School of Applied Sciences

Academic Regulations

B.Sc.

Degree Programmes

Centurion UNIVERSITY

Shaping Lives...
Empowering Communities...

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT

Odisha

www.cutm.ac.in

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Preface

The philosophy of B.Sc Curriculum design is to produce sciences graduates aiming for; **A. Higher studies B. Job, C. Entrepreneur.** The process involves input from Industry professional, Academician and Alumni. It is observed that a student choses science discipline without proper information and exposure. The scope for change of discipline in a traditional curriculum is limited. In order to address the above issues University offers Choice Based Credit Systems curriculum w.e.f 2016.

1. Academic Regulations & Policies:

This section gives an overview of the different Academic Rules and Regulation to be followed in the Centurion University of Technology and Management (CUTM) for the Bachelor of science Programs. Specifically, it contains information on Choice Based Credit System (CBCS), including Registration, Selection of Subjects, Time Table, Grading System, Examination Policy, Attendance Policy and Academic Rules applicable at CUTM.

1.1 Choice Based Credit System

The Choice Based Credit System (CBCS) is made available to all science students.

1.11 A. Structure of Choice Based Credit System; B.Sc

Basket	**Basket Category**	**Minimum Credits to be required**	**Minimum Credits a student can acquire**
I	Ability Enhancement Compulsory Courses	8	8
II	Skill Enhancement Courses	12	12
III	Core Courses	84	84
IV	Generic Elective Courses	24	24
V	Domain Course	18 to 29	21 to 32
	Total Credits	**146**	**160**

1.12 Guidelines:

- The student can choose her/his pace of Credit Acquisition based on a predetermined academic plan, with the support of faculty mentor.
- The entire syllabus is divided into Baskets of subjects comprising of Ability Enhancement Compulsory Courses (Basket I), Skill Enhancement Courses (Basket II), and Core Courses (Basket III); Generic Elective Courses (Basket IV); and Domain Courses (Basket V).
- From a portfolio of courses in each Basket, a student has the option of choosing any combination of Subjects, fulfilling minimum Credit requirement from that Basket.
- There is no limit on the number of Credits to be registered in any semester. However, while offering courses, all the subjects must be set in timetable without overlap and a subject must have minimum strength of students to offer. For the award of degree in a particular

discipline/branch, a student has to acquire 146 Credits and complete the requisite Credits from each basket.

- The student has the flexibility to decide the duration of his/her degree program completion period. However, the maximum duration that a student can take to graduate shall not be more than 6 years from the date of registration to the degree program.
- Subjects are divided in to different types, e.g. Theory, Practice, Project, Theory & Practice, Theory & Project, Practice & Project, and Theory & Practice & Project. A Student has no restriction on crediting any number of Subjects from any type. The student can obtain a certificate of acquisition of Skill for most of the Practice Subjects.
- A student must pass in all prerequisite subject(s), if any, before registering for a particular subject.
- While the student has the option of exercising her/his choice in crediting a subject, the same will not be offered by the University, if a minimum number of students do not register for the said subject. The concerned department/faculty will notify the minimum student requirements, based on their specific need.
- The CBCS is not for selecting a subject on the basis of how easy or difficult it is, but on the basis of student's goal of getting right employment/higher education/entrepreneurship. Accordingly, for every student, a dynamic course plan, aligned to his/her goal, needs to be in place.
- A student has the option of dropping a subject (midway/at the end of semester after failure) and register for a new subject of relevant basket in subsequent semester and fulfils the credit requirements.

1.13 Registration, Selection of Subjects & Time Table:

This section gives the details of the University Registration Card, Registration to different Subjects and Time Table for Course work. Immediately after admission, the students' particulars are to be stored in ERP/MIS of the University. Any information related to the students required by any Department/Entity will be collected from the ERP/MIS only.

1.13.1 University Registration Card:

A Student is issued University Registration Card after admission process. University Registration number continues to be his/her Registration Number for all examinations during his/her tenure of study. This card is also essential for attending classes in a college and appearing in examinations. This is an IMPORTANT document and the student must take care of it. Duplicate University Registration Card will be issued only after recommendation by the Dean of respective college on paying the prescribed fee.

1.13.2 Subject-wise Registration:

All registered students of the University have to register for each of the subjects they are required to study before commencement of a semester. A student has to apply in a specified format for subject wise registration for each semester with prescribed fees to his/her college Dean. The same will be scrutinized and registration confirmation will be displayed on the notice board and in MIS. The following methodology is adopted for registration procedure.

i. Head of the Departments to submit the titles of the subjects to be offered, for all the Baskets, to the Dean.
ii. The MIS section has to upload all these subjects in the MIS/ERP.

iii. One week slot will be provided to the students for counselling & registration in every semester.

iv. Immediately after admission in the first year, each faculty mentor will be allotted 20 students for continuous guidance.

v. It is the responsibility of faculty mentor and concerned HOD to counsel and make the students understand the CBCS and select the subjects of their choice (aligned to their goal). Student-wise tracker will be developed at the beginning of the first semester. It will consist of a portfolio of subjects keeping in mind student's goal (i.e. employment/higher education/entrepreneurship). Colleges will prepare slots for students and their faculty mentors for this purpose.

vi. The Mentor concerned can make note of the subjects selected by his/her students from the tracker and then the students are guided to freeze these in MIS.

vii. There is no restriction on the number of credits to be registered by any student, although expected normal credit load for a semester is 24 to 26 and 3 years is the minimum duration for award of degree.

- A student can go at less than normal pace by registering fewer credits.
- Further, a student can register for more than normal credits in a semester. He/she can judiciously credit Subjects in advanced topics, interdisciplinary areas and undertake skill Subjects and project works.

viii. A Student is allowed to register for a subject only after clearing its pre requisites, if any.

ix. After the choice lock, the time table will be finalised. Care will be taken to accommodate maximum number of students for the subject choices locked. Wherever it is not feasible, concerned student(s) will be guided to defer the subject chosen to future semesters and register another feasible subject.

x. If any student does not register during the given slot or joins the college later, then he/she will have to exercise choice based on the time table.

xi. Any student falling short of credits for graduation after the final semester examination, has the chance to complete the required shortfall by appearing the examination organised before the convocation of his/her batch.

xii. MIS will show cumulative student credits under "My Credits". A report on student wise credits can be obtained from MIS for documentation.

1.13.3 Time Table for Instructions:

Each college will provide the Time Table for the subjects being offered in a semester after the subject registration for that semester. The time table will indicate the name of the Subject facilitators.

1.13.4 Duration of Curriculum and Calendar:

- Each year shall be divided into two Semesters – Autumn Semester (July to December) and Spring Semester (January to June). Students normally join in Autumn Semester. The number of teaching weeks in each semester will be 15 to 18 with a minimum of 90 teaching days, excluding the period of examination.
- Each year the University will draw out a calendar of academic and associated activities. Detailed curricula and syllabi will be as decided by the Academic Council with provision for required modification.
- The duration of the programmes will take note of statutory provisions that come into effect from time to time. The minimum duration of the B. Sc degree programmes is three years/six semesters. A student has the option to complete the B. Sc degree programme within six (6) years.

1.14 Grading System & Degree Requirement:

The University has a ten points grading system as below.

1.14.1 Categorization of Grades and Their Correlation

This section gives the details of the Grading system being followed by the University.

Qualification	Grade	Score on 100 Percentage Point	Point
Outstanding	'O'	90 & above up to 100	10
Excellent	'E'	80 & above but less than 90	9
Very Good	'A'	70 & above but less than 80	8
Good	'B'	60 & above but less than 70	7
Fair	'C'	50 & above but less than 60	6
Pass	'D'	40 & above but less than 50	5
Failed	'F'	Below 40	2
Malpractice	'M'	---	0
Absent	'S'	---	0

N.B. *Grade C shall be considered as average, Grade D shall be pass Grade for theory and Grade C shall be Pass Grade for Practical / Sessional /Project.*

1.14.2 Definition of Terms:

The terms used in the above table are defined as follows:

a) Point – Integer equivalent of each letter grade
b) Credit – Integer signifying the relative emphasis of individual Subject item(s) in a semester as indicated by the course structure and syllabus
c) Credit Point – (b) multiplied by (a) for each Subject item
d) Credit Index – Sum of Credit Points, [i.e. Sum of (c)] of Subject items in a semester
e) Grade Point – (c) / (d)
f) Grade Point Average – Represented by Grade Point Indices as per section 1.4.3.
   - Semester Grade Point Index (SGPI)
   - Cumulative Grade Point Index (CGPI)

1.14.3 Grade Point Index:

The formulas for calculating the SGPI and CGPI are as follows:
SGPI = (Credit Index) / (Sum of Credits for a Semester)
CGPI = (Sum of Credit Index of all previous Semester)/(Credits of all previous Semesters) up to a semester

1.14.4 B. Sc Degree Requirements:

There shall be no class / division awarded to a student either at semester or degree level. A candidate will be eligible for award of B. Tech degree if he/she satisfies all the following conditions:

a) Has cleared all subjects with at least pass grade,
b) Has obtained 140 Credits,
c) Has obtained required Credits from each of the Baskets,
d) Has obtained at least satisfactory grade in CSR activities (i.e. NCC/NSS/Games/Sports/ Music/Debate/Quiz/Yoga) during the study period,
e) Has no dues to the University, and
f) Has no disciplinary action pending against him/her.

2. Examination Policy:

The section on Examination Policy gives specific guidelines, rules of the Examination and expected Examination Code of Conduct.

2.1 Eligibility for Examinations:

The eligibility criteria for appearing in the examinations of CUTM are as follows:

- A student has to maintain overall 75% attendance to be able to write all papers at end-semester examinations in a semester. The attendance is considered from the date of commencement of classes as per academic calendar of the university and is calculated based on the total number of working days available in a semester.
- The schedule of classes shall be notified through a time table before the beginning of the classes in the Semester. Attendance record will be compiled at the time of each class test and the students with poor attendance will be informed through notification. The guardian may be informed through a letter/SMS. Letters will be issued to the student and the guardian before he/she is debarred for appearing at University examination due to shortage of attendance. Examination Section shall be informed about the list of eligible/ineligible students for the Examination. Dean will monitor students' attendance.
- Concessions: A student who has been absent for short periods on health ground or due to participation in cultural, sports and other academic/official assignments in the interest of students, with prior written permission of the Dean/Head of the Department shall be permitted a concession of 10% in attendance (i.e. will be eligible for appearing in examination with a minimum of 65% attendance).
- A student will be allowed to appear in the Semester Examination in those theory subjects where his/her attendance is not less than 75% in case he/she does not have 75% overall attendance.
- A candidate shall be allowed in a Semester Examination only after he/she is issued an Admit Card for the relevant examination by the University through the Examination Section of the College.

- Students who have been found to indulge in malpractice during examination will be awarded 'M' grade in that subject. The University will take appropriate disciplinary action, as per rule.
- A student who is absent in any subject(s) for which he/she has registered will be awarded 'S' grade. He/she is permitted to appear in those Subjects in subsequent semester examinations after compensating for the course work missed and obtaining due permission from the respective College and University.
- A student may register to appear in a semester examination which she/he has not passed, with appropriate fee.

2.2 Evaluation System:

The University has a continuous evaluation system for each type of Subjects (Theory, Practice, Project, Theory & Practice, Theory & Project, Practice & Project, Theory, Practice & Project). For this purpose the university holds the following examinations.

- End Semester Examinations at the end of the Odd and Even Semester course work
- Examination on Demand (EOD) to be notified from time to time. In general, there will be one EOD in each semester, in addition to a special EOD towards the end of Academic Year.

2.2.1. The Assessment breakup of Internal and External are as follows:

S. No.	*Course Type*	*Total Marks for Assessment*	*Internal Evaluation*			*External Evaluation*		
			Theory	*Practice*	*Project*	*Theory*	*Practice*	*Project*
1	*Theory*	*100*	*40*	*-*	*-*	*60*	*-*	*-*
2	*Practice*	*100*	*-*	*50*	*-*	*-*	*50*	*-*
3	*Project*	*100*	*-*	*-*	*50*	*-*	*-*	*50*
4	*Theory + Practice*	*100*	*20*	*30*	*-*	*30*	*20*	*-*
5	*Theory + Project*	*100*	*20*	*-*	*25*	*30*	*-*	*25*
6	*Theory + Practice + Project*	*300**	*40*	*50*	*50*	*60*	*50*	*50*
7	*Practice + Project*	*200*	*-*	*50*	*50*	*-*	*50*	*50*

Details of Theory + Practice + Project (300*)

	Theory		*Practice*		*Project*	
	Internal	*External*	*Internal*	*External*	*Internal*	*External*
Marks for basic Assessment	*40*	*60*	***50***	*50*	***50***	*50*
Total for basic Assessment	*100*		*100*		*100*	

% to be considered for Award of Grade	***40***	***30***	***30***

- All Internal marks will be recorded in ERP and uploaded to EMS. All external marks to be sent to QA cell in a sealed cover as per the direction of QA.
- Grading pattern to be followed as specified in the Subject Depository.
- Pass marks for Theory, Practice and Project will be as follows:

Theory	Practice	Project
40%	50%	50%

Student has to get pass percentage in individual components

- In case, a student gets" **F"** grade in theory course, he/ she will only appear for External component as the internal marks are locked. But, in case of combination courses, the student will have to appear for all the external components (theory + practice + project), even if the student has cleared in some/ failed in some of the components.
- Registration of a paper having pre-requisite condition indicates that, a student will only be allowed to register provided he/she has cleared the pre-requisite paper at the time of registration.
- A student may apply for rechecking and photocopy as per the norms.
- A student can appeal against the rechecking result(s) with a fee of Rs 5000/- per paper. The fee will be refunded to the student in case the revised result (marks) is 10% or more than the earlier rechecked marks.

2.2.2. Examination & Evaluation Systems for Back Papers:

1. Back paper (Theory)
    a. Option 1: Students can re-register back paper subject during a semester (if it is offered in that semester), attend all class appear internal examination and end semester examination by paying requisite registration fee per subject. The previous internal/external marks will be invalid. The student will be evaluated and grades will be awarded as per the marks scored in the current session.
    b. Option 2: Student can appear EOD for external component only. This external mark along with previous internal marks scored by student will be considered for final grade. No scope for change in internal marks.

2. Back Paper (Lab/Practice/Workshop)
    a. Option 1: Student can re-register back paper during a semester (if it is offered in that semester) by paying requisite registration fee per subject. The previous internal/external marks will be invalid. The student will be evaluated and grades will be awarded as per the marks scored in the current session.

    b. Option 2: Student can re-register for summer course, conduct all Lab experiments and appear internal & external examination by paying requisite registration fee per subject. The previous internal/external marks will be invalid. The student will be evaluated and grades will be awarded as per the marks scored in the current session. Student has to pay exam fee as applicable.

3. Back Paper (T+P+P/T+P/P+P/Project)
    a. Option 1: Student can re-register during a semester (if it is offered in that semester) by paying requisite registration fee per subject. Student has to attend required theory class, conduct all Lab experiments/ does project, appear internal examination and end semester examination. The previous internal/external marks will be invalid. The student will be evaluated and grades will be awarded as per the marks scored in the current session.

    b. Option 2: Student can appear EOD for external components for Theory/Practice/Project only to clear back paper. The previous internal marks will be considered for final grade. No scope for change in internal marks.

2.2.3. <u>Assessments of Projects, Internships & Seminars (In Domains & CBCS All)</u>

a. Projects:

There will be Process and Output of the Project. Process will be dealt and marks will be given by Internal Faculty/ Guide. Output will be evaluated by External Examiner (External Examiner + Faculty committee of the Dept.). Internal Evaluation is 50% and External Evaluation is 50%.

Process will include Literature review, design/ techniques to be decided, Experiment/ testing/ simulation, Attendance, Observations/ viva.
Output will include Report, Product, Presentation etc.

Note: *The project report can be of a new project/product development or working with continuing project/production. Students need to prepare a report based on the followings; new product development (if any): Product details, product feature, product design /drawing, scope, commercial production process, costing of product, use of product, equipment's used for production, safety and security measures, raw materials required, inventory management systems and quality standards & practice etc.*

In case of operation & maintenance project student has to prepare report on O&M Role and Responsibilities, operation sequence and procedures, production control procedures, Input /Output procedures, Diagnostics and problem handling procedure, Maintenance procedures, Inventory Management, safety, testing, maintenance contracts, operation maintenance records, etc.

b. Seminars:

I. Report – 40% weightage
II. Presentation --- 30% weightage
III. Attendance & Participation in seminar talks given by other students for the course --- 30% weightage.

3. General

3.1 The academic regulations should be read as a whole for the purpose of interpretation.

3.2 In case of doubt or ambiguity in the interpretation of the above regulations, the decision of the Vice-Chancellor is final.

3.3 The University may change or amend the academic regulations at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the University.

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B.Sc Curriculum

Mission

To educate students in applied sciences, enabling them with necessary skill to contribute to the social, technological, and economic development of our state, nation, and global community, in an environment that fosters teamwork, cultural and intellectual diversity, a strong sense of public responsibility, and lifelong learning

Vision;

1. Provide the highest level of education in applied sciences to produce competent, creative and innovators.

2. Create an intellectual reservoir to meet the various demands of the Industry/Society in facilitating employment, creating enterprise and to pursue higher studies/research.

3. Graduates will bring in to their careers the self-assurance, integrity, social values and technical strengths that drive innovation through communication ability and collaborative skills to inspire and guide the groups they work within, bringing their ideas to action.

POs: Sciences Graduates will be able to;

Pos	Outcomes
PO1	Apply mathematics, science, fundamentals and specialization to the conceptualization of different scientific models
PO2	Identify, formulate, research literature and solve complex science related problems reaching substantiated conclusions using first principles of mathematics and applied sciences
PO3	Design solutions for complex scientific problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations
PO4	Conduct investigations of complex problems including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions
PO5	Create, select and apply appropriate techniques, resources, and modern engineering tools, including prediction and modeling, to complex scientific activities, with an understanding of the limitations
PO6	Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
PO7	Communicate effectively on complex science activities with the science community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO8	Demonstrate understanding of the societal, health, safety, legal and cultural issues andthe consequent responsibilities relevant to scientific application
PO9	Understand and commit to professional ethics and responsibilities and norms of engineering practice
PO10	Understand the impact of science solutions in a societal context and demonstrate knowledge of and need for sustainable development

PO11	Recognize the need for, and have the ability to engage in independent and life-long learning
PO12	Demonstrate a knowledge and understanding of contemporary technologies, their applications and limitations, contemporary research in the broader context of relevant fields
PO13	Demonstrate the ability to succeed in national and international competitive events in the relevant fields

A. PSOs: Department of Chemistry:

PSO1: The Programme enables the students to understand basic facts and concepts of Chemistry while retaining the exciting aspects of Chemistry so as to develop interest in the study of chemistry as a discipline.

PSO2: Students will be able to develop the ability to apply the basic principles like quality testing and reactions in day to day activities and problem solving skill.

PSO3: Able to familiarize with the emerging areas of Chemistry and their applications in various spheres of Chemical sciences and to apprise the students of its relevance in future studies. Able to be exposed to the different processes used in industries and their applications

***Correlation is noted as "H" for High, "M" for Medium and "L" for Low**

Mapping PSOs with POs (Scale of High, Medium and Low)

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PO13**
PSO1	**H**	**H**	**M**	**M**	**L**	**M**	**L**	**H**	**H**	**L**	**M**	**M**	**M**
PSO2	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**M**	**M**	**M**	**M**	**H**	**M**
PSO3	**H**	**H**	**M**	**M**	**M**	**M**	**L**	**M**	**M**	**M**	**M**	**M**	**M**

B. PSOs: Department Physics:

PSO1. Provide knowledge about material properties and its application for developing technology to ease the problems related to the society. Applied course will enable them to be suitable for various fields.

PSO2. Understood the basic concepts, fundamental principles and the scientific theories related to various phenomena of Physics and their relevancies in the day-to-day life.

PSO3. Learn the concepts as Classical Mechanics, Solid State Physics, Quantum Mechanics, Relativity, Nuclear and Particle Physics, Electronics etc. Analyze the applications of mathematics to the problems in physics & develop suitable mathematical method for such application & for formulation of physical theories.

Mapping PSOs with POs (Scale of High, Medium and Low)

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PO13**
PSO1	**H**	**H**	**M**	**M**	**L**	**M**	**L**	**H**	**H**	**L**	**M**	**M**	**M**
PSO2	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**M**	**M**	**M**	**M**	**H**	**M**
PSO3	**H**	**H**	**M**	**M**	**M**	**M**	**L**	**M**	**M**	**M**	**M**	**M**	**M**

C. PSOs: Department of Mathematics

PSO1. Graduates will develop their ability to apply critical thinking skills to solve problems that can be modelled mathematically, to critically interpret numerical and graphical data, to read and construct mathematical arguments and proofs.
PSO2. Graduates will have an ability to design, implement, and evaluate a computer based hypothetical solution

PSO3. Graduates will able to qualify JAM/JEST and other PSU examinations.

Mapping PSOs with POs (Scale of High, Medium and Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
PSO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
PSO2	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**L**
PSO3	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**L**

D. PSOs: Department of Botany

PSO1: To expose them to various skill and domain subjects, lab experiments, gain practical knowledge in cell biology, genetics, taxonomy, physiology, ecology and Biotechnology and able to trend themselves for employability.

PSO2: Motivate the students for higher education and the students gain confidence in expressing ideas and views about the particular program clearly.

PSO3: Able to perform various procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, tools and techniques of botany, toxicology, agri-biotechnology, Biochemistry, Plant biotechnology and research methodology.

Mapping PSOs with POs (Scale of High, Medium and Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
PSO1	**H**	**H**	**M**	**M**	**L**	**M**	**L**	**H**	**H**	**L**	**M**	**M**	**M**
PSO2	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**M**	**M**	**M**	**M**	**H**	**M**
PSO3	**H**	**H**	**M**	**M**	**M**	**M**	**L**	**M**	**M**	**M**	**M**	**M**	**M**

E. PSOs: Department of Zoology

PSO1: The students will understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology and analyse the relationships among animals, plants and microbes

PSO2: Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology, Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology.

PSO3: To expose them to various skill and domain subjects, lab experiments, gain practical knowledge. Motivate the students for Higher education and the students gain confidence in expressing ideas and views about the particular program clearly.

Mapping PSOs with POs (Scale of High, Medium and Low)

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PO13**
PSO1	**H**	**H**	**M**	**M**	**L**	**M**	**L**	**H**	**H**	**L**	**M**	**M**	**M**
PSO2	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**M**	**M**	**M**	**M**	**H**	**M**
PSO3	**H**	**H**	**M**	**M**	**M**	**M**	**L**	**M**	**M**	**M**	**M**	**M**	**M**

Course Outcomes:

COs	**Skills**
CO1	Knowledge
CO2	Observe, Classify, Quantify, Interpret and Communicate
CO3	Investigation and Judgements
CO4	Problem Solving
CO5	Leadership & Entrepreneurship
CO6	Product/Publication/Patent

Scale: H: High, M: Medium, L: Low, -: Nil

A. Department of Chemistry:

B. Sc Chemistry

Mapping COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
CO1	H	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	H	M	H	H	H	H
CO3	M	H	H	M	H	H	H	M	M	H	H	H	H
CO4	H	H	H	H	H	H	H	H	M	H	H	H	H
CO5	H	H	H	M	H	H	H	M	M	H	H	H	H
CO6	M	M	H	M	H	M	H	L	M	H	H	H	H

Course Code	*Course Title*	*Course Type*	*Credits*	*Prerequisite*	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	PSO 1	PSO 2	PSO 3
CUTM 1469	Atomic Structure and Chemical bonding-I	Theory + Practice	6	+2 Sc	H	H					H	H	
CUTM 1470	States of matter and ionic equilibrium	Theory + Practice	6	+2 Sc	H	H	-	-	-	-	H	M	-
CUTM 1471	Basics and hydrocarbons	Theory + Practice	6	+2 Sc	H	H	-	-	-	-	H	H	-
CUTM 1472	Chemical Thermodynamics and its application	Theory + Practice	6	+2 Sc	H	H	-	-	-	-	H	H	-
CUTM 1473	S-and P-block elements	Theory + Practice	6	+2 Sc	H	M	-	-	-	-	M	M	-
CUTM 1474	Oxygen Containing Functional Gropus	Theory + Practice	6	+2 Sc	H	M	-	-	-	-	M	M	-
CUTM 1475	Phase Equilibria & Chemical Kinetics	Theory + Practice	6	+2 Sc	H	M	-	-	-	-	M	M	M
CUTM 1476	Coordination Chemistry	Theory + Practice	6	+2 Sc	H	H	-	H	-	-	M	M	H
CUTM 1477	Heterocyclic Chemistry	Theory + Practice	6	+2 Sc	H	H	-	M	-	-	-	M	H
CUTM 1478	Electrochemistry	Theory + Practice	6	+2 Sc	H	H	-	-	-	-	-	M	M
CUTM 1479	Biomolecules	Theory + Practice	6	+2 Sc	H	H	-	H	-	-	-	M	M
CUTM 1480	Quantum Chemistry & Spectroscopy	Theory + Practice	6	+2 Sc	H	H	-	H	-	-	-	M	M

CUTM 1481	**Organometallic Chemistry**	**Theory + Practice**	**6**	+2 Sc	**H**	**H**	-	**H**	-	-	-	**H**	**M**
CUTM 1482	**Spectroscopy**	**Theory + Practice**	**6**	+2 Sc	**H**	**H**	-	**H**	-	-	-	**M**	**M**
	English	**Theory**	**6**	+2 Sc	**H**	-	-	**H**	-	-	**M**	**M**	-
CUTM1010	**Environmental Science**	**Theory**	**2**	+2 Sc	**H**	-	-	**H**	-	-	**M**	**M**	**M**

B. Department of Physics:

B.Sc Physics

	Course Title	*Course Type*	*Credits*	*Prerequisite*	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**	**PSO1**	**PSO2**	**PSO3**
CUTM1182 OR **CUTM1010**	English	Theory	6	+2 Sc	H	M	-	-	-	-	H	H	-
	Environmental Science	Theory	2	+2 Sc	H	M	-	-	-	-	M	M	-
CUTM1483	Mathematical Physics-1	Theory+ Practice	6	+2 Sc	H	H	-	H	-	-	H	H	**H**
CUTM1484	Mechanics	Theory+ Practice	6	+2 Sc	H	H	-	H	-	-	H	M	**M**
CUTM1485	Thermal Physics	Theory+ Practice	6	+2 Sc	H	H	-	H	-	-	H	M	**M**
CUTM1486	Waves and optics	Theory+ Practice	6	+2 Sc	H	H	-	H	-	-	H	M	**M**
CUTM1487	Mathematical Physics II	Theory+ Practice	6	+2 Sc	H	H	-	H	-	-	H	M	**M**
CUTM1488	Electricity and Magnetism	Theory+ Practice	6	+2 Sc	H	H	-	H	-	-	H	M	**M**
CUTM1489	Analog systems and Applications	Theory+ Practice	6	+2 Sc	H	H	-	H	L	-	H	H	H
CUTM1490	Mathematical Physics III	Theory+ Practice	6	+2 Sc	H	H	H	H	-	-	H	M	H
CUTM1491	Elements of Modern Physics	Theory+ Practice	6	+2 Sc	H	H	H	H	-	-	H	M`	-
CUTM1492	Digital systems and Applications	Theory+ Practice	6	+2 Sc	H	H	H	H	L	-	H	M	L
CUTM1493	Quantum Mechanics & Applications	Theory+ Practice	6	+2 Sc	H	H	H	H	-	-	H	H	H

CUTM1494	Solid State Physics	Theory+ Practice	6	+2 Sc	H	H	M	H	-	-	H	H	H
CUTM1495	Electro-magnetic Theory	Theory+ Practice	6	+2 Sc	H	H	M	H	-	-	M	M	M
CUTM1496	Statistical Mechanics	Theory+ Practice	6	+2 Sc	H	H	H	H	-	-	H	M	M

C. Department of Mathematics:

Mapping COs with POs

B.Sc Mathematics

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**H**
CO3	**M**	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**M**	**H**	**H**	**H**	**H**
CO4	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**H**
CO5	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**M**	**H**	**H**	**H**	**H**
CO6	**M**	**M**	**H**	**M**	**H**	**M**	**H**	**L**	**M**	**H**	**H**	**H**	**H**

Course Code	***Course Title***	***Course Type***	***Credits***	***Prerequisite***	**CO 1**	**CO 2**	**CO 3**	**CO 4**	**CO 5**	**CO 6**	**PSO 1**	**PSO 2**	**PSO 3**
CUTM1511	Calculus	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**M**	**H**	**L**	**L**	**M**	**M**	**M**
CUTM1512	Linear Algebra	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**M**	**H**	**L**	**L**	**M**	**M**	**M**
CUTM1513	Analysis-I	Theory + Project	6	+2 Sc	**H**	**H**	**M**	**M**	**L**	**L**	**M**	**H**	**M**
CUTM1514	Ordinary Differential Equation	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**M**	**H**	**L**	**L**	**M**	**M**	**M**
CUTM1515	Analysis-II	Theory + Project	6	+2 Sc	**H**	**H**	**M**	**M**	**L**	**L**	**M**	**H**	**M**
CUTM1516	Modern Algebra	Theory + Project	6	+2 Sc	**H**	**H**	**M**	**M**	**L**	**L**	**M**	**H**	**M**
CUTM1517	Partial Differential Equations and System of Ordinary Differential Equations	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**M**	**H**	**L**	**L**	**M**	**M**	**M**
CUTM1518	Numerical Analysis	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**H**	**H**	**L**	**L**	**H**	**M**	**H**
CUTM1519	Advanced Analysis	Theory + Project	6	+2 Sc	**H**	**H**	**M**	**M**	**L**	**L**	**M**	**H**	**M**
CUTM1520	Complex Analysis	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**M**	**M**	**L**	**L**	**M**	**M**	**M**
CUTM1524	Probability and Statistics	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**M**
CUTM1523	Linear Programming	Theory + Practice+ Project	6	+2 Sc	**H**	**H**	**M**	**H**	**L**	**L**	**M**	**M**	**M**

CUTM1522	Discrete Mathematics	Theory + Practice+ Project	6	+2 Sc	H	H	M	H	L	L	M	M	M
CUTM1182 OR CUTM1010	English	Theory	6	+2 Sc	H	H	M	L	H	L	M	L	L
	Environmental Science	Theory	2	+2 Sc	H	H	M	L	H	L	M	L	L
CUTM1521	Integral Transforms	Theory + Practice+ Project	6	+2 Sc	H	H	M	H	L	L	M	M	M

D. Department of Botany:

B.Sc Botany

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
CO1	**H**	**H**	**M**	**M**	**M**	**H**	**H**	**H**	**M**	**H**	**M**	**H**	**H**
CO2	**H**	**M**	**M**	**H**	**H**	**M**	**M**	**M**	**H**	**H**	**H**	**H**	**H**
CO3	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**M**	**M**	**H**	**M**	**H**	**M**
CO4	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**M**	**M**	**M**	**M**	**L**	**M**
CO5	**M**	**M**	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**M**
CO6	**M**	**M**	**H**	**H**	**H**	**M**	**H**	**L**	**L**	**M**	**H**	**H**	**M**

Sl. No.	*Course Code*	*Course Title*	*Course Type*	*Credits*	*Prerequisite*	CO1	CO2	CO3	CO4	CO5	CO6	PSO1	PSO2	PSO3
1.	CUTM1455	Phycology and Microbiology	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**M**	**L**	**-**	**-**	**H**	**H**	**M**
2.	CUTM1456	Biomolecules & Cell biology	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**L**	**-**	**-**	**-**	**H**	**M**	**-**
3.	CUTM1457	Mycology & Phytopathology	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**H**	**M**	**-**	**-**	**H**	**M**	**M**
4.	CUTM1458	Archegoniate	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**-**	**-**	**-**	**-**	**M**	**H**	**-**
5.	CUTM1459	Anatomy of Angiosperms	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**H**	**H**	**-**	**H**	**H**	**M**	**H**

6.	CUTM1460	Economic Botany	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**L**	**-**	**H**	**-**	**H**	**H**	**L**
7.	CUTM1461	Basics of Genetics	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**L**	**M**	**-**	**-**	**H**	**M**	**M**
8.	CUTM1462	Molecular Biology	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**M**	**L**	**-**	**-**	**H**	**H**	**M**
9.	CUTM1463	Plant Ecology and Phytogeography	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**H**	**M**	**-**	**-**	**H**	**H**	**M**
10.	CUTM 1464	Plant Systematics	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**H**	**M**	**-**	**-**	**H**	**H**	**H**
11.	CUTM1465	Reproductive Biology of Angiosperm	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**M**	**M**	**-**	**-**	**-**	**H**	**M**	**L**
12.	CUTM1466	Plant Physiology	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**H**	**-**	**-**	**-**	**H**	**M**	**L**
13.	CUTM1467	Plant Metabolism	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**L**	**-**	**-**	**-**	**H**	**M**	**L**
14.	CUTM1468	Plant Biotechnology	Theory + Practice +Project	6	+2 Sc. with Biology	**H**	**H**	**M**	**-**	**-**	**-**	**M**	**M**	**H**

E. Department of Zoology:

B.Sc Zoology

4. Mapping COs with POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**H**
CO3	**M**	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**M**	**H**	**H**	**H**	**H**
CO4	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**H**
CO5	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**M**	**H**	**H**	**H**	**H**
CO6	**M**	**M**	**H**	**M**	**H**	**M**	**H**	**L**	**M**	**H**	**H**	**H**	**H**

Course Code	*Course Title*	*Course Type*	*Credits*	*Prerequisite*	CO1	CO2	CO3	CO4	CO5	CO6	PSO1	PSO2	PSO3
CUTM1497	Non-Chordates-I	Theory + Practice	*6*	+2 Sc. with Biology	H	H	M	L	L	H	H	H	H
CUTM1499	Principles of Ecology	Theory + Practice	*6*	+2 Sc. with Biology	H	H	M	L	L	H	H	H	H
CUTM1498	Non-Chordates-II	Theory + Practice	*6*	+2 Sc. with Biology	H	H	M	L	L	H	H	H	H
CUTM1500	Cell Biology	Theory + Practice	*6*	+2 Sc. with Biology	H	H	M	L	L	H	H	H	H
CUTM1501	Diversity of Chordates	Theory + Practice	*6*	+2 Sc. with Biology	H	H	H	L	L	H	H	H	H
CUTM1502	Animal Physiology-Controlling & Coordinating Systems	Theory + Practice	*6*	+2 Sc. with Biology	H	H	H	L	L	H	H	H	H
CUTM1503	Fundamentals of Biochemistry	Theory + Practice	*6*	+2 Sc. with Biology	H	H	H	H	L	H	H	H	H
CUTM1504	Comparative Anatomy of Vertebrates	Theory + Practice	*6*	+2 Sc. with Biology	H	H	M	L	L	H	H	H	H
CUTM1505	Animal Physiology: Life Sustaining Systems	Theory + Practice	*6*	+2 Sc. with Biology	H	H	H	L	L	H	H	H	H

CUTM1506	Biochemistry of Metabolic Processes	Theory + Practice	***6***	+2 Sc. with Biology	**H**	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**H**
CUTM1507	Molecular Biology	Theory + Practice	***6***	+2 Sc. with Biology	**H**	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**H**
CUTM1508	Principles of Genetics	Theory + Practice	***6***	+2 Sc. with Biology	**H**	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**H**
CUTM1509	Developmental Biology	Theory + Practice	***6***	+2 Sc. with Biology	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**H**

CUTM1510	Evolutionary Biology	Theory + Practice	***6***	+2 Sc. with Biology	**H**	**H**	**M**	**L**	**L**	**H**	**H**	**H**	**H**
CUTM1182 OR **CUTM1010**	English OR Environmental Science	Theory	***8***	+2 Sc. with Biology	**H**	**H**	**M**	**L**	**L**	**H**	**H**	**H**	**H**