SCHOOL OF FORENSIC SCIENCES

ACADEMIC REGULATIONS

B.Sc. Forensic Science Programme (2020)

Centurion UNIVERSITY

Shaping Lives...
Empowering Communities!

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT

SCHOOL OF FORENSIC SCIENCES

B.Sc. Forensic Science

PREFACE

Objective of the programme is to strengthen the foundations of forensic science at national level. The following are the objectives of this programme:

1. To emphasize the importance of scientific methods in crime investigation.
2. To disseminate information on the advancements in the field of forensic science.
3. To highlight the importance of forensic science for perseverance of the society.
4. To review the steps necessary for achieving highest excellence in forensic science.
5. To generate talented human resource, commensurating with latest requirements of forensic science.
6. To provide a platform for students and forensic scientists to exchange views, chalk-out collaborative programs and work in a holistic manner for the advancement of forensic science.
7. To inculcate knowledge and skill of forensic science so that it can be applied in forensic laboratory as well as on field during investigation.

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 B.Sc. Forensic Science. It contains information on eligibility criteria, including Registration, Selection of Subjects, Grading System, Examination Policy, Attendance Policy and Academic Rules applicable at CUTM.

2. Minimum qualification for admission:

Passed Class XII from a recognized Board in science stream.
The admission will be done on merit basis taking into consideration the aggregate marks obtained in the following three subjects:

a) Physics
b) Chemistry
c) Any one out of Mathematics or Biology Candidate must have secured minimum 50% in 12^{th}.

3. Duration of the program

The Programme for B.Sc. Forensic Science shall extend over a period of six semesters (three academic years).

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

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.

6. 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.

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.

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.

a) Head of the Departments to submit the titles of the subjects to be offered, for all the Baskets, to the Dean.
b) The MIS section has to upload all these subjects in the MIS/ERP.
c) One week slot will be provided to the students for counselling & registration in every semester.
d) Immediately after admission in the first year, each faculty mentor will be allotted 20 students for continuous guidance.

e) 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.
f) 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.
g) 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.
h) A Student is allowed to register for a subject only after clearing its pre requisites, if any.
i) After the choice lock, the time table will be finalized. 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.
j) 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.
k) 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 organized before the convocation of his/her batch.
l) MIS will show cumulative student credits under "My Credits". A report on student wise credits can be obtained from MIS for documentation.

Time Table for Instructions

Department will provide 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.

7. Program/Course credit structure

As per the Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

8. Programme Structure:

Sr. No.	Code	Course Title	Type of course	Credit	Prere quisite
1.	CUTM1659	Basics of Forensic Science	Theory + Practice	4+2+0 (06)	Nil
2.	CUTM1660	Crime and Society	Theory + Practice	4+2+0 (06)	Nil
3.	CUTM1661	Criminal Law	Theory + Practice	4+2+0 (06)	Nil
4.	CUTM1662	Forensic Psychology	Theory + Practice	4+2+0 (06)	Nil
5.	CUTM1663	Forensic Dermatoglyphics	Theory + Practice	4+2+0 (06)	Nil
6.	CUTM1664	Technological Methods in Forensic Science	Theory + Practice	4+2+0 (06)	Nil
7.	CUTM1665	Criminalistics	Theory + Practice	4+2+0 (06)	Nil
8.	CUTM1666	Forensic Chemistry	Theory + Practice	4+2+0 (06)	Nil
9.	CUTM1667	Questioned Documents	Theory + Practice	4+2+0 (06)	Nil
10.	CUTM1668	Forensic Biology	Theory + Practice	4+2+0 (06)	Nil
11.	CUTM1669	Forensics Ballistics	Theory + Practice	4+2+0 (06)	Nil
12.	CUTM1670	Forensic Toxicology	Theory + Practice	4+2+0 (06)	Nil
13.	CUTM1671	Forensic Anthropology	Theory + Practice	4+2+0 (06)	Nil
14.	CUTM1672	Forensic Medicine	Theory + Practice	4+2+0 (06)	Nil

ABILITY ENHANCEMENT COURSE

Code	Course Title	Type of Course	Credit	Prerequisite
CUTM1673OR CUTM1010	English Or Environmental Science	Theory or Tut	2-0-0 (02) Or 0-0-2 (02)	Nil

ABILITY ENHANCEMENT ELECTIVE (SKILL BASED) COURSE

Sl.No	Code	Course Title	Type of Course	Credit	Prerequisite
1.	CUTM1675	Introduction to Biometry	Practice	0-2-0 (02)	Nil
2.	CUTM1676	Handwriting Identification and Recognition	Practice	0-2-0 (02)	Nil

DISCIPLINE SPECIFIC ELECTIVE (DSE COURSES)

Sl.No	Code	Course Title	Type of Course	Credit	Prerequisite
1.	CUFS2410	Digital Forensics	Theory + Practice	4+2+0 (06)	Computer as one of the subject in 10+2
2.	CUFS24111	Economic Offences	Theory + Practice	4+2+0 (06)	Nil
3.	CUFS24112	ForensicSerology	Theory + Practice	4+2+0 (06)	Biology as one of the subject in 10+2
4.	CUFS24113	Accident Investigations	Theory + Practice	4+2+0 (06)	Nil
5.	CUFS24114	DNA Forensics	Theory + Practice	4+2+0 (06)	Biology as one of the subject in 10+2
6.	CUFS24115	Audio Recognitionand Video Analysis	Theory + Practice	4+2+0 (06)	Knowledge about basic concepts of physics is required
7.	CUFS24116	Explosive Analysis andPost Blast Investigation	Theory + Practice	4+2+0 (06)	Student should have knowledge regarding basic concepts of chemistry
8.	CUFS24117	Quality control and Quality Assurance	Theory + Practice	4+2+0 (06)	Student should have knowledge regarding basic concepts of chemistry

GENERIC ELECTIVE (GE)

Subjects From other Disciplines (One each in Semester I, II, III, IV)

Code	Course Title	Type of Course	Credit	Prerequisite
		Theory + Practice	4+2+0 (06)	Nil

One each in semester 1, 2, 3 and 4, to be chosen from the following:

1.	**Chemistry**
2.	**Physics**
3.	**Zoology**
4.	**Botany**

9. Course of Study :

SEMESTER-I

Sl. No.	Course Code	Course	Type of Course	T-P-Pj (credit)
1	CUTM1659	Basics of Forensic Science	Theory + Practice	4-2-0 (06)
2	CUTM1660	Crime and Society	Theory + Practice	4-2-0 (06)
3		Generic Elective	Theory + Practice	4-2-0 (06)
4	CUTM1674	Ability Enhancement Compulsory Course : CUTM1674 Environmental science	Theory	2-0-0 (02)
TOTAL CREDITS				20

SEMESTER-II

Sl. No.	Course Code	Course	Type of Course	T-P-Pj (credit)
1	CUTM1661	Criminal Law	Theory + Practice	4-2-0 (06)
2	CUTM1662	Forensic Psychology	Theory + Practice	4-2-0 (06)
3		Generic Elective	Theory + Practice	4-2-0 (06)
4	CUTM1673	Ability Enhancement Compulsory Course CUTM1673: English	Theory	2-0-0 (02)
TOTAL CREDITS				20

SEMESTER- III

Sl. No.	Course Code	Course	Type of Course	T-P-Pj (credit)
1	CUTM1663	Forensic Dermatoglyphics	Theory + Practice	4-2-0 (06)
2	CUTM1664	Technological Methods in Forensic Science	Theory + Practice	4-2-0 (06)
3	CUTM1665	Criminalistics	Theory + Practice	4-2-0 (06)
4		Generic Elective	Theory + Practice	4-2-0 (06)
5		Ability Enhancement Elective (Skill Based) course	Practice	0-2-0 (02)
TOTAL CREDITS				26

SEMESTER-IV

Sl. No.	Course Code	Course	Type of Course	T-P-Pj (credit)
1	CUTM1666	Forensic Chemistry	Theory + Practice	4-2-0 (06)
2	CUTM1667	Questioned Documents	Theory + Practice	4-2-0 (06)
3	CUTM1668	Forensic Biology	Theory + Practice	4-2-0 (06)
4		Generic Elective	Theory + Practice	4-2-0 (06)
5		Ability Enhancement Elective (Skill Based) course	Practice	0-2-0 (02)
TOTAL CREDITS				26

SEMESTER-V

Sl. No.	Course Code	Course	Type of Course	T-P-Pj (credit)
1	CUTM1669	Forensics Ballistics	Theory + Practice	4-2-0 (06)
2	CUTM1670	Forensic Toxicology	Theory + Practice	4-2-0 (06)
3		Discipline Specific Elective	Theory + Practice	4-2-0 (06)
4		Discipline Specific Elective	Theory + Practice	4-2-0 (06)
TOTAL CREDITS				24

SEMESTER-VI

Sl. No.	Course Code	Course	Type of Course	T-P-Pj (credit)
1	CUTM1671	Forensic Anthropology	Theory + Practice	4-2-0 (06)
2	CUTM1672	Forensic Medicine	Theory + Practice	4-2-0 (06)
3		Discipline Specific Elective	Theory + Practice	4-2-0 (06)
4		Discipline Specific Elective	Theory + Practice	4-2-0 (06)
TOTAL CREDITS				24

10. Credit assignment

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

11. Grading System & Degree Requirement

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

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)

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

12. Examination Policy

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

Eligibility for Examinations

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

a) 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.
b) 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.
c) 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).
d) 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.

e) 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.
f) 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.
g) 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.
h) A student may register to appear in a semester examination which she/he has not passed, with appropriate fee.

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.

a) End Semester Examinations at the end of the Odd and Even Semester course work
b) 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.
c) 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.
d) Grading pattern to be followed as specified in the Subject Depository.
e) 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

f) 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.
g) 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.
h) A student may apply for rechecking and photocopy as per the norms.

i) 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.

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*

Evaluation Systems:

1. **Theory + Practice:**

	Component	**% of Marks**	**Method of Assessment**
Internal Examination	Midterm Test	20	Written examination
	Experiments	30	Lab work, report, viva
External Examination	Semester Examination	30	Written examination
	Experiments	20	Lab work, report, viva
Total		**100**	

2. **Theory:**

	Component	% of Marks	Method of Assessment
Internal Examination	Internal Theory	30	Written examination
	Assignment	5	Report or Presentation + Learning Record
	Attendance	5	Based on class attended
External Examination	External Theory	60	Written examination
Total		**100**	

3. **Practice:**

	Component	% of Marks	Method of Assessment
Internal Examination	Internal Practice	50 (40+10)	Lab work + Learning Record
External Examination	External Practice	50	Lab work
Total		**100**	

Assessments of 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%.

Examination& evaluation systems for Back Papers

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.

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.

13. General

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

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

c. 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.

B.Sc. Forensic Science Curriculum

Mission: An Institution dedicated to touch human lives with the aim of intensifying the field of investigative sciences to ensure a diminished rate of criminal record in the society by strengthening the justice delivery system leading towards to prosperity, integrity and peace.

Vision: To be a distinguished School of excellence aiming to create a peaceful society by imparting quality education/Training to the Prospective students and allied professionals. To make the institute an inclusive centre of excellence for forensic education, research and Training services, thereby strengthening justice delivery system.

PO (Programme Outcomes): B.Sc. Forensic Science

POs Outcomes	POs Outcomes
PO1	Forensic knowledge: Apply knowledge of mathematics, various disciplines of science and basic principles of forensic in investigation.
PO2.	Perform experiments as well as to carry out problem analysis and data interpretation of instrumental analysis
PO3	The crime and society: Apply reasoning informed by the contextual knowledge to assess civil and criminal laws,society,health and cultural issues and the consequent responsibilities relevant to forensics
PO4	Individual and team work: Function affectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings in the field of forensic Science.
PO5	Conduct investigations: Visit crime scene and help the police officials in proper collection, preservation and handling of scientific evidences which will aid in maintaining the integrity of evidences
PO6	Understanding of professional and ethical responsibility of forensic scientist
PO7	Communication: Communicate effectively on various activities of forensics with proper understanding of scientific and legal terminologies
PO8	Understand psychology of criminal mind
PO9	Life- long learning: Recognize the need for lifelong learning in the broadest contest of challenges and recent advances in the field of forensic science.
PO10	Project Management: Demonstrate knowledge & understanding of the forensic science and apply these to one's own work, as a member and leader in a team, to manage projects in forensic science.
PO11	Use of modern techniques, skills, and instruments necessary for forensic expert or any person working in such field.
PO12	Make a robust report on the basis of scientific analysis.

PSO-Program Specific Outcomes- B.Sc. Forensic Science

PSO1: Graduate will be able to develop skill which can be applied in the jobs of Forensic Science
PSO2: Graduate will be able to pursue higher studies and research
PSO3: Graduate will be able to use software and technologies that can be effectively used to solve various problems encountered during investigations.

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

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

Core Courses

BSFS0401 : Basics of Forensic Science

Course Objective : To teach in depth knowledge of forensic science, it's disciplines and importance and working of FSL.

Course Outcome : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	know the significance of forensic science to human society.
CO-2	understand fundamental principles and functions of forensic science.
CO-3	get idea about working of the forensic establishments in India and abroad.

BSFS0402 : Crime and Society

Course Objective : To obtain knowledge about criminology i.e. crime and its causes, its impact on society and basic elements of justice delivery system.

Course Outcome : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Student will know about importance of criminology.
CO-2	Understand the causes of criminal behaviour.
CO-3	Understand the significance of criminal profiling to mitigate crime.
CO-4	Understand the elements of criminal justice system.

BSFS0403 : Criminal Law

Course Objective : To obtain knowledge about basic law which governs our society
Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Know about Elements of Criminal Procedure Code related to forensic science.
CO-2	Understand the acts and provisions of the Constitution of India related to forensic science.
CO-3	Understand the acts governing socio-economic crimes.

CO-4	Understand acts governing environmental crimes

BSFS0404 : Forensic Psychology

Course Objective : To obtain knowledge about forensic psychology and various psychological investigative tools.

Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Know about importance of psychological assessment in gauging criminal behaviour.
CO-2	Understand the legal aspects of forensic psychology.
CO-3	Understand the significance of criminal profiling.
CO-4	Do critical assessment of advanced forensic techniques like polygraph, Narco analysis and brain electrical oscillation signatures.

BSFS0405 : Forensic Dermatoglyphics

Course Objective : To study fingerprints and its fundamental principles, its role in linking a person to the crime scene, techniques to develop prints

Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Know about physical and chemical techniques of developing fingerprints on crime science evidence.
CO-2	Understand the significance of foot, palm, ear and lip prints.
CO-3	Understand pattern types and matching

BSFS0406 : Technological Methods in Forensic Science

Course Objective : To gain knowledge about various instruments and techniques used in analysis and examination of evidences

Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Understand the importance of chromatographic and spectroscopic techniques in processing crime scene evidence.
CO-2	Understand the significance of microscopy in visualizing trace evidence and comparing it with control samples.
CO-3	Understand usefulness of photography and videography for recording the crime scenes.

BSFS0407 : Criminalistics

Course Objective : To gain knowledge about crime scene and its processing including securing, searching and documentation as well as collection and packaging of evidences.

Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Understand the methods of securing, searching and documenting crime scenes.
CO-2	Understand the tools and techniques for analysis of different types of crime

	scene evidence.
CO-3	Understand about legal importance of chain of custody.

BSFS0408 : Forensic Chemistry

Course Objective : The study enhances ability of investigating officer in arson cases. Scientific study to analyse the explosives and Petroleum product and investigation in cases of IED.
Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Understand the methods of analysing trace amounts of petroleum products in crime scene evidence.
CO-2	Understand the classification of explosives, including the synthesis and characterization of representative analogues.
CO-3	Understand significance of bomb scene management.

BSFS0409 : Questioned Documents

Course Objective : helps in understanding nature of paper and some other characteristics of written as well printed document with respect to class and individual characteristics and helps to examine fraud cases.
Course Outcome : On completion of this course, the successful students should be able to :

CO	Statements
CO-1	Understand the importance of examining questioned documents in crime cases.
CO-2	Understand the tools required for examination of questioned documents.
CO-3	Understand significance of comparing hand writing samples.
CO-4	Know about the importance of detecting frauds and forgeries by analysing questioned Documents.

BSFS0410 : Forensic Biology

Course Objective: To teach about biological fluid which helps to determine source of origin among the individuals. Hair evidence distinguishes between human and animal. Study of wild life forensic science enhances skill and knowledge of investigator in investigation smuggling cases.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about the significance of biological and serological evidence.
CO-2	Understand importance of biological fluids – blood, urine, semen, saliva, sweat and milk – in crime investigations.
CO-3	Know about how wildlife forensics aid in conserving natural resources.
CO-4	Know about how forensic entomology assists in death investigations

BSFS0411 : Forensic Ballistics

Course Objective: It helps to identify class and individual characteristics of firearm and ammunition. Enhance the skill and knowledge of investigating officer.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about classification of firearms and their firing mechanisms..
CO-2	Understand importance of firearm evidence
CO-3	Know about methods of identifying firearms.
CO-4	Know about methods for characterization of gunshot residue.

BSFS0412 : Forensic Toxicology

Course Objective : To study qualitative and quantitative analysis of poison in body fluids. It also helps understanding mode of administration of poison and their absorption.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about the significance of toxicological studies in forensic science.
CO-2	Classify poisons and their modes of actions.
CO-3	Understand classification and characteristics of the narcotics, drugs and psychotropic substances.
CO-4	Know about menace of designer drugs.

BSFS0413 : Forensic Anthropology

Course Objective : Study focuses on skeletal parts and their significance in determining identification of person, characteristics that helps in identifying missing person as well facial reconstruction through sketching of individual characteristics.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about the importance of forensic anthropology in identification of persons.
CO-2	Classify poisons and their modes of actions.
CO-3	Understand different techniques of facial reconstruction and their forensic importance.
CO-4	Know about significance of somatoscopy and somatometry

BSFS0414 : Forensic Medicine

Course Objective Study helps to distinguish between postmortem and anti-mortem characteristics of corpus delicti. Age and sex can also be determined by forensic odontology.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about the importance of forensic odontology
CO-2	Understand the importance of autopsy
CO-3	Understand the importance of bloodstain patterns in reconstructing the crime

	scene.
CO-4	importance of bloodstain patterns in reconstructing the crime scene.

Ability Enhancement Elective Course

BSFL1101 : English

Course Objective : To expose the students to a variety of self-instructional, learner-friendly modes of language learning and to enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Communicate fluently in different business situation
CO-2	Use appropriate words with correct pronunciation
CO-3	Do effective oral and written communication

FCBS0101 : Environmental Science

Course Objective : To understand the concept of multi-disciplinary nature of Environmental Science where different aspects are dealt with a holistic approach.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	develop a sense of community responsibility by becoming aware of environmental issues in the larger social context.
CO-2	Characterize and analyze human impacts on the environment
CO-3	Design and evaluate strategies, technologies and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.
CO-4	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.

Ability Enhancement Elective (Skill Based) course

BSSE0201 : Introduction to Biometry

Course Objective : To understand the concept of biometry and its role in identification and various kinds of biometrics.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the basis of biometry.

CO-2	Know about the classification of biometric processes
CO-3	Know about the importance of behavioural biometry

BSSE0202 : Handwriting Identification and Recognition

Course Objective : To understand the important features of handwriting identification and perform detection of document forgery or alteration.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand important features in handwriting identification.
CO-2	Learn about basis of handwriting characteristics.
CO-3	Know about significance of forensic documentation.

Discipline Specific Elective

DEFS0401 : Digital Forensics

Course Objective : To understand the basic concepts of digital forensics and types of digital forensics, malwares and investigation methods applied in such cases.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the basics of digital forensics.
CO-2	Analyse the cases which fall under the purview of digital crimes.
CO-3	Understand the types of digital crimes.
CO-4	Understand the elements involved in investigation of digital crimes.

DEFS0402 : Economic Offences

Course Objective: To introduce to terminologies related to economic offences, some common economic offences and its impact on society.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand basic economic and financial terminology.
CO-2	Understand steps involved in mitigating economic crimes.
CO-3	Know about types of common economic offences and their consequences.

DEFS0403 : Forensic Serology

Course Objective: To gain knowledge about serological evidences and their importance in crucial cases and methods of their detection.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements

CO-1	Understand the significance of serological evidence.
CO-2	The importance of biological fluids – blood, urine, semen, saliva, sweat and milk – in crime investigations.
CO-3	Know about the usefulness of genetic markers in forensic investigations.

DEFS0404 : Accident Investigations

Course Objective: To study methods of investigation in accidental cases, types of injuries in accidents, documentation, collection and preservation of evidences and their analysis.

Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the significance of tiremark evidence.
CO-2	Understand the importance of air bags and photography of accident cases
CO-3	Know about the usefulness of trace evidences in forensic investigations.

DEFS0405 : DNA Forensics

Course Objective: Understanding basic concepts of DNA Analysis, DNA Typing, STR markers.

Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the basic principle of DNA analysis and it's significance
CO-2	Understand the importance of short tandem repeats and restriction fragment length polymorphism in DNA technique.
CO-3	Know about role of DNA typing in parentage testing

DEFS0406 : Audio Recognition and Video Analysis

Course Objective: To Understand the role of voice in forensic investigations, understanding speaker recognition and identification and their analysis.

Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the basic principle of voice production and forensic significance speaker identification and recognition.
CO-2	Know about the importance of audio recording evidences.
CO-3	Use various software in audio recognition and video analysis.

DEFS0407 : Explosives Analysis & Post Blast Investigation

Course Objective: To study the protocols followed for analysis of explosives and get in depth knowledge about post blast investigations.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about History and development of explosives.
CO-2	Understand processing of crime scene.
CO-3	Know about clandestine Laboratories.

DEFS0408 : Quality Control and Quality Assurance

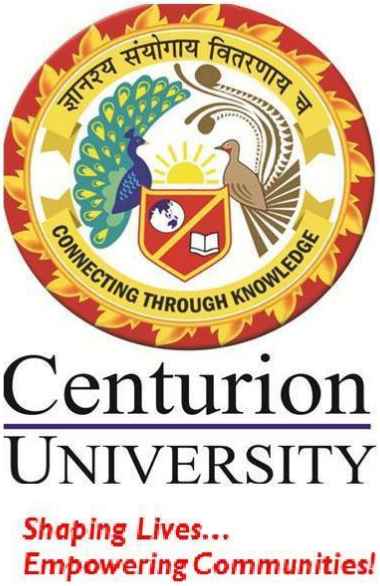
Course Objective : To study the various aspects of quality control and assurance aspects and understand important parameters such as cGMP, QC tests, documentation,
Quality certifications, GLP and regulatory affairs.
Course Outcome: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the cGMP aspects in a pharmaceutical industry.
CO-2	Know about the importance of documentation.
CO-3	Understand the Scope of quality certifications applicable to Pharmaceutical industries and responsibilities of QA and QC department.

SCHOOL OF FORENSIC SCIENCES

ACADEMIC REGULATIONS

M.Sc. Cyber Security and Digital Forensics (2020)



CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT

SCHOOL OF FORENSIC SCIENCES

M.Sc. Cyber Security and Digital Forensics

PREFACE

Objective of the programme is to strengthen the foundations of cyber forensics at national & International level. The following are the objectives of this programme:

a) To prevent or mitigate harm to—or destruction of—computer networks, applications, devices, and data. For cybersecurity strategy to succeed, it must continually evolve to keep pace with the shifting strategies and technologies used by hackers.
b) The goal of computer forensics is to examine digital data with the aim of identifying, preserving, recovering, analyzing and presenting facts and opinions about the digital information. It is used in both computer crime and civil proceedings.
c) To identify evidence in a short time frame, and estimate the overall menace and impact of the malicious cyber-attack.
d) Activity on the victim user or organization and suggest for protection against the attack.
e) To emphasize the importance of technical methods in cybercrime investigation.
f) To publicize information on the developments in the field of digital forensic sciences.
g) To highpoint the importance of digital forensic for resolution of the modern society.
h) To review the steps necessary for achieving highest excellence in digital forensic.
i) To generate talented human resource, commensuration with latest requirements of information security.
j) To provide a platform for students and security professionals to exchange views, chalk-out collaborative programs and work in an all-inclusive manner for the advancement of digital science.
k) To train knowledge and skill of cyber forensics so that it can be applied in digital forensic lab.

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 M.Sc. Cyber Security and Digital Forensics. It contains information on eligibility criteria, including Registration, Selection of Subjects, Grading System, Examination Policy, Attendance Policy and Academic Rules applicable at CUTM.

2. Minimum qualification for admission:

Qualification for M.Sc. Cyber Security and Digital Forensics is B.e, B.tech in CE/IT/EC/CS or BCA or B.SC. IT/CS/Maths/Physics or equivalent with atleast with minimum 50% aggregate.

3. Duration of the program

The Programme for M.Sc. Cyber Security and Digital Forensics shall extend over a period of four semesters (two academic years).

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

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.

6. 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.

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.

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.

a) Head of the Departments to submit the titles of the subjects to be offered, for all the Baskets, to the Dean.
b) The MIS section has to upload all these subjects in the MIS/ERP.
c) One week slot will be provided to the students for counselling & registration in every semester.
d) Immediately after admission in the first year, each faculty mentor will be allotted 20 students for continuous guidance.
e) 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.
f) 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.
g) 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.
h) A Student is allowed to register for a subject only after clearing its pre requisites, if any.
i) After the choice lock, the time table will be finalized. 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.
j) 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.
k) 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 organized before the convocation of his/her batch.
l) MIS will show cumulative student credits under "My Credits". A report on student wise credits can be obtained from MIS for documentation.

Time Table for Instructions

Department will provide 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.

7. Program/Course credit structure

As per the Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion

of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

8. Programme Structure:

Semester I			
Code	**Course**	**Course Type (Lecture-Tutorial-Practice)**	**Credit**
CUTM1618	Principles of Information Security	4-0-0	4
CUTM1619	Digital Forensics	4-0-2	6
CUTM1620	Computer Networks	4-0-2	6
CUTM1621	Cyber Crime & Investigations	4-0-0	4
CUTM1622	Intellectual Property Rights	4-0-0	4
	Total Credits		**24**

Semester II			
Code	**Course**	**Course Type (Lecture-Tutorial-Practice)**	**Credit**
CUTM1623	Number theory & Cryptography	4-0-0	4
CUTM1624	Advanced Information Security	4-0-0	4
CUTM1625	Cyber Forensics	4-0-2	6
CUTM1626	System and Network Security	4-0-2	6

CUTM1627	Cyber Law	4-0-0	4
	Total Credits		**24**

Semester III			
Code	**Course**	**Course Type (Lecture-Tutorial-Practice)**	**Credit**
CUTM1628	Mobile Security Analysis	4-0-2	6
CUTM1629	IT Governance, Risk and Compliance	4-0-0	4
CUTM1630	Business Continuity Planning (BCP) And Disaster Recovery (Dr)	4-0-0	4
CUTM1631	Penetration Testing & Vulnerability Assessment	4-0-2	6
CUTM1632	Digital Frauds	4-0-0	4
	Total Credits		**24**

Semester IV			
Code	**Course**	**Course Type (Lecture-Tutorial-Practice)**	**Credit**
CUTM1633	Project/Dissertation		**24**

Total Credits for M.Sc. Cyber Security and Digital Forensics : 96

9. Credit assignment

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures

and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

10. Grading System & Degree Requirement

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

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)

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

11. Examination Policy

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

Eligibility for Examinations

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

a) 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.
b) 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.
c) 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).
d) 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.
e) 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.
f) 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.
g) 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.
h) A student may register to appear in a semester examination which she/he has not passed, with appropriate fee.

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.

a) End Semester Examinations at the end of the Odd and Even Semester course work
b) 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.
c) 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.
d) Grading pattern to be followed as specified in the Subject Depository.
e) 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

f) 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.
g) 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.
h) A student may apply for rechecking and photocopy as per the norms.
i) 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.

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***

Evaluation Systems:

1. **Theory + Practice:**

	Component	**% of Marks**	**Method of Assessment**
Internal Examination	Internal Theory	30	Written examination
	Assignment	5	Report or Presentation + Learning Record
	Attendance	5	Based on class attended
External Examination	External Theory	60	Written examination
Total		**100**	

2. **Theory:**

	Component	**% of Marks**	**Method of Assessment**
Internal Examination	Internal Theory	30	Written examination
	Assignment	5	Report or Presentation + Learning Record
	Attendance	5	Based on class attended
External Examination	External Theory	60	Written examination
Total		**100**	

3. **Practice:**

	Component	**% of Marks**	**Method of Assessment**
Internal Examination	Internal Practice	50 (40+10)	Lab work + Learning Record

External Examination	External Practice	50	Lab work
Total		**100**	

Assessments of 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%.

Examination& evaluation systems for Back Papers

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.

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.

12. General

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

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

c. 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.

M.Sc. Cyber Security and Digital Forensics Curriculum

Mission: An Institution dedicated to touch human lives with the aim of intensifying the field of investigative sciences to ensure a diminished rate of criminal record in the society by strengthening the justice delivery system leading towards to prosperity, integrity and peace.

Vision: To be a distinguished School of excellence aiming to create a peaceful society by imparting quality education/Training to the Prospective students and allied professionals. To make the institute an inclusive centre of excellence for forensic education, research and Training services, thereby strengthening justice delivery system.

Programme Outcomes (PO) : M.Sc. Cyber Security and Digital Forensics

Cybersecurity masters will be able to;

POs	Outcomes
PO1	Cyber forensic knowledge: Apply knowledge of mathematics, tools, techniques various disciplines of science and basic principles of digital forensic in investigation.
PO2	Perform live hands on as well as to carry out problem analysis and data interpretation of tools analysis.
PO3	The cybercrime and digital society: Apply cognitive informed by the circumstantial knowledge to assess corporate and digital criminal laws, society, health and educational issues and the consequent responsibilities relevant to the cyber forensics
PO4	Discrete and team work: Functions affectively as an individual, and as a member or leader in assorted teams, and in multidisciplinary settings in the field of digital forensics.
PO5	Conduct digital investigations: Tracing cyber victims and help the cyber police officials in proper collection, preservation and handling of digital evidences which will aid in maintaining the integrity of digital evidences.
PO6	Understanding of professional and ethical responsibility of cyber security professionals.
PO7	Communication: Communicate effectively on various activities of digital forensics with proper understanding of scientific tools and legal terminologies.
PO8	Understand thinking of felonious mind and finding digital signatures.
PO9	Life- long learning: Recognize the need for lifelong learning in the broadest contest of challenges and recent advances in the field of cyber forensic science.
PO10	Project Management: Demonstrate knowledge & understanding of the digital forensic science and apply these to one's own work, as a member and leader in a team, to manage projects in cyber forensic science.
PO11	Use of modern techniques, tools, skills, and digital devices necessary for forensic expert or any person working in such field.
PO12	Make a robust documentation on the basis of scientific tools analysis.

Programme Specific Outcomes (PSO): M.Sc. Cyber Security and Digital Forensics

PSO1: Masters will be able to develop skill which can be applied in the jobs of Cyber Forensic Science in private and public sector.
PSO2: Masters will be able to pursue higher studies and research.
PSO3: Masters will be able to use software and technologies that can be effectively used to solve various problems encountered during digital investigations.

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

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

Course Outcomes (CO): M.Sc. Cyber Security and Digital Forensics

Semester 1

MSCS1101 : PRINCIPLES OF INFORMATION SECURITY

Course Objective : The objective of this course is to focus on the models, tools, and techniques for enforcement of security. Student will also learn security from multiple perspectives.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Will gain familiarity with computer network, defences against them, and forensics to investigate the aftermath.
CO-2	Develop a basic understanding of Risk assessment
CO-3	Develop an understanding of security policies as well as protocols to implement such policies.

MSCS1102 : DIGITAL FORENSICS

Course Objective : This course focuses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimize it, and, how to extract and use digital information from a wide range of systems and devices.

The course is structured so that all students cover the same introductory material, but then choose to specialize in either Cyber Security or Digital Forensics.

Any aforesaid science graduate who requires keen interest & knowledge of IT programming languages with basic knowledge of math beyond calculus.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Explain the origins of forensic science.
CO-2	Explain the difference between scientific conclusions and legal decision-making
CO-3	Explain the role of digital forensics and the relationship of digital forensics to traditional forensic science, traditional science and the appropriate use of scientific methods
CO-4	Outline a range of situations where digital forensics may be applicable
CO-5	Identify and explain at least three current issues in the practice of digital forensic investigations.

MSCS1103 : COMPUTER NETWORKS

Course Objective : The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	explain the concepts of confidentiality, availability, and integrity (CIA) in context of Information Assurance; articulate the threats to CIA and be able to analyse a given architecture, discern vulnerabilities, and recommend physical, logical, or administrative controls to mitigate the threat; (Cybersecurity Fundamentals—Theory)
CO-2	demonstrate expertise in configuring host and network level technical security controls, to include host firewalls, user access controls, host logging, network filtering, intrusion detection, and prevention and encryption at all levels; (Managing Security—Applied)
CO-3	describe the hardware, software, and services that comprise an enterprise network, and be able to articulate how these components integrate to form a network solution; (Network Integration—Theory)
CO-4	Explain key networking protocols, and their hierarchical relationship in the context of a conceptual model, such as the OSI and TCP/IP framework; be able to articulate the low-level data communications and subsequent abstractions that allow networked hosts and applications to communicate across the internet; (Networking Protocols—Theory)
CO-5	Build multiple host and network architectures, given business requirements and constraints; student will configure operating systems, network specific services, routing, switching, and remote access solutions; (Networking—Applied)

MSCS1104 : CYBER CRIME & INVESTIGATIONS

Course Objective : This course focusses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimize it, and, how to extract and use digital information from a wide range of systems and devices. The course is structured so that all students cover the same introductory material, but then choose to specialize in either Cyber Security or Digital Forensics. Any aforesaid science graduate who requires keen interest & knowledge of IT programming languages with basic knowledge of math beyond calculus.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Discuss data and identify data sources

CO-2	Describe and discuss digital evidence
CO-3	Compare and contrast the differences between digital evidence and traditional evidence
CO-4	Describe and critique digital forensics process models
CO-5	Describe and critique digital forensics process models
CO-6	Critically evaluate standards and good practices for digital evidence and digital forensics

MSCS1105 : INTELECTUAL PROPERTY RIGHTS

Course Objective : The main objective of the IPR is to make the students aware of their rights for the protection of their invention done in their project work. The students will get a basic idea about registration in India and abroad of their invention, designs, thesis written/developed by them during their project work and for this they must have knowledge of patents, copy right, trademarks, designs.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Once the students complete their syllabus and assessment, they will develop the basic knowledge and awareness of acquiring the patent and copyright for their innovative works.
CO-2	They will also get an idea about plagiarism while writing any article, blog, research or review paper and learn how to avoid it.

2ND SEMESTER

MSCS1201 : NUMBER THEORY & CRYPTOGRAPHY

Course Objective : Covers fundamental algorithms for integer arithmetic, greatest common divisor calculation, modular arithmetic, and other number theoretic computations. Algorithms are derived, implemented and analysed for primality testing and integer factorization. Applications to cryptography are explored including symmetric and public-key cryptosystems. A cryptosystem will be implemented and methods of attack investigated. To be able to implement and analyse algorithms for integer factorization and primality testing. To be able to use a system like Maple to explore concepts and theorems from number theory. To understand fundamental algorithms from symmetric key and public key cryptography.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	To understand fundamental number theoretic algorithms such as the Euclidean algorithm, the Chinese Remainder algorithm, binary powering, and algorithms for integer arithmetic.
CO-2	To understand fundamental algorithms for symmetric key and public key cryptography.
CO-3	To understand the number theoretic foundations of modern cryptography and the principles behind their security.
CO-4	To implement and analyze cryptographic and number theoretic algorithms.
CO-5	To be able to use Maple to explore mathematical concepts and theorems.

MSCS1202 : ADVANCED INFORMATION SECURITY

Course Objective : The objective of this course is to focus on the models, tools, and techniques for enforcement of security. Students will learn security from multiple Perspectives.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Will gain familiarity with computer network, defences against them, and forensics to investigate the aftermath.
CO-2	Develop a basic understanding of Risk assessment
CO-3	Develop an understanding of security policies as well as protocols to implement such policies

MSCS1203: CYBER FORENSICS

Course Objective : The aim of this course is to equip you with the knowledge and techniques to computer forensics practices and evidence analysis. It prepares you to use various forensic investigation approaches and tools necessary to start a computer forensics investigation. It also aims at increasing the knowledge and understanding in cyber security and ethical hacking.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Define computer forensics.
CO-2	Identify the process in taking digital evidence.
CO-3	Describe how to conduct an investigation using methods of memory, operating system, network and email forensics.
CO-4	Assess the different forensics tools.
CO-5	Differentiate among different types of security attacks.
CO-6	Describe the concept of ethical hacking.

MSCS1204 : SYSTEM & NETWORK SECURITY

Course Objective : The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Able to understand the concepts of confidentiality, availability, and integrity (CIA) in context of Information Assurance.
CO-2	Articulate the threats to CIA and be able to analyze a given architecture.
CO-3	Discern vulnerabilities.
CO-4	Recommend physical, logical, or administrative controls to mitigate the threat; (Cybersecurity Fundamentals—Theory)

MSCS1205 : CYBER LAW

Course Objective: The Objectives of This Course Is to Enable Learner to Understand, Explore, And Acquire A Critical Understanding Cyber Law. Develop Competencies for Dealing with Frauds and Deceptions (Confidence Tricks, Scams) And Other Cyber Crimes for Example, Child Pornography Etc. That Are Taking Place Via the Internet.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Make Learner Conversant with The Social and Intellectual Property Issues Emerging From 'Cyberspace.
CO-2	Give Learners in Depth Knowledge of Information Technology Act and Legal Frame Work Of Right to Privacy, Data Security and Data Protection.
CO-3	Make Study on Various Case Studies on Real Time Crimes.

3RD SEMESTER

MSCS2101 : MOBILE SECURITY ANALYSIS

Course Objective: This course focuses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimize it, and, how to extract and use digital information from a wide range of systems and devices. The course is structured so that all students cover the same introductory material, but then choose to specialize in either Cyber Security or Digital Forensics. Any aforesaid science graduate who requires keen interest & knowledge of IT programming languages with basic knowledge of math beyond calculus.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Students learn cryptography basics (concepts, algorithms, techniques, implementation, and evaluation) for mobile apps.

CO-2	Students learn basic cryptography implementation for Android mobile security.
CO-3	Understand how to outsource application and data to a cloud in mobile computing which will leverage services provided by cloud providers.
CO-4	Deal with the various aspects arising in architecting secure complex systems, such as analysing and identifying system threats and vulnerabilities, and investigating operating systems security.

MSCS2102 : IT GOVERNANCE, RISK& COMPLIANCE

Course Objective: This course focusses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimize it, and, how to extract and use digital information from a wide range of systems and devices. The course is structured so that all students cover the same introductory material, but then choose to specialize in either Cyber Security or Digital Forensics. Any aforesaid science graduate who requires keen interest & knowledge of IT programming languages with basic knowledge of math beyond calculus.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the concepts of governance, risk management and compliance (GRC) and regulatory environment.
CO-2	Identify high-risk areas and compliance in your organization and apply Risk-based Approach
CO-3	Develop and implement a governance, risk management and compliance strategic plan
CO-4	Understand, define, and enhance organizational culture as it relates to performance, risk, and compliance
CO-5	Implement governance, risk management and compliance processes that are effective and efficient
CO-6	Using a risk-based audit approach

MSCS2103: BUSINESS CONTINUITY PLANNING & DISASTER RECOVERY

Course Objective: This course focuses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimize it, and, how to extract and use digital information from a wide range of systems and devices. The course is structured so that all students cover the same introductory material, but then choose to specialize in either Cyber Security or Digital Forensics. Any aforesaid science graduate who requires keen interest & knowledge of IT programming languages with basic knowledge of math beyond calculus.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the concept of business continuity
CO-2	Learn the importance of a BCP (business continuity planning)
CO-3	See how load balancing maintains business continuity
CO-4	Discover how a DCP (Disaster recovery plan) is a second line of defence
CO-5	Learn how to choose the right failure over solution

MSCS2104: PENETRATION TESTING & VULNERABILITY ASSESSMENT

Course Objective: In the end, the goal is to identify security weaknesses in a network, machine, or piece of software. Once they're caught, the people maintaining the systems or software can eliminate or reduce the weaknesses before hostile parties discover them. "Security" isn't limited to how well the machines and software stand up against penetration attempts.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Explain the basic principles and techniques of how attackers can enter computer systems.
CO-2	Put acquired knowledge into practice by performing ethical penetration tests and hide the intrusion.
CO-3	Perform analyses of data breaches and audits of information technology security.
CO-4	Evaluate the strengths and weaknesses of various information technology solutions in terms of data security.
CO-5	Independently present and perform demonstrations of pen-tests for educational purposes.
CO-6	Evaluate the societal role of hacking from a social, ethical and economic standpoint

MSCS2105 : DIGITAL FRAUDS

Course Objective: To provide students with a comprehensive overview of collecting, investigating, preserving, and presenting evidence of cybercrime left in digital storage devices. To introduce topics of forensic data examination of computers and digital storage media. Investigation of computers used for wrong-doing. Understand file system basics and where hidden files may lie on the disk, as well as how to extract the data and preserve it for analysis.

Understand some of the tools of e-discovery. Legal aspects must form a constant background for these types of investigations.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the importance of a systematic procedure for investigation of data found on digital storage media that might provide evidence of wrong-doing.
CO-2	Understand the file system storage mechanisms of two common desktop operating systems (i.e., versions of Microsoft Windows and LINUX)
CO-3	Use tools for faithful preservation of data on disks for analysis. Find data that may be clear or hidden on a computer disk.

4TH SEMESTER

MSCS0301 : PROJECT/ DISSERTATION

Course Objective: To help in training of students with hands on experience of instruments while working on any research topic.

Course Outcomes : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Have understanding of research methodology and lab work/field work.

SCHOOL OF FORENSIC SCIENCES

ACADEMIC REGULATIONS

M.Sc. Forensic Science Programme (2020)

Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities!

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT
SCHOOL OF FORENSIC SCIENCES
M.Sc. Forensic Science

PREFACE

Programme focuses on the collection, preservation, analysis and interpretation of scientific evidence, in an integrated approach, with plenty of field studies. This exciting area of science is delivered with expertise from faculty and practitioners. It gives understanding of the major branches of science including anthropology, biology, physics, chemistry biochemistry and medical sciences. It will develop key laboratory skills, and learn to give detailed scientific explanations for the theory and practices used in modern forensic science. The course gives an overview of types of forensic evidence, such as skeletal remains, insects, drugs, toxicology and poisons. It will explain the DNA and human identification techniques, crime-scene processing, counterfeits and forgeries and the application of analytical techniques to analysis of evidence. The students will be introduced to criminal law, and police administration. The course provides with the opportunity to study analysis of body fluids, drugs, fibers, fire investigation and ballistics and advanced analytical techniques or Forensic investigations.

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 M.Sc. Forensic Science. It contains information on eligibility criteria, including Registration, Selection of Subjects, Grading System, Examination Policy, Attendance Policy and Academic Rules applicable at CUTM.

2. Minimum qualification for admission:

Qualification for M.Sc. Forensic Science is B.Sc. (Hons.)/B.Sc. in any Branch of Science with minimum 50% aggregate.

3. Duration of the program

The Programme for M.Sc. Forensic Science shall extend over a period of four semesters (two academic years). Students will opt for specialization from 3rd semester and will undertake research topic for their dissertation.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

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.

6. 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.

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.

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.

a) Head of the Departments to submit the titles of the subjects to be offered, for all the Baskets, to the Dean.
b) The MIS section has to upload all these subjects in the MIS/ERP.
c) One week slot will be provided to the students for counselling & registration in every semester.
d) Immediately after admission in the first year, each faculty mentor will be allotted 20 students for continuous guidance.
e) 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.
f) 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.
g) 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.

h) A Student is allowed to register for a subject only after clearing its pre requisites, if any.
i) After the choice lock, the time table will be finalized. 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.
j) 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.
k) 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 organized before the convocation of his/her batch.
l) MIS will show cumulative student credits under "My Credits". A report on student wise credits can be obtained from MIS for documentation.

Time Table for Instructions

Department will provide 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.

7. Program/Course credit structure

As per the Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

8. Course of Study

SEMESTER I

Sl No.	**Subject Code**	**Name of Subject**	**Credit** **Theory + Practice + Project**
1.	CUTM1634	Introduction to Forensics, Psychology Law and Statistics	4+0+0
2.	CUTM1635	Instrumental techniques	4+2+0
3.	CUTM1636	Crime Scene Management and Forensic Physics	4+2+0
4.	CUTM1637	Fingerprints and Questioned Documents	4+2+0
5.	CUTM1638	Business Communication	0+2+0
		Total	**24**

SEMESTER II

Sl No	Subject Code	Name of subject	**Credit** **Theory + Practice + Project**
1.	CUTM1639	Quality Management, Narcotic Drugs, Explosives, and Forensic Chemistry .	4+2+0

2.	CUTM1640	Forensic Biology and Forensic Medicine	4+2+0
3.	CUTM1641	Forensic Serology and DNA Profiling	4+2+0
4.	CUTM1642	Forensic Toxicology and Pharmacology	4+2+0
5.	CUTM1643	Forensic Ballistics and Computer Forensics	4+2+0
		Total	30

SEMESTER III : Student can select any one of the following specializations and have to undertake courses of that specialization.

SPECIALIZATION IN FORENSIC CHEMISTRY AND TOXICOLOGY

Sr. no.	**Subject Code**	**Name of Subject**	**Credit** **Theory + Practice + Project**
1.	CUTM1647	Pharmacology and Pharmaceutical Drug Analysis	4+2+0
2.	CUTM1648	Concepts of Toxicology	4+2+0
3.	CUTM1649	Modern and Applied Analytical Forensic Chemistry	4+2+0
4.	CUTM1656	Assignment	0+6+0

5.	CUTM1657	Seminar	0+6+0
		Total	30

SPECIALIZATION IN FORENSIC BIOLOGY

Sr. no.	**Subject Code**	**Name of Subject**	**Credit** **Theory + Practice + Project**
1.	CUTM1644	Molecular Biology and Genetics	4+2+0
2.	CUTM1645	Biotechnology in Pharmaceutical Sciences	4+2+0
3.	CUTM1646	Environmental Biotechnology	4+2+0
4.	CUTM1656	Assignment	0+6+0
5.	CUTM1657	Seminar	0+6+0
		Total	30

SPECIALIZATION IN FORENSIC PHYSICS

Sr. no.	Subject Code	Name of Subject	Credit Theory + Practice + Project
1.	CUTM1650	Advances in Physical Techniques	4+2+0
2.	CUTM1651	Concepts of Conventional and Modern Ballistics	4+2+0
3.	CUTM1652	Audio Recognition and Video Analysis	4+2+0
4.	CUTM1656	Assignment	0+6+0
5.	CUTM1657	Seminar	0+6+0
		Total	30

SPECIALIZATION IN FINGERPRINTS AND QUESTIONED DOCUMENT

Sr. no.	Subject Code	Name of Subject	Credit Theory + Practice + Project
1.	CUTM1653	Modern Trends in Fingerprint Sciences	4+2+0
2.	CUTM1654	Questioned Document and Forensic Accounting	4+2+0
3.	CUTM1655	Forensic Photography and Biometric Traits	4+2+0

4.	CUTM1656	Assignment	0+6+0
5.	CUTM1657	Seminar	0+6+0
		Total	30

SEMESTER IV

Sr. no.	**Subject Code**	**Name of Subject**	**Credit** **Theory + Practice + Project**
1.	CUTM1658	Project	0+0+12

Total credits for M. Sc Forensic science - 96

9. Credit assignment

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

10. Grading System & Degree Requirement

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

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)

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

11. Examination Policy

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

Eligibility for Examinations

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

a) 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.
b) 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.
c) 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).
d) 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.
e) 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.
f) 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.
g) 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.
h) A student may register to appear in a semester examination which she/he has not passed, with appropriate fee.

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.

a) End Semester Examinations at the end of the Odd and Even Semester course work
b) The courses having theory components will have ONLY TWO MID-TERM (earlier known as internal) examinations w.e.f. 2020 academic year. One will be online examination and another will be a presentation. Both these examinations will be conducted and evaluated centrally by the QA cell. The topics for the presentation will be from the syllabus and will be given one week in advance to students by the teaching faculty. The external assessor who will be assessing the presentations will be responsible for the marks. A rubric to assess presentations will be provided. Each student will be given 5 minutes for presentation and 5 minutes for questions by the external assessor. The overall marks obtained will be average of both internals.
c) Practice component assessments will be 50% by the faculty who is teaching the course and 50% by the external assessor who will be assigned by the QA cell. This is same as present policy.
d) 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.
e) Grading pattern to be followed as specified in the Subject Depository.
f) 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

g) 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.
h) 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.
i) A student may apply for rechecking and photocopy as per the norms.

S. No.		***Total Marks for Assessment***	***Internal Evaluation***			***External Evaluation***		
	Course Type		***Theory***	***Practice***	***Project***	***Theory***	***Practice***	***Project***
1	***Theory***	***100***	***40***	***-***	***-***	***60***	***-***	***-***
2	***Practice***	***100***	***-***	***50***	***-***	***-***	***50***	***-***
3	***Project***	***100***	***-***	***-***	***50***	***-***	***-***	***50***

Assessments of Projects:

The Project component assessments for the core courses will have at least two presentations. The project will be assigned by the teaching faculty. Final presentation will be in front of the external assessor and the weightage is 50% each, as is the present case.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.

Examination& evaluation systems for Back Papers

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.

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.

12. General

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

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

c. 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.

M.Sc. Forensic Science Curriculum

Mission: An Institution dedicated to touch human lives with the aim of intensifying the field of investigative sciences to ensure a diminished rate of criminal record in the society by strengthening the justice delivery system leading towards to prosperity, integrity and peace.

Vision: To be a distinguished School of excellence aiming to create a peaceful society by imparting quality education/Training to the Prospective students and allied professionals. To make the institute an inclusive centre of excellence for forensic education, research and Training services , thereby strengthening justice delivery system.

PO (Programme Outcomes): M.Sc. Forensic Science

POs	Outcomes
PO1	Forensic knowledge: Apply knowledge of mathematics, various disciplines of science and basic principles of forensic in investigation.
PO2	Knowledge of psychology and law related to forensic science. Understanding of psychology of criminal mind and modus operandi of crime and statistical analysis in forensic science.
PO3	Knowledge and understanding of crime scene and their management, Visit crime scene and help the police officials in proper collection, preservation and handling of scientific evidences which will aid in maintaining the integrity of evidences.
PO4	Individual and team work: Function affectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings in the field of forensic Science.
PO5	Identification of individuals by knowledge and understanding of Fingerprints. Identify and analyse the questioned documents to aid the police officials and court of law.
PO6	Understanding of different instruments used for forensic analysis and perform experiments as well as to carry out problem analysis and data interpretation of instrumental analysis
PO7	Understanding of professional and ethical responsibility of forensic scientist.
PO8	Communication: Communicate and convey effectively on various activities of forensics with proper understanding of scientific and legal terminologies.
PO9	Understanding of drugs analysis, explosive materials, adulteration analysis as well as poison detection and analysis in forensic science.
PO10	Knowledge and understanding of biological aspects, serological analysis and DNA profiling as well as medico legal aspects in forensic science.
PO11	Understanding and knowledge of ballistics for the analysis of fire arms and projectiles in forensic science.
PO12	Life- long learning: Recognize the need for lifelong learning in the broadest contest of challenges and recent advances in the field of forensic science.
PO13	Project Management: Demonstrate knowledge & understanding of the forensic science and apply these to one's own work, as a member and leader in a team, to manage projects in forensic science.

PO14	Use of modern techniques, skills, and instruments necessary for forensic expert or any person working in such field.
PO15	Make a robust report on the basis of scientific analysis to administer the court of law.

PSOs: M.Sc. Forensic Science

PSO1: Post-graduate will be able to develop skill and knowledge which can be applied in the jobs of Forensic Science

PSO2: Post-graduate will be able to pursue higher studies and research

PSO3: Post-graduate will be able to use software and technologies that can be effectively used to solve various problems encountered during investigations.

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

	PSO1	**PSO2**	**PSO3**
PO1	**H**	**H**	**L**
PO2	**H**	**H**	**L**
PO3	**H**	**H**	**L**
PO4	**M**	**L**	**M**
PO5	**H**	**H**	**L**
PO6	**H**	**H**	**L**
PO7	**L**	**M**	**M**
PO8	**M**	**L**	**M**
PO9	**H**	**H**	**L**
PO10	**H**	**H**	**L**
PO11	**H**	**H**	**L**
PO12	**L**	**M**	**L**
PO13	**H**	**H**	**L**
PO14	**H**	**H**	**L**
PO15	**M**	**L**	**L**

Course Outcome (CO) : M.Sc. Forensic Science

1st Semester

MSFS 1101 Introduction to Forensics, Psychology, Law and Statistics

Course Objective: To understand the Basic knowledge of Psychology, Law and Statistics in Forensic science.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand criminal mind, their Modus Operandi.
CO-2	Understand the Law used in Forensic science.
CO-3	Get idea about statistical analysis and can use in forensic science.

MSFS 1102 Instrumental Techniques

Course Objective: To familiarize the students about the different instruments and their techniques used for analysis in Forensic Science.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand the instrumentation and basic concept of the instruments.
CO-2	Understand the process for analysis of different evidences.

MSFS 1103 Crime Scene Management and Forensic Physics

Course Objective: To understand the management of crime scene, formulation of hypothesis and processing of evidence to FSL.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Visit the crime scene, conduct the investigation, processed the evidence and sent to FSL.
CO-2	Understanding of different type of evidence, formulation of hypothesis, reconstruction of the crime scene.

MSFS 1104 Fingerprints and Questioned Documents

Course Objective: To impart knowledge of fingerprint and questioned document and to understand the role of individual characteristics and identification of Friction Ridges.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know about the important of fingerprint, pattern and their characteristics. Knowledge of analysis of fingerprints and identification of individuals on the basis of fingerprint pattern.
CO-2	Knowledge of documents evidences and their examination process and techniques.
CO-3	Get knowledge on different techniques and recent technologies developed used in fingerprint and questioned documents.

FCHU1203 Business Communication

Course Objective: To impart knowledge on language to communicate in Forensic science.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know the basic terminologies.
CO-2	Will be able to communicate with different officers and convey the important information of forensic aspects.

MSFS1105 Instrumental Techniques Laboratory

Course Objective: To impart the knowledge of instrumental analysis for the evidences and samples in Forensic science.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Get knowledge on using different instruments, understanding the concept of the instruments.
CO-2	To know the different instruments required for respective evidences and prepare the results to administer the court of law.

MSFS1106 Crime Scene Management and Forensic Physics Laboratory

Course Objective: To equip the students with skills to manage the crime scene, investigate the crime scene and forward the evidence to FSL.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skills to investigate the crime scene, find out the evidence and forward the evidence to FSL for analysis.
CO2	Formulate the hypothesis of the crime and reconstruction of the crime scene.

MSFS1107 Finger prints and Questioned Documents Laboratory

Course Objective: To equip the students with skills to analyse the fingerprints and questioned documents.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skills to analyse the fingerprint. Compare the fingerprint to match and identify the individuals.
CO2	Skills to analyse the different documents and find out the contents and characteristics of the documents. Analyse the authenticity of the documents. Detect the forgery in the documents.

2ND SEMESTER

MSFS 1201 Quality Management, Narcotic Drugs, Explosives, and Forensic Chemistry

Course Objective: To understand the quality management and assurance. Knowledge of drugs, explosives materials and their analysis.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Impart the concept of quality management and quality assurance.

CO-2	Knowledge of drugs, analysis of drugs and their forensic aspects.
CO3	Knowledge of explosive and the material used as explosive. Analysis of residue material and parts of the explosives. Detection of the cause of the explosion.

MSFS 1202 Forensic Biology and Forensic Medicine

Course Objective: Impart the knowledge of biological concept and materials used in forensic science, medico legal aspect.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know the biological material used in forensic science. Understand the wild life forensic, entomology and odontology.
CO-2	Understand the autopsy used in forensic science. Determine the cause of death and time of death and understanding the medico legal aspects.

MSFS 1203 Forensic Serology and DNA Profiling

Course Objective: To acquaint the students about different body fluids and their analysis. Impart the knowledge of DNA profiling and individualisation.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Know the body fluids analysis and serological techniques.
CO-2	Impart the knowledge of DNA and DNA analysis. Understand the basic concept of individualisation and uniqueness of DNA in identification of individuals.

MSFS1204 Forensic Toxicology and Pharmacology

Course Objective: To educate students about basic concepts of poison and their analysis.
Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Impart the knowledge of poison and their analysis. Detection of poison in the body or body fluids.
CO-2	Understanding of drug interaction with body and drug toxicity.

MSFS1205 Forensic Ballistics and Computer Forensics
Course Objective: To impart the knowledge of firearms and projectile and basic understanding of digital platform and cyber laws.
Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Impart the knowledge of different firearms and projectile. Understanding of bullet and cartridge cases and gunpowder.
CO-2	To understand the computer parts, digital platform, cyber-crime and cyber laws.

MSFS1206 Quality Management, Narcotic Drugs, Explosives, and Forensic Chemistry Laboratory
Course Objective: To identify the quality of the product. Analysis of drugs and explosive materials.
Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to identify the quality of the different product. Examination of different product as per BIS standards.
CO-2	Identification of NDPS drugs and detection of different drugs by different techniques.
CO-3	Identification of explosives materials and detection of explosives by different techniques.

MSFS1207 Forensic Biology and Forensic Medicine Laboratory
Course Objective: To acquaint the students about the examination of biological material and wildlife forensics.
Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to analyse the biological material and detection of age, sex, race, height and species origin.
CO-2	Identification of injuries and various types of death by post-mortem examination.

MSFS1208 Forensic Serology and DNA Profiling Laboratory
Course Objective: To acquaint the students about the examination of body fluids and individualisation and identification by DNA profiling.
Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to analyse the body fluids and different serological techniques for serological analysis.
CO-2	Identification of individuals by DNA profiling.

MSFS1209 Forensic Toxicology and Pharmacology Laboratory

Course Objective: To acquaint the students about the examination of poison and drug interaction with body.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to analyse the type of poison and detection of different type of poison in body.
CO-2	Analyse the drug interaction and bioavailability of the drug in the body and their metabolites.

MSFS12010 Forensic Ballistics and Computer Forensics Laboratory

Course Objective: To acquaint the students about the examination of firearms and analysis of the projectiles. Tracking and restoration of digital evidences.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to analyse the different firearms and projectiles. Identification and detection of gunshot residue, gunshot powder, range, marks and characters of projectiles.
CO-2	Analysis of storage media, deleted files and information from digital platform and tracking.

3RD SEMESTER
Specialisation in Forensic Chemistry and Toxicology

MSFS2101 Pharmacology and Pharmaceutical Drug Analysis

Course Objective: To teach the concepts Drug, analysis of drug. Understanding of drug therapy, abuses and interaction of drug with body.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand about the drug, factors, bioavailability, and responses of drugs.
CO-2	Understanding the different agents of drugs, designer drugs and NDPS substances.
CO-3	Analysis of drugs and agents.

MSFS 2102 Concepts of Toxicology

Course Objective: Concepts of poison and toxic materials. Understanding of toxic agents and their risk assessments.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Get knowledge on different toxic substances and their identification and detection.
CO-2	Understanding of analytical methods of toxicology and application of toxicology.

MSFS2103 Modern and Applied Analytical Forensic Chemistry

Course Objective: Understanding of nuclear forensics, detection and measurement of radioactive substances.

Understanding of drugs chemistry, NDPS laws and analytical method. Understanding and identification of fire crime scene and explosion crime scene.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Acquainted with proper knowledge chemistry of drugs and different laws related to drugs. Understanding the process of analysis involved to identify the drugs.

MSFS2104 Pharmacology and Pharmaceutical Drug Analysis Laboratory

Course Objective: Skill to analyse the various chemicals.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Qualitative and quantitative analysis of various chemicals.
CO-2	Instrumental analysis of various chemicals.

MSFS2105 Concepts of Toxicology Laboratory

Course Objective: Skill to identify and detect the drugs and poisons.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Ability to detect the drugs by various analytical techniques.
CO-2	Ability to detect the poison by various analytical techniques from biological and non-biological matrices.

MSFS2106 Modern and Applied Analytical Forensic Chemistry Laboratory

Course Objective: Skill to identify and detect the drugs, explosives and fire crime scene. Detection of food adulteration.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Ability to detect the different drug component. Identify and detect the cause of fire and explosion and analyse the residue materials.
CO-2	Skill to detect the food adulteration in food and identify the adulterated material in food.

Specialisation in Forensic Biology

MSFS2111 Molecular Biology and Genetics

Course Objective: To understand the concept of serological analysis and uses of enzymes and proteins in criminal investigation. Understanding of methodologies in forensic DNA analysis.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understand about the serological methods, enzymes and proteins for criminal investigation. Understanding of parameter and factors in forensic DNA typing.
CO-2	Understanding the different methods and techniques used for DNA analysis and development in technologies and methods for DNA analysis.
CO-3	Understanding of Bioinformatics, population structure and DNA databases.

MSFS 2112 Biotechnology in Pharmaceutical Sciences

Course Objective: Concepts of recombinant DNA technology, bioprocessing, animal and plant biotechnology and industrial microbiology.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Get knowledge on recombinant DNA technology and genetically modified organism. Understanding of Blotting techniques and molecular therapy.
CO-2	Understanding of quality control and assurances, regulatory affairs and intellectual property rights.

MSFS2113 Environmental Biotechnology

Course Objective: Understanding the component of environment, waste analysis and detection of illegal waste.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Acquainted with proper knowledge of environmental forensic, analysis of the component of pollutants and materials.
CO-2	Acquainted with the knowledge og waste management and detection of waste material in the environments.

MSFS2114 Molecular Biology and Genetics Laboratory

Course Objective: Skill to analyse and quantify the DNA from different sources and genotyping of the DNA.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Extraction and estimation of DNA from different sources. Genotyping of the DNA with different markers and interpretation of the result to aid the police officials and court of law.
CO-2	Extraction and estimation of proteins from different sources. Analysis of protein structure using RASMOL software.

MSFS2115 Biotechnology in Pharmaceutical Sciences Laboratory

Course Objective: Skill to conduct different analysis for DNA and detection of different industrial products.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skills to isolate DNA from different sources and GMO detection.
CO-2	Ability to handle blotting techniques and identification and detection of production of industrial products.

MSFS2116 Environmental Biotechnology Laboratory

Course Objective: Skill to identify and detect the environmental components and pollutants. Examination of food quality and estimation of BOD and waste treatment.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Ability to detect the pollutants material in the environment and analysis of the pollutants.
CO-2	Skill to identify the adulterated material in food and examine the food quality.

Specialisation in Forensic Physics

MSFS2121 Advances in Physical Techniques

Course Objective: Skill to identify and examine various analyses of techniques used in Forensic Physics

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Ability to detect the various techniques Such as Microscopes, etc.
CO-2	Skill to identify the examination of nanotechnology and Forensic Engineering

MSFS 2122 Concepts of Conventional and Modern Ballistics

Course Objective: Concepts of Ballistics, GSR and various Standards of V50, STANNG 4500, NIG .06

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Identifications and Examination of Ammunitions Range of Fire.
CO-2	Analysis and Examination of GSR Material with various Standards

MSFS2123 Audio Recognition and Video Analysis

Course Objective: Understanding the anatomy of Voice production, Audio and video Analysis

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Identification and Examination of Voice samples using Gold wave Software, Automatic Speaker recognition.
CO-2	Examination of Audio and Video analysis using AMphed Five.

MSFS2124 Advances in Physical Techniques Laboratory

Course Objective: Skill to identify and examine various analyses of techniques used in Forensic Physics

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Ability to detect the various techniques Such as Microscopes, etc.
CO-2	Skill to identify the examination of nanotechnology and Forensic Engineering

MSFS2125 Concepts of Conventional and Modern Ballistics Laboratory

Course Objective: Concepts of Ballistics, GSR and various Standards of V50, STANNG 4500, NIG .06

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Identifications and Examination of Ammunitions Range of Fire.
CO-2	Analysis and Examination of GSR Material with various Standards

MSFS2126 Audio Recognition and Video Analysis Laboratory

Course Objective: Understanding the anatomy of Voice production, Audio and video Analysis

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Identification and Examination of Voice samples using Gold wave Software, Automatic Speaker recognition.
CO-2	Examination of Audio and Video analysis using AMphed Five.

Specialisation in Fingerprints and Questioned Documents

MSFS2131 Modern Trends in Fingerprint Sciences

Course Objective: Understanding of morphology and anatomy of fingerprints and their method for fingerprints detection.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Fundamental and principle of fingerprints and their detection methods.
CO-2	Understanding of development and detection of fingerprints from various methods.

MSFS 2132 Questioned Document and Forensic Accounting

Course Objective: Concepts of documents and their examination. Understanding of forgery and their detection. Identification of fraud and writings and examination of financial documents.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understanding of writing forgery and documents forgery. Examination of questioned documents and writings.
CO-2	Understanding of frauds, money laundering and financial reports.

MSFS2133 Forensic Photography and Biometric Traits

Course Objective: Understanding the knowledge of photography and different biometric techniques.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Principle and techniques of photography and understanding the crime scene photography with various light sources.
CO-2	Knowledge of different biometric techniques and biometrics analysis.

MSFS2134 Modern Trends in Fingerprint Sciences Laboratory

Course Objective: Skill to analyse the fingerprint and compare the fingerprint.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to analyse the fingerprint with microscopic techniques and comparison of male and female fingerprint with specific reference and with AFIS method..
CO-2	Development of fingerprint with various chemical and physical methods.

MSFS2135 Questioned Document and Forensic Accounting Laboratory

Course Objective: Skill to analyse the ink, paper, documents and detection and identification of forgery and fraud.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Skill to examination of ink, paper age, currency notes and detection of forgery of the documents.
CO-2	Examination of passports, stamps, stamps impression.

MSFS2136 Forensic Photography and Biometric Traits Laboratory

Course Objective: Skill to conduct crime scene photography and biometric analysis.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Do crime scene photography, evidences photography and videography. Development of photographic prints.
CO-2	Do photography with various light sources and with various filters. Analysis of various biometrics.

MSFS2107 : Assignment

Course Objective: to familiar and skilled to write the content with order and right pattern.

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Understanding of writing the proper content with professional language and with proper explanation.

MSFS2108: SEMINAR

Course Objective: to make student familiar and skilled to deliver in seminar

Course Outcomes: On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Get familiar and skilled to deliver in seminar

MSFS2200: Dissertation/project

Course Objective: To help in training of students with hands on experience of instruments while working on any research topic.

Course Outcome : On completion of this course, the successful students should be able to:

CO	Statements
CO-1	Have understanding of research methodology and lab work/field work.