50	50	100
	TOTALFOR SEM-II		15C 10E			400 150	200 150	600 300

C-core;E-elective;Alltutorialclasseswillbeonline

SEMESTER-III

Coursesubjects		Instruction				Evaluation		
Courseno./ .(totalcredits)	**Coursename**	**Credits**	**Core/Elective**	**Hours/week**	**prerequisites**	**Internal**	**Endsemester**	**Total**
20-340-0301	Recombinant DNA technology	4	C	3L+1L+1T	Nil	50	50	100
20-340-0302	Immunology and Immunotechnology	4	C	3L+1P+1T	Nil	50	50	100
20-340-0303	MolecularVirology	4	C	3L+1P+1T	Nil	50	50	100
20-340-0304	Industrialmicrobiology	3	E	2L+ 1P+0T	Nil	50	50	100
20-340-0305	FunctionalGenomics	2	E	2L+ 1P+1T	Nil	50	50	100
20-340-0306	EnvironmentalMicrobiology	3	E	3L+1P+1T	Nil	50	50	100
20-340-0307	Diagnostic and Pharmaceuticalmicrobiology	3	E	2L+1P+1T	Nil	50	50	100
20-340-0308	Biodegradation and Solid waste management	3	E	2L+1P+1T	Nil	50	50	100
	TOTALFORSEM-III					**150**	**150**	**300**
			12C			**250**	**250**	
			15E					

SEMESTER-IV

Coursesubjects		Instruction						
	EvaluationCoursenos	Course name						
		Credits	Core/Elective	Hours/week	prerequisites	Internal	Endsemester	Total
20-340-0401	**Skill development and Entrepreneurship**	**4**	E	4	Nil	100	-	100
20-340-0402	Dissertation	**12**	**C**	-	-	200	200	400
	Comprehensive viva voce&Seminar	**1**	**C**	-	-	100	100	200
TotalforsemesterIV			**13C**	**300**			**300**	**600**
			4E	**100**				**100**
CompulsoryElectiveSWAYAM/NPTEL		3	E	100			-	100
GRAND TOTAL FOR M.Sc.			**60C**	1100			900	2000
BIOTECHNOLOGYPROGRAM			**29E**	500			500	1000

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

CourseStructureofM.Sc.Mathematics-2020 admissionsonwards

Thereshall beabridgecoursetocoversomebasictopicsinMathematics.

Semester I

CourseCode	Paper	Credits	Pre-requisites
MAM2101	LinearAlgebra	4	
MAM2102	RealAnalysisI	4	
MAM2103	TopologyI	4	
MAM2104	AlgebraI	4	
MAM2105	OrdinaryDifferentialEquations	4	
	VivaVoce	0	
TotalCreditsforSemesterI		20	

SemesterII

CourseCode	NameofthePaper	Credits	Pre-requisites
MAM2201	AlgebraII	4	IMAM2104
MAM2202	FunctionalAnalysisI	4	MAM2101-2103
MAM2203	ComplexAnalysisI	4	
MAM2204	Measure&Integration	4	MAM2101-2103
MAM2205	ComputationalMathematicalLaboratory	2	
	Viva Voce	0	
TotalCreditsforSemesterII		18	

SemesterI

CourseCode	Paper	Credits	Pre-requisites
MAM2301	FunctionalAnalysis II	4	MAM2202
MAM2302	TopologyII	4	MAM2103
MAM2303	PartialDifferentialEquations	4	MAM2105
MAM2304	ProbabilityTheoryand OptimizationMethods	4	MAM2204
	Elective I	2	
VivaVoce		0	
TotalCreditsforSemesterIII		18	

SemesterIV

CourseCode	Paper	Credits	Pre-requisites
MAM2401	DifferentialGeometry	4	
	ElectiveII	4	
	ElectiveIII	4	
	ElectiveIV	4	
	VivaVoce	0	
Total**Creditsfor**SemesterIV		16	

TOTAL CEDITSFOR THESUCCESSFULCOMPLETIONOFTHECOURSE-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
MAM 2333/2433	Applied Mathematics – I (Online Course)

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 Semigroups
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. Sasi Gopalan Professor	Fuzzy Mathematics	sgcusat@gmail.com 9495363385
3	Dr. Shery Fernandez Associate Professor	Fuzzy Mathematics	sheryfernandez@yahoo.co.in 9846762450
4	Dr. V.B. Kiran Kumar (VBK) Assistant Professor	Functional Analysis, Spectrum of Operators, Linear Algebra, Approximation Theory.	kiranbalu36@gmail.com 8547496594
5	Dr. Ambily A.A. (AAA) Assistant Professor	Commutative Algebra, Algebraic K-theory	aaambily@gmail.com 9496530225
6	Dr. Noufal A. (AN) Assistant Professor	Functional Analysis, Approximation Theory, Integral Transforms, Signal Processing	noufalasharaf@gmail.com 9447327154
7	Prof. M.N. Narayanan Namboodiri (MNN) Emeritus Scientist	Functional Analysis	mnnadri@gmail.com 9446505953
8	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

CourseCode	Name	C/E	MarksDistribution			
			Cont.eval.	Endsemester	Total	Credit
PHY2101	Mathematical Physics	C	50	50	100	4
PHY2102	ClassicalMechanics	C	50	50	100	4
PHY2103	Electrodynamics	C	50	50	100	4
PHY2104	QuantumMechanics–I	C	50	50	100	4
PHY2105	ExperimentsinPhysicsLab-I	C	50	-	50	2
	Total		250	200	450	18

Semester–II

CourseCode	Name	C/E	MarksDistribution			
			Cont.eval.	Endsemester	Total	Credit
PHY2201	QuantumMechanics–II	C	50	50	100	4
PHY2202	StatisticalMechanics	C	50	50	100	4
PHY2203	AtomicandMolecularSpectroscopy	C	50	50	100	4
PHY2204	NuclearandParticlePhysics	C	50	50	100	4
PHY2205	Scientificcomputinganddata analysis (Lab-II)	C	50	-	50	2
	Total		250	200	450	18

Semester–III

CourseCode	Name	C/E	MarksDistribution			
			Cont.eval.	Endsemester	Total	Credit
PHY2301	AdvancedElectronics	C	50	50	100	4
PHY2302	AdvancedSolidStatePhysics	C	50	50	100	4
PHY23*xx*	Elective–I*	E	50	50	100	3
PHY23*yy*	Elective–II*	E	50	50	100	3
PHY23*zz*	Elective–III*	IE	50	50	100	3
PHY2304	ExperimentsinPhysicsLab-III	C	50	-	50	2
	Total		300	250	550	19

*Electives–IandIIaretheDepartmentalelectivecoursesandElective–IIIistheinterdepartmentalelective(IE)course.Replace*xx*,*yy*and*zz*withselectedelectivecoursecodes.

Semester–IV

CourseCode	Name	C/E	MarksDistribution			
			Cont.eval.	Endsemester	Total	Credit
PHY2401	MajorProject*	C	200	200	400	16
PHY2402	Onlinecourse**	E	50	-	50	2
	Total		250	200	450	18

ElectiveCourses(Departmental/Inter-Departmental)–3Credits

CourseCode	Name	C/E	MarksDistribution			
			Cont.eval.	Endsemester	Total	Credit
06	AnIntroductiontoNano Sci-ence	E	50	50	100	3
07	MeasurementsandOpticalIn-strumentation	E	50	50	100	3
08	GroupsandTensorsinPhysics	E	50	50	100	3
09	GeneralRelativityandRela-tivisticCosmology	E	50	50	100	3
10	ModernOptics	E	50	50	100	3
11	LaserandNonlinearOptics	E	50	50	100	3
12	LightSourceandDetectors	E	50	50	100	3
13	Biophysics	E	25	25	50	3
14	QuantumComputation and Information	E	50	50	100	3
15	Advanced Magnetism and MagneticMaterials	E	50	50	100	3
16	ComplexNetworks	E	50	50	100	3
17	AdvancedSolidStatePhysics II	E	50	50	100	3
18	Nonlinear Dynamics and Chaos	E	50	50	100	3
19	QuantumFieldTheory	E	50	50	100	3
20	ThinFilmPhysics	E	50	50	100	3
21	MolecularPhysics and Laser Spectroscopy	E	50	50	100	3
22	QuantumOptics	E	50	50	100	3
23	NonlinearOptics	E	50	50	100	3
24	ElementaryAstronomy	E	50	50	100	3
25	Astrophysics	E	50	50	100	3

26	ComputationalPhysics	E	50	50	100	3
27	PhaseTransitionandCritical Phenomena	E	50	50	100	3
28	2-DMaterials	E	50	50	100	3
29	Advanced Mathematical Physics	E	50	50	100	3
30	NondestructiveMeasurement TechniquesandApplications	E	50	50	100	3
31	Advanced Raman Spec-troscopy	E	50	50	100	3
32	Principleof BiomedicalInstru-ments	E	50	50	100	3
33	Fundamentals of Photo-voltaics	E	50	50	100	3
34	SolarPhotovoltaicTechnology	E	50	50	100	3
35	UltrafastLaserPhysics	E	50	50	100	3

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

CourseCode	Title ofPaper	Core/Elective	Credits	Continuous evaluation marks	End Semester Evaluation Marks	Total marks
20-322-0101	Mathematical Methods for Statistics	C	4	50	50	100
20-322-0102	Probability TheoryI	C	4	50	50	100
20-322-0103	Probability Distributions	C	4	50	50	100
20-322-0104	Sampling Theory & Methods	C	4	50	50	100
20-322-0105	Elective:I Statistical Computing	E	3	50	50	100

SEMESTER–II

Course Code	Title of Paper	Core/ Elective	Credits	Continuous evaluation marks	EndSemester EvaluationMarks	Total marks
20-322-0201	Statistical InferenceI	C	4	50	50	100
20-322-0202	Probability TheoryII	C	4	50	50	100
20-322-0203	Stochastic Processes	C	4	50	50	100
20-322-0204	Practical-Iand Viva Voce	C	2	100	-	100
Elective–II(Chooseanyone)						
20-322-0205	Statisticsfor National Developme nt	E	3	50	50	100
20-322-0206	Reliability Modeling and Analysis.	E	3	50	50	100

SEMESTER–III

Course Code	Title of Paper	Core/ Elective	Credits	Continuous evaluation marks	End Semester Evaluation Marks	Total marks
20-322-0301	Statistical Inference II	C	4	50	50	100
20-322-0302	Multivariate Analysis	C	4	50	50	100
20-322-0303	Applied Regression Analysis	C	4	50	50	100
20-322-0304	Practical -II using SPSS/MATLAB Projectwork and VivaVoce.	C	2	50 (practical)+ 50(viva)	-	100
Elective–III(Choose anyone)						
20-322-0305	Topics in Stochastic Finance	E	3	50	50	100
20-322-0306	Operations Research-II	E	3	50	50	100

SEMESTER-IV

Course Code	TitleofPaper	Core/ Elective	Credits	Continuous evaluation marks	EndSemester Evaluation Marks	Total marks
20-322-0401	Designand Analysis ofExperiments	C	4	50	50	100
20-322-0402	Practical – IIIusingSAS/R, andVivaVoce	C	3	50	50	100
20-322-0403	Project	C	3	100	--	100
Electives-IV, V,VI.(Choose anythree)						
20-322-0404	Statistical Quality Assurance	E	3	50	50	100
20-322-0405	TimeSeries Analysis	E	3	50	50	100
20-322-0406	Lifetime data analysis.	E	3	50	50	100
20-322-0407	AppliedMultivariateStatistical Analysis.	E	3	50	50	100
20-322-0408	Statistical Forecasting	E	3	50	50	100
20-322-0409	Inference for Stochastic Processes	E	3	50	50	100

M.Tech.ENGINEERING STATISTICS

(WithEffectfrom2020Admissiononwards)

Semest erI

CourseCode	Paper	Core/Elective	Credits
20-458-0101	Probability	C	4
20-458-0102	ReliabilityandLifeTesting	C	4
20-458-0103	PracticalIandViva–Voce	C	2
ElectiveI,II(Anytwoofthefollowing)			
20-458--0104	StatisticalInference	E	4
20-458-0105	SystemsandDecisionAnalytics	E	4
20-458-0106	ElementsofEngineeringManagement	E	4
20-458-0107	TotalQualityManagement	E	4
20-458-0108	OperationsResearch	E	4
20-458-0109	ManufacturingProcessesandMeasurementsfor Quality	E	4

SemesterII

20-458-0201	IndustrialExperimentalDesign	C	4
20-458-0202	StatisticalMethodsforQualityAssurance	C	4
20-458-0203	PracticalIIandVivaVoce	C	2
ElectiveIII,VI(Anytwoofthefollowing)			
20-458-0204	ElementsofStochasticProcesses	E	4
20-458-0205	StatisticalForecasting	E	4
20-458-0206	MultivariateMethods	E	4
20-458-0207	EngineeringMaintainability	E	4
20-458-0208	SimulationModellingandAnalysis	E	4
20-458-0209	BusinessAnalytics	E	4

SemesterIII

20-458-0301	ProjectProgressEvaluation	C	18

SemesterIV

20-458-0401	ProjectDissertationEvaluationandViva	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 Professorand 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, Accounting and 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)

FIRST SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMS2101	ManagementConceptsand OrganisationalBehaviour	CC	3	50	50	100
SMS2102	StatisticsforManagers	CC	3	50	50	100
SMS2103	ManagerialEconomics	CC	3	50	50	100
SMS2104	BusinessCommunication	CC	3	50	50	100
SMS2105	Financial Accounting	CC	3	50	50	100
SMS2106	BusinessEnvironment	CC	3	50	50	100
SMS2107	IndianEthosand BusinessEthics	CC	3	50	50	100
SMS2108	IT forBusinessandManagement	CC	3	50	50	100
	ManagerialSkillDevelopment	NC	Nil			

CC – Core CourseEC-ElectiveCourseNC–NonCredit
CES ContinuousEvaluationSystemESE –End SemesterExamination

SECOND SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMS2201	FinancialManagement	CC	3	50	50	100
SMS2202	MarketingManagement	CC	3	50	50	100
SMS2203	OperationsManagement	CC	3	50	50	100
SMS2204	HumanResourceManagement	CC	3	50	50	100
SMS2205	ManagementAccounting	CC	3	50	50	100
SMS2206	BusinessResearchMethods	CC	3	50	50	100
SMS2207	LegalAspects ofBusiness	CC	3	50	50	100
SMS2208	InnovationandEntrepreneurship	CC	3	50	50	100
	ManagerialSkillDevelopment	NC	Nil			

THIRD SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMS2301	ManagementScience	CC	3	50	50	100
SMS2302	OrganisationalStructure,Design andChange	CC	3	50	50	100
SMS2303	BusinessAnalytics	CC	3	50	50	100
SMS2304	SummerProjectWork*	CC	4	50	50	100
SMS2305	Elective –1	EC	3	50	50	100
SMS2306	Elective –2	EC	3	50	50	100
SMS2307	Elective –3	EC	3	50	50	100
SMS2308	Elective –4	EC	3	50	50	100

FOURTH SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMS2401	CorporateGovernanceand StrategicManagement	CC	3	50	50	100
SMS2402	EnvironmentManagement	CC	3	50	50	100
SMS2403	Elective –5	EC	3	50	50	100
SMS2404	Elective –6	EC	3	50	50	100
SMS2405	Elective –7	EC	3	50	50	100
SMS2406	ComprehensiveViva-Voce	CC	3	--	100	100

*****Each student should carryout a summer project work in a company after the completion of second semester for a period of six to eight weeks. The work shall becarried out during the summer break after the second semester examination under thesupervision of a guide assigned by the School. The report of the summer project must be submitted during the third semester.

*EvaluationofprojectworkshallbemadeasintheotherCorecourses.Ifacandidate fails in evaluation he/she has to complete the project work and obtain pass grade along with next batch.

MBADEGREE

PART-TIMEPROGRAMMESTRUCUTRE

FIRST SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMP2101	ManagementConceptsand OrganisationalBehaviour	CC	3	50	50	100
SMP2102	StatisticsforManagers	CC	3	50	50	100
SMP2103	ManagerialEconomics	CC	3	50	50	100
SMP2104	IndianEthosand BusinessEthics	CC	3	50	50	100
SMP2105	Financial Accounting	CC	3	50	50	100

SECONDSEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMP2201	BusinessEnvironment	CC	3	50	50	100
SMP2202	MarketingManagement	CC	3	50	50	100
SMP2203	HumanResourceManagement	CC	3	50	50	100
SMP2204	ManagementAccounting	CC	3	50	50	100
SMP2205	FinancialManagement	CC	3	50	50	100

THIRDSEMESTER

Code	NameofCourse	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMP2301	BusinessCommunication	CC	3	50	50	100
SMP2302	ManagementScience	CC	3	50	50	100
SMP2303	OrganisationalStructure,Design andChange	CC	3	50	50	100
SMP2304	IT forBusinessandManagement	CC	3	50	50	100
SMP2305	Legal AspectsofBusiness	CC	3	50	50	100
SMP2306	SummerProjectWork*	CC	4	50	50	100

CC – Core CourseEC– ElectiveCourse
CES– ContinuousEvaluationSystemES – EndSemesterExamination

FOURTH SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMP2401	BusinessResearchMethods	CC	3	50	50	100
SMP2402	OperationsManagement	CC	3	50	50	100
SMP2403	EnvironmentManagement	CC	3	50	50	100
SMP2404	Elective1	EC	3	50	50	100
SMP2405	Elective2	EC	3	50	50	100

FIFTH SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMP2501	InnovationandEntrepreneurship	CC	3	50	50	100
SMP2502	BusinessAnalytics	CC	3	50	50	100
SMP2503	Elective3	EC	3	50	50	100
SMP2504	Elective4	EC	3	50	50	100

SIXTH SEMESTER

Course Code	Nameof Course	CC/ EC	Credit	Marks		Total Marks
				CES	ESE	
SMP2601	Corporate Governance andStrategic Management	CC	3	50	50	100
SMP2602	Elective5	EC	3	50	50	100
SMP2603	Elective6	EC	3	50	50	100
SMP2604	Elective7	EC	3	50	50	100
SMP2605	ComprehensiveViva-Voce	CC	3	---	100	100

*****Each student should carryout a summer project work in a company after the completion of second semester for a period of six to eight weeks. The work shall be carried out during the summer break after the second semester examination under the supervision of a guide assigned by the School. The report of the summer project must be submitted during the third semester.

*Evaluation of projectwork shall be made as in the other Core courses. If a candidate fails in evaluation he/she has to complete the project work and obtain pass grade alongwith nextbatch.

Details of Faculty

Sl. No.	Name & Designation	Specialization	Communication (Contact No. & e-mail id)
1	Dr. D Mavoothu Professor	HRM, Industrial Relations and Business Ethics	7994042136 mavoothu@rediffmail.com
2	Dr. M Bhasi Professor	Logistics, Supply Chain, Quality, Safety and Crisis Management, Management of Scientists & Engineers, Operations Management & Systems	9447419863 mbhasi@gmail.com
3	Dr. Jagathy Raj V P Professor & Director	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
4	Dr. Rajithakumar S Professor	Finance and General Management	9400019611 rajithakumar@cusat.ac.in
5	Dr. Sam Thomas Professor	Systems and Finance	9846152127 sam@cusat.ac.in
6	Dr. Zakkariya K A Professor	Organisational Behaviour, Marketing & Sales Management, Managerial Skills Development	9846554444 zakkariya@gmail.com
7	Dr.Santhosh Kumar S Professor	Finance Management	9446041325 drsan@cusat.ac.in
8	Dr. Manoj Edward Professor	Operations, Marketing and Service Management & Digital Marketing	9846280535 manojedw@gmail.com
9	Dr. Saji T G Associate Professor	Corporate Finance & Asset Pricing, Tax Management, Data Analytics, Risk Management	9446869214 sajthazhungal@gmail.com
10	Dr. Sangeetha K Prathap Assistant Professor	Management, Banking, Financial Services, Financial Management	9995775239 sangeethakprathap@gmail.com
11	Dr.Santhosh Kumar P K Assistant Professor	Finance and Open economy macroeconomics	9620569469 s.kumar@cusat.ac.in
12	Dr. ManuMelwin Joy Assistant Professor	Production & Human Resource Management	9744551114 manu_melwinjoy@yahoo.com
13	Dr.DeviSoumyaja Assistant Professor	Human Resource Management	9972309166 devisoumyaja@gmail.com
14	Dr. Remya Ramachandran Assistant Professor	Finance, Capital Market, Security Analysis and Portfolio Management & Financial Accounting	9446035607 remya.rc2323@gmail.com
15	Dr. Rakesh Krishnan M Assistant Professor	Finance-Corporate Finance, Financial Markets, Behavioural Finance, Derivatives & Securities Analysis	9447700081 mrakeshkrishnan@gmail.com

DEEN DAYAL UPADHYAY KAUSHAL KENDRA

M.Voc. (Master of Vocation) in Technology and Management Consulting.

SEMESTER I

Course Code	Course	C/E	Credit
KMC2101	Business Communication Skills - I	C	3
KMC2102	Contemporary Management	C	3
KMC2103	Introduction to Technology and ManagementConsulting	C	3
KMC2104	Economics for Business Decisions	C	3
KMC2105	Accounting and Financial Management forConsultants	C	3
KMC2106	Research Skills for Consulting	C	3
KMC2107	Quantitative Techniques	C	3
KMC2108	Professional Skills Development (Training Programme)	C	3
Total			**24**

SEMESTER II

Course Code	Name of the Course	C/E	Credit
KMC2201	Operations Management	C	3
KMC2202	Integrated Management Systems	C	3
KMC2203	Management of Consulting Firms and Developing Consulting Career	C	3
KMC2204	New Age Marketing fo Business Consulting r		3
KMC2205	Project Management	C	3
KMC2206	Business Analytics	C	3
KMC2207	Business Communication Skills – II	C	3
KMC2208	Case Development Skills for Consultants (Training Programme)	C	3
KMC2209	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 of Internal Examiners)	C	12
Total			**36**

SEMESTERIII

Course No.	Name of the Course	C/E	Credit
KMC2301	Business, Government and Society	C	3
KMC2302	Business Model Analysis and Strategy	C	3
KMC2303	Managing Change in Organisations	C	3
KMC2304	Entrepreneurship and New Venture Planning	C	3
KMC2305	Elective-I	E	3
KMC2306	Elective-II	E	3
KMC2307	Elective-III	E	3
KMC2308	Elective-IV	E	3
Total			**24**

List of Electives offered in III Semester

1. HRAnalytics
2. Corporate TrainingConsulting
3. Technology EnabledHR
4. HR Strategies for the New World
5. Consulting Expertise in PerformanceManagement
6. Total RewardManagement
7. StrategicBranding
8. Consulting in CRM Design and Management
9. Consulting in MarketingResearch
10. Strategic Consulting for ServiceOrganisations
11. StrategicMarketing
12. Marketing CommunicationConsulting
13. RetailManagement
14. Technology and Innovation Management
15. Environmental Consulting (Impact Assessment &Certifications)
16. Enterprise ResourcePlanning
17. Supply ChainManagement
18. Investment Banking & FinancialServices
19. Financial RiskManagement
20. Banking and Financial Services andInsurance
21. SecuritiesMarket.
22. Tax Consulting
23. Corporate Governance and Social Responsibility ofBusiness
24. Consulting for Mergers, Acquisitions and CorporateRestructuring
25. Consulting for Public Private PartnershipProjects.

SEMESTERIV

Course No.	Name of the Course	C/E	Credit
KMC2401	*Major Project (Duration – 90 working days during Semester IV in a consulting firm or any other business organisation 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	Course	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	Course	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
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	Course	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	5Days Workshop Programme (Personal Productivity Improvement)	30 hrs/ Semester			2	50		50

SEMESTER IV

Course Code	Course	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 marks for written report after the completion of the project)	120 hrs/ Semester			4	100		100

SEMESTER V

Course Code	Course	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 Analysts	5	0	1	5	50	50	100

KBD 1504	Big DataAnalytics	4	0	2	4	50	50	100
KBD 1505	Text and Web Analytics	5	0	2	5	50	50	100
KBD 1506	Business Model Analysis	5	0	1	5	50	50	100
KBD 1507	Elective 2	5	0	2	5	50	50	100

SEMESTER VI

Course Code	**Course**	**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 organisation 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
E-1	Practical Accounting in Business Organizations
E-2	Computational Finance
E-3	Investment Analysis and Portfolio Management
E-4	HR Analytics
E-5	Introduction to Machine Learning
E-6	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 Mobile/email
1	Dr.K.A.Zakkariya Director	OB, HRM & Marketing	9846554444 zakkariya@gmail.com
2	Dr.Renjini.D., Associate Professor	Marketing, Business Model Analysis, Marketing Research	9895888599 renjinidas@yahoo.com
3	Dr.George Joseph, Assistant Professor	Project Management, Entrepreneurship, Operations Management	9995468697 cgeorgejoseph@gmail.com
4	Vinod.V.Nair, Assistant Professor	Operation Management, Technology Consulting	9447620973 vinodvnair@ieee.org
5	Vinu Varghees.V.V., Assistant Professor	Android App Development, Data Mining, Network security	9446655362 vinghese@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 DATA SCIENCE

COURSE STRUCTURE
(2020 Admission onwards**)**

Semester I

Course Code	Paper				Marks		Credit
		L	T	P	Sessional	Final	
	Statistical Foundations for data Science	4	1	3	50	50	4
	Operating System Concepts*	4	1	3	50	50	4
	Data Structures and Algorithms*	3	1	2	50	50	3
	Python for Data Analytics	3	1	2	50	50	3
	Mathematics for Machine Learning	3	1	2	50	50	3
	Python Programming LAB			2	50	50	1
	Mini Project			2	50		1
TOTAL							19

Semester II

Course Code	Paper				Marks		Credit
		L	T	P	Sessional	Final	
	Networks and Data Communications*	4	1	3	50	50	4
	Database Management Systems*	4	1	3	50	50	4
	R for Data Analytics	3	1	2	50	50	3
	Data Mining & Machine Learning**	3	1	2	50	50	3
	Elective I	3	1	2	50	50	3
	R Programming LAB			2	50	50	1
	Mini Project			2	50		1
		TOTAL					19

Semester III

Course Code	Paper				Marks		Credit
		L	T	P	Sessional	Final	
	Soft Computing Techniques	4	1	3	50	50	4
	Elective II	3	1	2	50	50	3
	Elective III	3	1	2	50	50	3
	Elective IV	3	1	2	50	50	3
	Elective V	3	1	2	50	50	3
	Seminar			2	50		1
	Mini Project			2	50		1
			TOTAL				17

Semester IV

Course Code	Paper	Marks		Credit
		Sessional	Final	
	Internship/Project Work	200	200	18
TOTAL				18

Second Semester Electives

1. Predictive Analytics

2. Text Analytics.

3. Social Network Analysis

Third Semester Electives

1.No SQL Databases

2. Image and Video Analytics

3. Healthcare Data Analytics

4. Fraud Analytics

5. Block Chain Technologies (Industry Oriented course/ MCA)

6. Big Data Analytics **

7. Natural Language Processing **

8. Information Retrieval *

9. Deep Learning **

10.Business Analytics **

11.Data Visualization #

12.Data warehousing #

13.Computational modelling #

14.Time Series Analysis and SEM Modeling #

15.AI & Knowledge representation #

* Subjects from M.Sc. Computer Science with specialization in Soft Computing

** Subjects from MCA

Master of Computer Applications (MCA)

(2020 Admission onwards)

Bridge Courses

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
	Principles of Programming	12		6		50	
	Basic Mathematics for Computer Applications	12				50	

Semester I

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
20-381-0101	Data Structures using C	3	1	2	50	50	3

20-381-0102	Mathematical Foundations and Numerical Techniques	3	1	2	50	50	3
20-381-0103	Digital Electronics and Computer Organization	3	1	3	50	50	3
20-381-0104	Database Management System	3	1		50	50	3
20-381-0105	Operating Systems (MOOC Course)	3	1	2	50	50	2
20-381-0106	C Programming LAB			4	50	50	2
20-381-0107	DBMS LAB			2	50	50	1
		2	1	1			2
Total							19

Semester II

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
20-381-0201	Object Oriented Programming	3	1	2	50	50	3
20-381-0202	Design and Analysis of Algorithms	3	1		50	50	3
20-381-0203	Fundamentals of Software Engineering.	3	1	2	50	50	3
20-381-0204	Data Mining and Machine Learning	3	1	2	50	50	3
20-381-0205	Information Security	3	1	2	50	50	3

20-381-0206	JAVA Programming LAB.			4	50	50	2
20-381-0207	Data Mining LAB using Python				50	50	2
Total							19

Semester III

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
20-381-0301	Data Communication and Networks	3	1	2	50	50	3
	Elective I	3	1	2	50	50	3
	Elective II	3	1	2	50	50	3
	Elective III (Industry Elective)	3	1	2	50	50	3
	Elective IV (IE)	3		2	50	50	3
20-381-0306	Mini Project			2	50		2
20-381-0307	Technical Communication	2	1	2	50	50	2
Total							19

Semester IV

Course Code	Paper	Marks		Credit
		Internal	External	
20-381-0601	Project Work and Course Viva Voce.	200	200	15
Total				15

LIST OF ELECTIVES

Elective I

20-381-0311 Android Application Development

20-381-0312 Web Application Design using PHP

20-381-0313 Network Security and Wireless Security

20-381-0314 Artificial Intelligence

20-381-0315 Security Threats and Vulnerabilities

Elective II

20-381-0321 BlockChain Technology

20-381-0322 Bioinformatics

20-381-0323 Internet of Things

20-381-0324 Real Time Systems

20-381-0325 Distributed and Cloud Computing

20-381-0326 Software project management/ Software testing

20-381-0327 Introduction to Cryptography

Elective III

20-381-0331 Big Data Analytics

20-381-0332 Natural Language Processing #

20-381-0333 Digital Image Processing

20-381-0334 Deep Learning

Elective IV

20-381-0341 Design Thinking

20-381-0342 Project Management

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
2	Dr. A. Sreekumar Professor	Compiler Design Operating System Cryptography Number Theory	0484-2576253 (O) 0484-2556057(R) 9495427491 (M) sreekumar@cusat.ac.in askcusat@gmail.com
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
4	Dr. Judy M. V. Associate Professor	Soft Computing Data mining	0484-2576253 (O) 9048991368 (M) judy.nair@gmail.com judy_nair@yahoo.com
5	Ms. Malathi S. Assistant Professor	Software Engineering	0484-2576253 (O) 9495968765 (M) malathi_s@cusat.ac.in malathisujith@gmail.com

COCHIN UNIVERSITY COLLEGE OF ENGINEERING KUTTANADU

MASTER OF COMPUTER APPLICATIONS (MCA)

Master of Computer Applications (MCA) Course Structure

(2020 Admission onwards)

Bridge Courses

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
	Principles of Programming	12		6		50	
	Basic Mathematics for Computer Applications	12				50	

Semester I

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
20-381-0101	Data Structures using C	3	1	2	50	50	3
20-381-0102	Mathematical Foundations and Numerical Techniques	3	1	2	50	50	3
20-381-0103	Digital Electronics and Computer Organization	3	1	3	50	50	3
20-381-0104	Database Management System	3	1		50	50	3

20-381-0105	Operating Systems (MOOC Course)	3	1	2	50	50	2
20-381-0106	C Programming LAB			4	50	50	2
20-381-0107	DBMS LAB			2	50	50	1
		2	1	1			2
Total							19

Semester II

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
20-381-0201	Object Oriented Programming	3	1	2	50	50	3
20-381-0202	Design and Analysis of Algorithms	3	1		50	50	3
20-381-0203	Fundamentals of Software Engineering.	3	1	2	50	50	3
20-381-0204	Data Mining and Machine Learning	3	1	2	50	50	3
20-381-0205	Information Security	3	1	2	50	50	3
20-381-0206	JAVA Programming LAB.			4	50	50	2
20-381-0207	Data Mining LAB using Python				50	50	2
Total							19

Semester III

Course Code	Subject	Hours			Marks		Credit
		L	T	P	Sessional	Final	
20-381-0301	Data Communication and Networks	3	1	2	50	50	3
	Elective I	3	1	2	50	50	3
	Elective II	3	1	2	50	50	3
	Elective III (Industry Elective)	3	1	2	50	50	3
	Elective IV (IE)	3		2	50	50	3
20-381-0306	Mini Project			2	50		2
20-381-0307	Technical Communication	2	1	2	50	50	2
Total							19

Semester IV

Course Code	Paper	Marks		Credit
		Internal	External	
20-381-0601	Project Work and Course Viva Voce.	200	200	15
Total				15

LIST OF ELECTIVES

Elective I

20-381-0311 Android Application Development

20-381-0312 Web Application Design using PHP

20-381-0313 Network Security and Wireless Security

20-381-0314 Artificial Intelligence

20-381-0315 Security Threats and Vulnerabilities

Elective II

20-381-0321 BlockChain Technology

20-381-0322 Bioinformatics

20-381-0323 Internet of Things

20-381-0324 Real Time Systems

20-381-0325 Distributed and Cloud Computing

20-381-0326 Software project management/ Software testing

20-381-0327 Introduction to Cryptography

Elective III

20-381-0331 Big Data Analytics

20-381-0332 Natural Language Processing #

20-381-0333 Digital Image Processing

20-381-0334 Deep Learning

Elective IV

20-381-0341 Design Thinking

20-381-0342 Project Management

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

PROGRAMMESTRUCTUREANDSYLLABUS(2020ADMISSIONS)							
M.TECH.COMPUTERANDINFORMATIONSCIENCE							
Semester-I							
Sl.No.	Coursecode	CourseTitle	Core /Elective	Credits	Lec	Lab/Tutorial	Marks
1	20-435-0101	MathematicalConceptsfor ComputerScience	C	4	4	2	100
2	20-435-0102	MachineLearningAlgorithms	C	4	4	3	100
3	20-435-0103	DesignandAnalysisof Algorithms	C	4	4	3	100
4	-	ElectiveI	E	3	4	1	100
5	-	ElectiveII	E	3	4	1	100
TotalforSemesterI				18	20	10	500
Electives							
20-435-0104:VirtualizedSystems							
20-435-0105:ComputationalLinguistics							
20-435-0106:AdvancedOptimizationTechniques							
20-435-0107:AlgorithmsforModernDataModels							
20-435-0108:DigitalImageandVideoProcessing							
20-435-0109:MathematicsforMachineLearning							
20-435-0110:NumberTheoryandCryptography							
Semester-II							
1	20-435-0201	AlgorithmsforMassiveDatasets	C	4	4	2	100
2	20-435-0202	ProbabilisticGraphicalModels	C	4	4	2	100
3	20-435-0203	Seminar	C	1		3	50
4	-	ElectiveIII	E	3	4	1	100
5	-	ElectiveIV	E	3	4	1	100
6	-	ElectiveV	E	3	4	1	100
TotalforSemesterII				18	20	10	550
Electives							
20-435-0204:Bioinformatics							
20-435-0205:ProgrammingMassivelyParallelProcessors							
20-435-0206:DeepLearning							
20-435-0207:ModellingCyberPhysicalSystems							
20-435-0208:AlgorithmicGameTheory							
20-435-0209:DeepLearningforComputerVision							
20-435-0210:ImageandVideoCoding							
20-435-0211:ReinforcementLearning							
20-435-0212:NaturalLanguageProcessingwithDeepLearning							

Semester-III	
20-435-0301	Elective-VI
20-435-0302	Project&VivaVoce
TotalforSemesterIII	
Semester-IV	
20-435-0401	Project&VivaVoce
TotalcreditsforDegree:**72**	

M.TECH.SOFTWAREENGINEERING

Semester-I

Sl.No.	Coursecode	CourseTitle	Core/ Elective	Credits	Lec.	Lab/ Tutorial	Marks
1	20-436-0101	MathematicalConceptsfor ComputerScience	C	4	4	2	100
2	20-436-0102	MachineLearningAlgorithms	C	4	4	3	100
3	20-436-0103	DesignandAnalysisof Algorithms	C	4	4	3	100
5	-	ElectiveI	E	3	4	1	100
6	-	ElectiveII	E	3	4	1	100
TotalforSemesterI				18	20	10	500
Electives							
20-436-0104:ArtificialIntelligence							
20-436-0105:HumanComputerInteraction							
20-436-0106:InformationRetrievalandWebsearch							
20-436-0107:FunctionalProgramming							
20-436-0108:SoftwareQualityManagement							

Semester-II

Sl.No.	Coursecode	CourseTitle	Core/ Elective	Credits	Lec.	Lab/ Tutorial	Marks
1	20-436-0201	BigDataAnalytics	C	4	4	2	100
2	20-436-0202	AgileSoftwareEngineering	C	4	4	2	100
3	20-436-0203	Seminar	C	1	0	3	50
4	-	ElectiveIII	E	3	4	1	100
5	-	ElectiveIV	E	3	4	1	100
6	-	ElectiveV	E	3	4	1	100
TotalforSemesterII				18	20	10	550
Electives							
20-436-0204:SoftwareArchitecture							
20-436-0205:SoftwareAgentSystems							
20-436-0206:EnterpriseApplicationIntegrationandBusinessProcessManagement							
20-436-0207:AdvancedDataMining							
20-436-0208:FuzzySetTheory:FoundationsandApplications							
20-436-0209:ComplexNetworks:TheoryandApplications							
20-436-0210:AdvancesinDatabases							

Semester-III

1	20-436-0301	ElectiveVI	E	2	0	10	50
2	20-436-0302	Project&VivaVoce	C	16	0	20	350
TotalforSemesterIII				18	0	30	400

Semester-IV

1	20-436-0401	Project&VivaVoce	C	18	0	30	500

TotalcreditsforDegree:**72**

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	Name of the Course	C/E	Credits
20-437-0101	Embedded Architecture and Interfacing	C	3
20-437-0102	Advanced Digital Communication	C	3
20-437-0103	Advanced Digital Signal Processing	C	3
20-437-0104	Embedded Systems Laboratory	C	1
	Elective-I (Specialization)	E	3
	Elective-Lab (Specialization)	E	1
	Elective-II (General)	E	3
	Elective-Lab (General)	E	1

Totalcredits **18**

Specialization Electives

VLSI and Embedded Systems

20-437-0105	VLSI Technology and Design	E	3
20-437-0106	VLSI Laboratory	E	1
Microwave and Radar Engineering			
20-437-0107	Microwave Devices & Circuits Design	E	3
20-437-0108	Microwave Circuits Lab	E	1
Robotics and Intelligent Systems			
20-437-0109	Robotics and Automation	E	3
20-437-0110	Robotics Lab	E	1

General Electives			
20-437-0111	FPGA Based System Design	E	3
20-437-0112	FPGA Based System Design Lab	E	1
20-437-0113	Antenna Theory	E	3
20-437-0114	Antenna Design Lab	E	1
20-437-0115	Neural Networks	E	3
20-437-0116	Neural Networks Lab	E	1
SemesterII **CourseCode**	**Name of the Course**	**C/E**	**Credits**
20-437-0201	Seminar	C	1
20-437-0202	Image and Video Processing	C	3
20-437-0203	Wireless Communication Techniques	C	3
20-437-0204	Communications Laboratory	C	1
	Elective-III (Specialization)	E	3
Elective-IV (Specialization)		E	3
Elective-Lab (Specialization)		E	1
Elective-V (General)		E	3
Total credits			**18**

Specialization Electives

VLSI and Embedded Systems			
20-437-0205	Design Verification and Testing	E	3
20-437-0206	Design Verification Lab	E	1
20-437-0207	Real Time Operating Systems	E	3
20-437-0208	Real Time Operating Systems Lab	E	1
Microwave and Radar Engineering			
20-437-0209	Electromagnetic Interference and Compatibility	E	3
20-437-0210	EMI/EMC Lab	E	1
20-437-0211	Radar Systems	E	3
Robotics and Intelligent Systems			
20-437-0212	Mobile Robotics	E	3
20-437-0213	Mobile Robotics Lab	E	1
20-437-0214	Deep Neural Network Signal Processing	E	3
20-437-0215	Deep Neural Network Signal Processing Lab	E	1
General Electives			
20-437-0216	Machine Learning	E	3
20-437-0217	Analog Integrated Circuits	E	3
20-437-0218	Adaptive Signal Processing	E	3

20-437-0219	RFIC Design	E	3
20-437-0220	Signal Integrity for High-Speed Digital Design	E	3
20-437-0221	Advanced Electromagnetic Engineering	E	3
20-437-0222	Computational Electromagnetics	E	3
20-437-0223	Software Defined Radios	E	3

Semester III

Course Code	Name of the Course	C/E	Credits
20-437-0301	Project Part 1	C	15
20-437-0302	NPTEL(minimum 8 weeks duration) /MOOC course (with pre approval of Department)	C	3
Total credits			**18**

Semester IV

Course Code	Name of the Course	C/E	Credits
20-437-0401	Project Part 2	C	18

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

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 13-211-0101	Engineering Mathematics - I	C	3
IN 13-211-0102	Engineering Physics	C	3
IN 13-211-0103	Engineering Chemistry	C	3
IN 13-211-0104	Basic Electronics	C	4
IN 13-211-0105	Electrical Engineering – I	C	3
IN 13-211-0106	Technical Communication	C	2
	Practicals		
IN 13-211-011	Engineering Graphics	C	2
IN 13-211-012	Mechanical and Electrical Workshop	C	2
	Total		**22**

Semester II

Course Code	Course	C/E	Credits
IN 13-211-0201	Engineering Mathematics – II	C	3
IN 13-211-0202	Analog Electronics	C	3
IN 13-211-0203	Electrical Engineering – II	C	3
IN 13-211-0204	Engineering Mechanics	C	4
IN 13-211-0205	Material Sciences	C	3
IN 13-211-0206	Ecology and Environmental Science	C	2
	Practicals		
IN 13-211-021	Basic Electronics Lab	C	2
IN 13-211-022	Computer Programming	C	2
	Total		**22**

Semester III

Course Code	Course	C/E	Credits
IN 13-211-0301	Engineering Mathematics – III	C	4
IN 13-211-0302	Digital Electronics	C	4
IN 13-211-0303	Linear Integrated Circuits	C	3
IN 13-211-0304	Electrical and Electronics Instruments	C	3
IN 13-211-0305	Mechanical Engineering	C	3
	Practicals		
IN 13-211-031	Ana log Electronics Lab	C	2
IN 13-211-032	Electrical Machines and Measurement Lab	C	2
IN 13-211-0307	Viva-Voce	C	1
	Total		**22**

Semester IV

Course Code	Course	C/E	Credits
IN 13-211-0401	Engineering Mathematics – IV	C	3
IN 13-211-0402	Principles of Measurement and Instrumentation	C	4
IN 13-211-0403	Control Engineering – I	C	4
IN 13-211-0404	Power Electronics	C	3
IN 13-211-0405	Pneumatic and Hydraulic System	C	3
	Practicals		
IN 13-211-041	Digital Electronics Lab	C	2
IN 13-211-042	Material Science Lab	C	2
IN 13-211-0407	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	Bio-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	18 (15+3 Sponsored)	Full Time Professional

	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.		

DETAILS OF FACULTY

Sl. No.	**Name & Designation**	**Specialization**	**Communication**
1.	Dr. K.N. Madhusoodanan Professor & Head	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	Industrial and Process Instrumentation	sanjo@cusat.ac.in 8547854816

	(on contract)		
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
10.	Smt. Soni P Assistant Professor (on contract)	Applied Electronics and Embedded Systems	sonip@cusat.ac.in 9446869524
11.	Smt. Nimmy John Assistant Professor (on contract)	Electronics and Instrumentation	nimmyjohnt@cusat.ac.in 9495565981
12.	Smt. Anju V Sathyan Assistant Professor (on contract)	Signal Processing	anjuvsathyan@cusat.ac.in 8281171094

DEPARTMENT OF POLYMER SCIENCE AND RUBBER TECHNOLOGY

B.TECH. POLYMER SCIENCE AND ENGINEERING

SEMETSER I

SI. No.	CourseCode	Subject	L	T	P	Credits	Marks		
							Internal	External	Total
1	20-214-0101	EngineeringMathematicsI	2	1	0	3	50	50	100
2	20-214-0102	EngineeringPhysics	2	1	0	3	50	50	100
3	20-214-0103	EngineeringChemistry	2	1	0	3	50	50	100
4	20-214-0104	EngineeringGraphics	1	2	0	3	50	50	100
5	20-214-0105	Basic Electrical Engineering andElectronics	2	1	0	3	50	50	100
6	20-214-0106	SoftSkillDevelopment	2	0	0	2	50	50	100
7	20-214-0111	Introduction to IndustrialChemicalAnalysis	0	0	2	1	50	-	50
8	20-214-0112	Basic Electrical Engineering andElectronics	0	0	2	1	50	-	50
9	20-214-0113	LanguageLab	0	0	2	1	50	-	50
	20-214-0121	Seminar(Non–Credit)	0	0	3	–			
	20-214-0122	Library(Non–Credit)	0	0	4	–			
		-							
		Total	**11**	**6**	**13**	**20**	**450**	**300**	**750**

SEMESTER II

1	20-214-0201	EngineeringMathematicsII	2	1	0	3	50	50	100
2	20-214-0202	EngineeringMechanics	2	1	0	3	50	50	100
3	20-214-0203	EnvironmentalStudies	3	0	0	3	50	50	100
4	20-214-0204	MechanicalEngineering	2	1	0	3	50	50	100
5	20-214-0205	Introduction to MacromolecularScienceandEngineering	3	0	0	3	50	50	100
6	20-214-0206	FluidMechanics	2	1	0	3	50	50	100
7	20-214-0211	MechanicalEngineeringWorkshop	0	0	3	1	50	-	50
8	20-214-0212	PolymerSynthesis	0	0	2	1	50	-	50
	20-214-0221	Seminar(Non─Credit)	0	0	3	–			
	20-214-0222	Library(Non─Credit)	0	0	4	–			
		Total	**14**	**4**	**12**	**20**	**400**	**300**	**700**

SEMESTER III

1	20-214-0301	EngineeringMathematicsIII	2	1	0	3	50	50	100
2	20-214-0302	Natural Rubber Production andTechnology	3	0	0	3	50	50	100
3	20-214-0303	StrengthofMaterials	2	1	0	3	50	50	100
4	20-214-0304	Heat andMassTransfer	2	1	0	3	50	50	100
5	20-214-0305	OrganicChemistry	3	0	0	3	50	50	100
6	20-214-0311	ComputerProgramming	2	0	3	3	100	-	100
7	20-214-0312	IdentificationofPolymers	0	0	2	1	50	-	50
8	20-214-0313	ChemicalEngineeringLab	0	0	2	1	50	-	50
	20-214-0321	Seminar(Non─Credit)	0	0	3	–			
	20-214-0322	Library(Non─Credit)	0	0	3	–			
		Total	**14**	**3**	**13**	**20**	**450**	**250**	**700**

SEMESTER IV

1	20-214-0401	AppliedStatistics	2	1	0	3	50	50	100
2	20-214-0402	Quality Management SystemsandSafety	3	0	0	3	50	50	100
3	20-214-0403	PolymerSynthesisand Manufacture	3	0	0	3	50	50	100
4	20-214-0404	ScienceandEngineeringofRubbers	3	0	0	3	50	50	100
5	20-214-0405	PlasticsMaterials	3	0	0	3	50	50	100
6	20-214-0406	ReviewSeminar	0	4	0	1	100	-	100
7	20-214-0411	Polymer Synthesis, Modificationandcharacterization	0	0	4	2	50	-	50
	20-214-0421	Seminar	0	0	3	1	30		30
	20-214-0422	Library(Non─Credit)	0	0	4	–			
		Total	**14**	**5**	**11**	**19**	**430**	**250**	**680**

SEMESTER V

1	20-214-0501	PlasticProcessing	3	0	0	3	50	50	100
2	20-214-0502	PolymerPhysics	3	0	0	3	50	50	100
3	20-214-0503	Rubber Processing and ProductsManufacture	3	0	0	3	50	50	100
4	20-214-0504	Fiber Science andTechnology	3	0	0	3	50	50	100
5	20-214-0521-23	ElectiveI	3	0	0	3	50	50	100
6	20-214-0524-26	ElectiveII	3	0	0	3	50	50	100
7	20-214-0511	Polymer Characterizationandproperties	0	0	2	1	50	-	50
8	20-214-0512	PolymerProcessing lab	0	0	3	1	50	-	50
	20-214-0521	Seminar	0	0	3	1	30		30
	20-214-0522	Library(Non─Credit)	0	0	4	–			
		Total	**18**	**0**	**12**	**21**	**430**	**300**	**730**

SEMESTER VI

1	20-214-0601	LatexTechnology	3	0	0	3	50	50	100
2	20-214-0602	Characterization and TestingMethods	3	0	0	3	50	50	100
3	20-214-0603	PolymerProductsDesign	3	0	0	3	50	50	100
4	20-214-0604	PolymerRheology	3	0	0	3	50	50	100
5	20-214-0621-23	ElectiveIII	3	0	0	3	50	50	100
6	20-214-0624-26	ElectiveIV	3	0	0	3	50	50	100
7	20-214-0605	MinorProject	0	0	3	1	100	-	100
8	20-214-0611	Latexand DryrubberTechnology	0	0	2	1	100	-	100
	20-214-0621	Seminar	0	0	3	1	30		30
	20-214-0622	Library(Non─Credit)	0	0	4	–			
		Total	**18**	**0**	**12**	**21**	**530**	**300**	**830**

SEMESTER VII

1	20-214-0701	PolymerCompositesandBlends	3	0	0	3	50	50	100
2	20-214-0702	IntroductiontoMouId and Design	3	0	0	3	50	50	100
3	20-214-0703	FailureAnalysisofPolymers	3	0	0	3	50	50	100
4	20-214-0704	IndustrialManagement	3	0	0	3	50	50	100
5	20-214-0721-23	ElectiveV	3	0	0	3	50	50	100
6	20-214-0724-26	ElectiveVI	3	0	0	3	50	50	100
7	20-214-0711	PolymerProductsTesting	0	0	2	1	50	-	50
	20-214-0712	Reviewpaper basedonElective			4	1	60		60
	20-214-0721	Softskill/startupworkshop(Non —Credit)	0	0	3	–			
	20-214-0722	Library(Non–Credit)	0	0	3	–			
		Total	**18**	**0**	**12**	**20**	**410**	**300**	**710**

SEMESTER VIII

1	20-214-0801	ProjectWorkReportandVivaVoce	0	0	22	12	200	200	400
2	20-214-0802	IndustrialTraining	0	0	4	3	50	50	100
3	20-214-0821	OpenElectiveI	2	0	0	2	–	50	50
4	20-214-0822	OpenElectiveII	2	0	0	2	–	50	50
		Total	**4**	**0**	**26**	**19**	**250**	**350**	**600**

Electives	
ElectiveI	20-214-0521AdhesivesTechnology 20-214-0522SurfaceCoatings 20-214-0523DisasterManagement
ElectiveII	20-214-0524 Biodegradable Polymers20-214-0525PolymersandEnvironment 20-214-0526Polymersforpackaging
ElectiveIII	20-214-0621 Polymers for Electrical & Electronics Applications20-214-0622Footwear Technology 20-214-0623PolymerRecycling
ElectiveIV	20-214-0624SpecialtyPolymers 20-214-0625MaterialsScience 20-214-0626IntroductiontoBiomaterialsandMedicalDevices
ElectiveV	20-214-0721TyreTechnology 20-214-0722Polymerprocessmodelingandsimulation20-214-0723 Smartand intelligentpolymers
ElectiveVI	20-214-0724PolymersinSpace 20-214-0725Polymernanocomposites 20-214-0726ProfessionalEthicsinEngineering

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

B.TECH(Naval Architecture &Ship Building)

SEMESTER I

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0101	TechnicalCommunication	2	1	-	3	2	100	100	200
20-215-0102	Mathematics I	3	1	-	4	3	100	100	200
20-215-0103	AppliedPhysics	3	1	-	4	3	100	100	200
20-215-0104	AppliedChemistry	3	1	-	4	3	100	100	200
20-215-0105	EngineeringMechanicsI	4	1	-	5	4	100	100	200
20-215-0106	EngineeringGraphics	4	1	-	5	4	100	100	200
20-215-0107	WorkshopPracticeI	2	-	3	5	1	50	-	50
Total		**21**	**6**	**3**	**30**	**20**	**650**	**600**	**1250**

SEMESTER II

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0201	MathematicsII	3	1	-	4	3	100	100	200
20-215-0202	Computer Programming	3	-	1	4	3	100	100	200
20-215-0203	ProfessionalEthics	2	1	-	3	2	100	100	200
20-215-0204	ElectricalEngineering	3	1	-	4	3	100	100	200
20-215-0205	MachineDrawing	4	1		5	4	100	100	200
20-215-0206	IntroductiontoNaval Architecture	3	1	-	4	3	100	100	200
20-215-0207	WorkshopPracticeII	1	-	2	3	1	50	-	50
20-215-0208	Electrical EngineeringLab	1	-	2	3	1	50	-	50
Total		**20**	**5**	**5**	**30**	**20**	**700**	**600**	**1300**

SEMESTER III

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0301	MathematicsIII	3	1	-	4	3	100	100	200
20-215-0302	Fluid MechanicsI	3	1	-	4	3	100	100	200
20-215-0303	MechanicsofSolids	3	1	-	4	3	100	100	200
20-215-0304	Instrumentation	3	1		4	3	100	100	200
20-215-0305	Applied Thermodynamics	3	1	-	4	3	100	100	200
20-215-0306	BasicShipTheory	3	1	-	4	3	100	100	200
20-215-0307	Fluid MechanicsLab	2	-	4	6	1	50	-	50
20-215-0308	Internship	-	-	-	-	1	50	-	50
	Total	**20**	**6**	**4**	**30**	**20**	**700**	**600**	**1300**

SEMESTER IV

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0401	MathematicsIV	3	1	-	4	3	100	100	200
20-215-0402	Fluid MechanicsII	3	1	-	4	3	100	100	200
20-215-0403	Design of Machine Elements	2	2	-	4	3	100	100	200
20-215-0404	AnalysisofStructures	3	1	-	4	3	100	100	200
20-215-0405	Material Science	3	1	-	4	3	100	100	200
20-215-0406	StabilityofShips	3	1	-	4	3	100	100	200
20-215-0407	LanguageLab	-	-	2	2	1	50	-	50
20-215-0408	MaterialTestingLab	-	-	4	4	1	50	-	50
Total		**17**	**7**	**6**	**30**	**20**	**700**	**600**	**1300**

SEMESTER V

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0501	ResistanceofShips	3	1	-	4	3	100	100	200
20-215-0502	PropulsionofShips	3	1	-	4	3	100	100	200
20-215-0503	ControllabilityofShips	3	1	-	4	3	100	100	200
20-215-0504	Ship Motions inSeaway	3	1	-	4	3	100	100	200
20-215-0505	ElectricalSystemson Ships&Shipyards	3	1	-	4	3	100	100	200
20-215-0506	JoiningTechniquesin Ship buildingTechnology	3	1	-	4	3	100	100	200
20-215-0507	ModelMaking TechniquesLab	2	-	4	6	1	50	-	50
20-215-0508	Internship	-	-	-	-	1	50	-	50
Total		**20**	**6**	**4**	**30**	**20**	**700**	**600**	**1300**

SEMESTER VI

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0601	ComputerAidedDesign &Drafting	3	1	-	4	3	100	100	200
20-215-0602	Ship StructuralAnalysis – I	3	1	-	4	3	100	100	200
20-215-0603	Structural Design ofShips	3	1	-	4	3	100	100	200
20-215-0604	ShipDesign	3	1	-	4	3	100	100	200
20-215-0605	Ship ProductionTechnology	3	1	-	4	3	100	100	200
20-215-0606	MarineEngineering	3	1	-	4	3	100	100	200
20-215-0607	Marine HydrodynamicsLab	1	-	2	3	1	50	-	50
20-215-0608	Marine EngineeringLab	1	-	2	3	1	50	-	50
Total		**20**	**6**	**4**	**30**	**20**	**700**	**600**	**1300**

SEMESTER VII

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0701	Ship ProductionManagement	4	-	-	4	3	100	100	200
20-215-0702	Ship StructuralAnalysis–II	3	1	-	4	3	100	100	200
20-215-0703	PracticalShipDesign	3	1	2	6	3	200		200
20-215-E7n	ElectiveI	3	1	-	4	3	100	100	200
20-215-E7n	Elective II	3	1	-	4	3	100	100	200
20-215-0704	ProjectWork	2	2	4	8	4	100		100
20-215-0705	Internship	-	-	-	-	1	50	-	50
Total		**18**	**6**	**6**	**30**	**20**	**750**	**400**	**1150**

SEMESTER VIII

Code	Subject	Hrs/Week				Credit	Marks		
		L	T	P	Total		Internal Exam	University Exam	Total
20-215-0801	Special Problem &Seminar	-	2	-	2	2	100	-	100
20-215-E8n	ElectiveIII	3	1	-	4	3	100	100	200
20-215-E8n	Elective IV	3	1	-	4	3	100	100	200
20-215-0802	Project Work& VivaVoce	12	-	8	20	12	300	200	500
Total		**18**	**2**	**10**	**30**	**20**	**800**	**400**	**1200**

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& Head	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.Sc. (Five year integrated) in Photonics

SEMESTERI

Course	Subject	Work/Week			Credit	Marks		
		Lecture	Lab	Tutorial		IE	SE	Total
ISP1101	Mechanics and Wave Phenomena	3		1	3	50	50	100
ISP1102	Electricity and Magnetism	3		1	3	50	50	100
ISP1103	Optics I-Geometrical Optics	3		1	3	50	50	100
ISP1104	Mathematics I	3		1	3	50	50	100
ISP1105	Statistical Methods	3		1	3	50	50	100
ISP1106	Lab+Course Viva		6		3	100 +50		150
ISP1107	Communicative English	2		1	2	100		100
Total for Semester I		**17**	**6**	**6**	**20**	**500**	**250**	**750**

SEMESTERII

Course	Subject	Work/Week			Credit	Marks		
		Lecture	Lab	Tutorial		IE	SE	Total
ISP1201	Electronics I- Basic Electronics	3		1	3	50	50	100
ISP1202	Optics II -Physical Optics	3		1	3	50	50	100
ISP1203	Mathematics II	3		1	3	50	50	100
ISP1204	Thermodynamics and Thermal Physics	3		1	3	50	50	100
ISP1205	Nuclear and Particle Physics	3		1	3	50	50	100
ISP1206	Lab+Course Viva		6		3	100 +50		150
ISP1207	History of Science and Technology	1		1	1	50		50
Total for Semester II		**16**	**6**	**6**	**19**	**450**	**250**	**700**

SEMESTER III

Course	Subject	Work/Week			Credit	Marks		
		Lecture	Lab	Tutorial		IE	SE	Total
ISP1301	Electronics II Analog Electronics	3		1	3	50	50	100
ISP1302	Classical Mechanics	3		1	3	50	50	100
ISP1303	Optics III- Optical Instrumentation	3		1	3	50	50	100
ISP1304	Mathematics III	3		1	3	50	50	100
ISP1305	Atomic Spectroscopy	3		1	3	50	50	100
ISP1306	Lab+ Course Viva		6		3	100+ 50		150
ISP1307	Seminar	1		0	1	50		50
Total for Semester III		**16**	**6**	**5**	**19**	**450**	**250**	**700**

SEMESTER IV

Course	Subject	Work/Week			Credit	Marks		
		Lecture	Lab	Tutorial		IE	SE	Total
ISP1401	Electronics III Digital circuits and microprocessors	3		1	3	50	50	100
ISP1402	Mathematical Modeling and computational techniques	3		1	3	50	50	100
ISP1403	Quantum Mechanics I	3		1	3	50	50	100
ISP1404	Electromagnetic Theory and Relativistic Phenomena	3		1	3	50	50	100
ISP1405	Mathematics IV	3		1	3	50	50	100
ISP1406	Computer lab+ Course Viva		6		3	100+ 50		150
ISP1407	Workshop		2	0	1	100		100
ISP1408	Seminar	1			1	50		50
Total for Semester IV		**16**	**8**	**5**	**20**	**550**	**250**	**800**

SEMESTER V

Course	Subject	Work/Week			Credit	Marks		
		Lecture	Lab	Tutorial		IE	SE	Total
ISP1501	Optics IV -Applied Optics	3		1	3	50	50	100
ISP1502	Electronics IV-Electronic Instrumentation	3		1	3	50	50	100
ISP1503	Quantum Mechanics II	3		1	3	50	50	100
ISP1504	Materials Science	3		1	3	50	50	100
ISP1505	Molecular Spectroscopy	3		1	3	50	50	100
ISP1506	Lab+ Course Viva		6		3	100 +50		150
ISP1507	Seminar	1			1	50		50
Total for Semester V		**16**	**6**	**5**	**19**	**450**	**250**	**700**

SEMESTER VI

Course	Subject	Work/Week			Credit	Marks		
		Lecture	Lab	Tutorial		IE	SE	Total
ISP1601	Photonics I-Optoelectronics	3		1	3	50	50	100
ISP1602	Photonics II-Fiber Optics	3		1	3	50	50	100
ISP1603	Photonics III-Laser Physics	3		1	3	50	50	100
ISP 1604	Statistical Mechanics	3		1	3	50	50	100
*ISP1605	Project & Project Viva		9		3	150		150
ISP1606	Lab+ Course Viva		6		3	100 +50		150
Total for Semester VI		**12**	**15**	**4**	**18**	**500**	**200**	**700**
Total for Semester I-VI					**115**	**2900**	**1400**	**4300**

* Project guidance of 9 hours shall be considered as equivalent to 3 lab hours (per project) for workload calculation

SEMESTER VII

(Course number of electives 2EX1- 2EX7 correspond to course numbers of electives chosen from the list of electives given separately. For example if 2E01 Advanced Quantum Mechanics and 2E03 Nanophotonics are given as the Elective I and Elective II respectively in the VII semester then ISP 2EX1and ISP 2EX2 will be ISP 2E01 and 2E03 respectively)

Code	Title	Work/Week			Credit	Marks		
		Theory	Lab	Tutorial		IE	SE	Total
ISP2701	Advanced Solid state theory	4		1	4	50	50	100
ISP2702	Laser Systems and applications	4		1	4	50	50	100
ISP2EX1	Elective I	3		1	3	50	50	100
ISP2EX2	Elective II	3		1	3	50	50	100
ISP2703	Lab I Electronics+ Course Viva		4		2	100 +50		150
ISP2704	Lab II- Photonics Lab		4		2	100		100
ISP2705	Seminar	1			1	50		50
Total for Semester VII		**15**	**8**	**4**	**19**	**500**	**200**	**700**

SEMESTER VIII

Code	Title	Work/Week			Credit	Marks		
		Theory	Lab	Tutorial		IE	SE	Total
ISP2801	Nonlinear Optics	4		1	4	50	50	100
ISP2802	Digital Signal Processing and Optical Signal Processing	4		1	4	50	50	100
ISP2EX3	Elective III	3		1	3	50	50	100
ISP2EX4	Elective IV	3		1	3	50	50	100
ISP2803	Lab I Electronics + Course Viva		4		2	100 +50		150
ISP2804	Lab II Photonics		4		2	100		100
ISP2805	Seminar	1			1	50		50
Total for Semester VIII		**15**	**8**	**4**	**19**	**500**	**200**	**700**

SEMESTER IX

Code	Title	Work/Week			Credit	Marks		
		Theory	Lab	Tutorial		IE	SE	Total
ISP2901	Optical Communication	4		1	4	50	50	100
ISP2902	Lab I Fiber Optics Lab + Course Viva		4		2	100 +50		150
ISP2903	Lab II Photonics Lab		4		2	100		100
ISP2904	Seminar	1			1	50		50
ISP 2EX5	Elective V	3		1	3	50	50	100
ISP 2EX6	Elective VI	3		1	3	50	50	100
ISP 2EX7	Elective VII	3		1	3	50	50	100
Total for Semester IX		**14**	**8**	**4**	**18**	**500**	**200**	**700**

SEMESTER X

Code	Title	Work/Week			Credit	Marks		
		Theory	Lab	Tutorial		IE	SE	Total
*ISP2X0 1	Project & project viva				16	200+100	200+100	600
	TOTALfor Semester X				**16**	**300**	**300**	**600**

* Project guidance of tenth semester shall be considered as equivalent to 6 lab hours (per project) for workload calculation

Total Credit for the Course

Semesters	Credit	Marks		
		IE	SE	Total
Total for VII-X	72 (Core 51 and Electives 21credits)	1800	900	2700
Total for I-VI	115	2900	1400	4300
Total for I-X	187	4700	2300	7000

Coursecode	**Paper**	**Core/Elective**	**Credits**	**Marks**
20-441-0201	FibreOptics&Applications	C	4	100
20-441-0202	LabcourseII	C	3	100
20-441-0203	MiniProject,Seminar	C	2	100

LIST OF ELECTIVES

ISP 2E01	Advanced Quantum Mechanics
ISP2E02	Biophotonics
ISP2E03	Nanophotonics
ISP2E04	Microwave Photonics
ISP 2E05	Network Analysis and Communication Engineering
ISP2E06	Advanced Laser Systems
ISP2E07	Quantum Optics
ISP2E08	Optomechanical Engineering
ISP2E09	Optical Sensor Technology
ISP 2E10	Solar Cells: Concepts and Theory
ISP 2E11	Discrete mathematics and Wavelets Theory
ISP2E12	Optical Computing
ISP2E13	Atom Optics
ISP2E14	Laser Spectroscopy
ISP 2E15	Advanced Electromagnetic Theory
ISP 2E16	Photonic bandgap structures and Metamaterials
ISP 2E17	Holography and speckle metrology
ISP2E18	Industrial Photonics

M.Tech OPTO-ELECTRONICS & LASER TECHNOLOGY

SemesterI

Coursecode	Paper	Core/ Elective	Credits	Marks
20-441-0101	ModernOptics	C	4	100
20-441-0102	LaserTechnology	C	4	100
20-441-0103	Optoelectronics	C	4	100
20-441-0104	LabCourseI	C	3	100
AnyOneElective				
20-441-0105	AdvancedEngineeringPhysics	E	3	100
20-441-0106	DigitalCommunication	E	3	100
	Total for Semester 1		**18**	**500**

SemesterII

Any3electives				
20-441-0204	LaserApplications	E	3	100
20-441-0205	OpticalCommunicationTechnology	E	3	100
20-441-0206	NonlinearOpticsOSP&OC.	E	3	100
20-441-0207	Biophotonics	E	3	100
20-441-0208	LaserSpectroscopy	E	3	100
20-441-0209	ScienceandTechnologyofPlasma	E	3	100
	TotalforSemesterII		**18**	**600**

SemesterIII

Coursecode	Paper	Core/Elective	Credits	Marks
20-441-0301	Project	C	15	300
20-441-03XX	OpenElective*	E	3	100
	TotalSemesterIII		**18**	**400**

*Management for Scientists and Engineers offered by School of Management Studies OR Any interdisciplinary Electives offered in the MOOC platform

SemesterIV

Coursecode	Paper	Core/Elective	Credits	Marks
20-441-0401	Project	C	18	400
	Totalfortheprogramme		**72**	**1900**

Details of Faculty

Sl.No.	Name & Designation	Specialization	Communication (Residence)
1.	Dr.Pramod Gopinath Professor & Director	Laser Plasma Spectroscopy,Non- linear optics, Nano Photonics	9446069743ramod@cusat.ac.in
2.	Dr.M.Kailasnath Professor	Optical fibre devices, Nano Photonics	0484-2711525 kailas@cusat.ac.in
3.	Dr. A Mujeeb Professor	Opto electronics, Biophotonics, Optical NDT	9447419205 0471-2455786 mujeebpoovar@gmail.com mujeeb@cusat.ac.in
4.	Dr.Sheenu Thomas Professor	Amourfous solid fibre optics material optics Nonlinear 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 Nonlinear Optics	9496061610 manu.vaishak@gmail.com
7.	Mr.Muhammad Rishad	Ultrafast Photonics Meta	9400876955 kpmrishad@gmail.com

	Assistant Professor	materials	
8.	Dr.Priya Rose T Assistant Professor	Ultrafast Photonics, Ultrafast Lasers, Laser Plasma	8281982228 priya.rose@gmail.com priyarose@cusat.ac.in
	Dr. C.P. Girijavallabhan Visiting Professor	Nano Photonics, Optical Instrumentation	9847040842 gvallabhan@gmail.com
9.	Dr. V.P.N.Nampoori Visiting Professor	Laser Plasma Spectroscopy, Non-linear optics, Nano Photonics, Fibre Optics	0484-2576263 nampoori@gmail.com
10.	Dr.P.Radhakrishnan Visiting Professor	Laser Spectroscopy and Non-linear Optics	0484-2604811 radhak@cusat.ac.in
11.	Dr. Bini P Pathrose Assistant Professor (Contract)	Electronics/Opto electronics	9446061126 binivibin@gmail.com
12.	Dr. Ratheesh R Assistant Professor (Contract)	Electronics/Opto electronics	9496129087 mailtoretheesh@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 8078078087mnr.praveen@cusat.ac.in

DEEN DAYAL UPADHYAY KAUSHAL KENDRA

M.Voc. (Master of Vocation) in Mobile Phone Application Development

SEMESTER I

Course Code	Course	C/E	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 Technologies (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	C/E	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 Database) (LAB)	C	2
KAD 2209	Internship – Android App Development	C	12
Total			**36**

SEMESTER III

Course Code	Name of the Course	**C/E**	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.	Name of the Course	**C/E**	Credits
KAD 2401	Main 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 – 100Marks, 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 Mobile/email**
1	Dr.K.A.Zakkariya Director	OB, HRM & Marketing	9846554444 zakkariya@gmail.com
2	Dr.Renjini.D., Associate Professor	Marketing, Business Model Analysis, Marketing Research	9895888599 renjinidas@yahoo.com
3	Dr.George Joseph, Assistant Professor	Project Management, Entrepreneurship, Operations Management	9995468697 cgeorgejoseph@gmail.com
4	Vinod.V.Nair, Assistant Professor	Operation Management, Technology Consulting	9447620973 vinodvnair@ieee.org
5	Vinu Varghees.V.V., Assistant Professor	Android App Development, Data Mining, Network security	9446655362 vinghese@gmail.com

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 of study	Department	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			
ShipTechnology	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.*