

BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH



Syllabus on the bases of Choice Based Credit System (CBCS)

For

Semester I

(F. Y. B. Sc.)

FORENSIC SCIENCE

SEMESTER – I

Paper No.-I : FS-101: FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUES - I

INFORCE FROM JUNE - 2018

Conceptual Framework of the Syllabus of Forensic Science Semester 1 & 2

Sr. No	Level UG or PG	Semester	Course Group Core Elective -1 Elective -2 etc	Course (Paper) Title	Paper No.	Credit	Internal Marks for Theory	Internal Marks for Practical	External Marks for Theory	External Marks for Practical	Total Marks	Course (Paper) Unique Code
1	UG	1	1	FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUE S - I	FS-101	06	30	15	70	15	150	

Total Scheme of evaluation

Semester	Theory			Practical		
	Internal	External	Total	Internal	External	Total
I	30	70	100	15	35	50

Minimum requirements of material and Instruments for Forensic Science

Practical based on Paper FS-101 and Paper FS-201

- Use of one students micro scope for two students in practical batch
- Stereo microscope
- Phase contrast microscope
- Different types of stain for slide preparation
- U. V. Visible spectrophotometer
- Gas Chromatography
- Different types of stain for slide preparation
- Paper chromatography chamber and their equipment's & Chemicals
- Adequate chemicals for forensic experiments.
- FTIR
- Incubator
- Centrifuge
- Oven
- UV Cabinet
- Tensile meter
- *Digital Balance*

FS-101: FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUES – I

Unit – I Forensic Science:

I.1 Fundamental of Forensic Science, need and scope of forensic science

I.2 Basic Principles and significance of Forensic Science

I.3 Organizational Structure of Forensic Science Laboratories-I

I.3.1 Physics division:

Physical evidences, soil analysis, glass analysis, paint analysis tool marks, cut marks, electrocution, physical comparison, physical quantities, itching, fake currency analysis, physical microscopy, speech and voice identification and authentication

I.3.2 Ballistics:

Introduction and fundamentals of fire arms and ammunition, Fire arm and bullets comparison, Distance of firing-contact shot and remote firing, Introduction of GSR

I.3.3 Digital forensic science:

Introduction of digital forensic, Types of digital crime, data recovery, digital Evidences, Introduction to network-LAN, WAN, MAN, Network security

I.3.4 Photography:

Introduction to photography with special reference to forensic, crime scene photography, Types of photography and its forensic application.

I.3.5 Documents Division:

Introduction of question document, Examination of questioned documents such as handwritings, signature, stamp, erased writing alteration, addition, typewriting, etc, basic tools needed for question document examination.

I.3.6 Finger print division:

Introduction and fundamentals of fingerprint, Different fingerprint detection techniques

Unit – II Organizational Structure of Forensic Science Laboratories-II

II.1 Chemistry:

Analysis and detection of unknown chemicals, Analysis of organic and inorganic compounds likes petroleum products, food additives and materials, Analysis of arson residue

II.2 Toxicology:

Introduction of toxicology, Analysis and detection of toxic substances or its intermediate metabolites in viscera, blood, urine, vomits samples

II.3 Blood alcohol:

Introduction of blood alcohol, Detection and determination of percentage of alcohol in blood samples

II.4 Prohibition and possession division:

Introduction to Prohibition and possession division, Examination of alcohol in foreign liquor, country made liquor, illicit alcohol

II.5 Explosion analysis:

Introduction and fundamentals of explosion, Types of explosive substance, Examination of explosive material and scene of crime.

II.6 Narcotics division:

Introduction and fundamentals of Narcotics, Types of Narcotics, Examination and detection of narcotic and psychotropic drugs, Abuse of Drugs

Unit – III Organizational Structure of Forensic Science Laboratories-III

III.1 Biology division:

Introduction and Examination of blood, saliva, semen, urine, teeth, bone, hair, tissues and vegetative materials, food poisoning, and analysis of any biological materials. Analysis of sample in wildlife crime

III.2 Serology division:

Introduction, Determination of origin and grouping of blood, serological examination of body fluids

III.3 DNA Division:

Introduction of DNA, DNA as biological blue prints of life, DNA profiling of any body fluids, tissues, hair, etc for personal identification, sexual cases and disputed paternity cases

III.4 Forensic psychology:

Introduction of forensic psychology

Techniques- Lie detection, Narcoanalysis, Brain electrical oscillation sign (BEOS)

III.5 Homeland security and antiterrorism

Forensic view in homeland security and antiterrorism, analysis work occur in Homeland Security and antiterrorism lab

III.6 Other divisions

Forensic anthropology, Forensic odontology, Forensic entomology, Forensic medicine

Unit – IV Crime scene analysis

IV.1 Definition & causation of crime, Types of crime, Nature of crime, modus operandi

IV.2 Definition of crime scene, types of crime scene, crime scene management, protection and recording of crime scene, Search of physical clues, preservation, packing and forwarding of physical clues

IV.3 Blood spattering / Pattern analysis

Unit – V Basic principles of forensic biology:

V.1 Microscopy

Basic principles, Simple and Compound microscope, Comparison microscope, Phase contrast Microscope, Stereoscopic microscope, Polarizing microscope, Fluorescent Microscopy, Infra red Microscopy, Scanning Electron Microscope & Transmission Electron Microscope.

V.2 Cell and tissues

Cell structure, cell organelles, their structure and functions

F.Y.B.Sc. Forensic Science(Practical) Semester - I Paper - I

Suggested Experiments

- 1.** To study tool mark identification.
- 2.** To know the physical comparison of objects.
- 3.** To analyze different soil of your region (physical and chemical).
- 4.** To study Forensic photography.
- 5.** To know the document examination.
- 6.** To take rolled and plain fingerprints impression of individual and recognize the fingerprint patterns.
- 7.** To analyze the blood group of given blood sample.
- 8.** Perform primary test for the examination of blood.
- 9.** To compare the hair.
- 10.** Amino acid separation by ascending / circular paper chromatography.
- 11.** To study different types of cells (Bacterial, Yeast, Plants and Animal).
- 12.** To study the Mitochondria and Endoplasmic Reticulum organelles.
- 13.** To study the principle and functional parts of light microscope.
- 14.** To study the different types of microscope.

SKELETON OF THEORY EXAMINATION
(EXTERNAL)

QUESTION 1 – UNIT 1		
Q 1 A	Objective type questions	4 Marks
Q 1 B	Answer in brief (Any 1 out of 2)	3 Marks
Q 1 C	Write a note on (Any 1 out of 2)	7 Marks
QUESTION 2 – UNIT 2		
Q 2 A	Objective type questions	4 Marks
Q 2 B	Answer in brief (Any 1 out of 2)	3 Marks
Q 2 C	Write a note on (Any 1 out of 2)	7 Marks
QUESTION 3– UNIT 3		
Q 3 A	Objective type questions	4 Marks
Q 3 B	Answer in brief (Any 1 out of 2)	3 Marks
Q 3 C	Write a note on (Any 1 out of 2)	7 Marks
QUESTION 4 – UNIT 4		
Q 4 A	Objective type questions	4 Marks
Q 4 B	Answer in brief (Any 1 out of 2)	3 Marks
Q 4 C	Write a note on (Any 1 out of 2)	7 Marks
QUESTION 5 – UNIT 5		
Q 5 A	Objective type questions	4 Marks
Q 5 B	Answer in brief (Any 1 out of 2)	3 Marks
Q 5 C	Write a note on (Any 1 out of 2)	7 Marks
TOTAL MARKS : 70 TOTAL TIME : 2½ HOURS		