Gyanmanjari
Innovative University

Subject: Forensic Fingerprinting BSCFS13302

Type of course: Major

Prerequisite: Basic understanding of chemistry and biology is recommended.

Rationale: After studying this paper the students will understand the concepts of fingerprinting used in forensic science.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				SEE		CCE			
CI	T	P	C	Theory	Practical	MSE	LWA/V	ALA	
3	0	2	4	75	25	30	20	50	200

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; MSE- Mid Semester Examination; LWA - Lab Work Assessment; V – Viva voce; CCE-Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.

3 Credits * 25 Marks = 75 Marks (each credit carries 25 Marks) Theory
1 Credits * 25 Marks = 25 Marks (each credit carries 25 Marks) Practical
SEE 100 Marks will be converted in to 50 Marks
CCE 100 Marks will be converted in to 50 Marks
It is compulsory to pass in each individual component.

Course Content:

Unit No	Course Content	Hrs	Weightage
1	**Introduction to Fingerprinting:** Definition, History and biology of fingerprints. Fundamental principles of fingerprinting. Classification/Types of Fingerprints. Significance of fingerprints in Forensic investigation.	12	28%
2	**Collection and Development**	12	28%

	Collection, lifting and preservation of fingerprints. Photography of fingerprints. Physical and Chemical methods for development of fingerprinting		
3	**Modern Detection Methods** Fingerprint identification through light sources. Quantum dots, Nano technology method, Iodine and a naphtoflavon method for skin, Multi metal deposition, Laser method of fingerprint development. Difference between conventional methods and modern methods for developing fingerprints. Evidentiary Value of Fingerprint Evidence Admissibility of Finger Prints in Indian Court Critical Aspect of Fingerprint Evidence in India	12	28%
4	**Foot and Lip Prints** Introduction and Importance of footprints. The examination of footprints in forensic investigation. Analysis of footprints and Shoeprints. Evidence submission and examination. Lip prints – Anatomy of lips, classification, lip prints in court, Lip print evidence in criminal case.	9	16%

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	**Fingerprint History Timeline:** Divide the class into small groups and assign each group a specific period in the history of fingerprinting, such as ancient civilizations' use of fingerprints, the development of modern fingerprinting techniques. Have each group create a timeline highlighting key events, discoveries, and advancements. Upload it to GMIU Web portal.	10
2	**Classic Classification:** Students need to draw colourful classification in chart paper and Upload it to GMIU Web portal.	10
3	**Historical Foot Print Case Studies:** Assign students to research historical cases where foot prints played a significant role in criminal investigations. Instruct students to analyze the details of each case, including how foot prints were collected, analyzed, and used to identify suspects or solve crimes. Have students present their findings in form of report and upload the report to GMIU Web Portal.	10
4	**Data Comparison Challenge:** Create a data comparison challenge where students analyze fingerprint data sets using software commonly used in forensic laboratories, such as AFIS (Automated Fingerprint Identification System) or fingerprint comparison software. Provide students with sets of fingerprint images and challenge them to identify matching	10

	prints, classify patterns, and generate comparison reports. Encourage students to discuss their findings and interpretations, emphasizing the importance of accuracy and reliability in fingerprint comparison.		
5	**Attendance**		10
	Total		50

List of Practical:

Sr. No	Descriptions	Unit No	Hrs
1	Prepare fingerprint card and identify the patterns.	All	2
2	Tape lifting of fingerprint		2
3	Casting of foot prints/ fingerprint		4
4	To carry out ridge tracing and ridge counting.		2
5	To investigate physical methods of fingerprint detection.		8
6	To investigate chemical methods of fingerprint detection.		8
7	To use different light sources for enhancing developed fingerprints.		4
		Total	30

Suggested Specification table with Marks (Theory):75

	Distribution of Theory Marks (Revised Bloom's Taxonomy)					
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	25%	25%	25%	20%	5%	00

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

	After learning the course the students should be able to:
CO1	Gain knowledge of history and development of fingerprints.
CO2	Understand various patterns of fingerprints.
CO3	Analyze and compare fingerprints on the basis of class and individual Characteristics.
CO4	Evaluate the admissibility of fingerprint evidence in court of law.

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

[1] Lee and Gaensleen's, Advances in Fingerprint Technology, 3 Edition, R.S. Ramotowski (Ed.), CRC Press, Boca Raton (2013).

[2] Fingerprints: Indian Scenario, Arun Bhoi, Atlantic Publishers.

[3] Forensic Chemistry, Nikunj Dave, Notion Press

[4] Forensic Chemistry, David Newton, Facts on File Inc.