BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

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

For

Semester - II

(F. Y. B. Sc.)

FORENSIC SCIENCE

SEMESTER – II

Paper No.-II : FS-201: FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUES – II

INFORCE FROM November - 2018

BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

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) Uniqu e Code
1	UG	1	1	FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUES - I	FS-101	06	30	15	70	15	150	
2	UG	2	1	FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUES - II	FS-201	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
II	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

F.Y.B.Sc. Forensic Science Semester - II Paper - II

FS-201: FORENSICS, CRIME AND INVESTIGATIVE TECHNIQUES - II

Unit – I Basic Concepts - Atomic & Molecular Spectroscopy-I

I.1 What is spectroscopy, electromagnetic spectrum?

I.2 Interaction of radiation with matter: reflection, absorption, transmission, fluorescence, phosphorescence and their forensic applications, radiation filters

I.3 Atomic spectra, energy levels, quantum numbers and designation of states, selection rules, qualitative discussions of atomic spectra

Unit – II Elements of X- ray spectrometry

Sources for shorter wavelength radiations (X-ray tubes) radioactivity, x -rays ,Elements of X- ray spectrometry- fluorescence, energy Dispersive X-ray analysis (EDX), wavelength Dispersive X-ray analysis (WDX), X-ray diffraction, Augur effect

Unit – III Sources and detectors of radiation and LASER

III.1 Sources of radiation; their utility and limitations- conventional sources for UV, visible and infrared rays, Detection of radiations; photographic detectors, thermal detectors, photoelectric detectors etc

III.2 Laser (He, Ne, Argon ion, dye lasers, semi conductor lasers)

Unit-IV General Principles of Biological/ Bio-chemical Analysis

IV.1 pH and buffers, Physiological solution

IV.2 Centrifugation Techniques

Basic principles of sedimentation, various types of centrifuges, Density gradient centrifugation, Preparative centrifugation, Analysis of sub-cellular fractions, Ultra-centrifuge- Refrigerated Centrifuges

Unit-V Macromolecules

V.1 Carbohydrates: Classification, Types, Properties, Significance

V.2 Proteins: Classification, Structures, Properties, Significance

V.3 Lipid: Classification, Types, Properties, Significance

V.4 Nucleic Acid: Classification, Types, Properties, Significance, Structures

F.Y.B.Sc. Forensic Science Semester - II Paper - II

Suggested Experiments

1. To prepare the phosphate buffer of different pH and measure the pH of given solution with pH meter.
2. Separate the different compound from given biological mixtures.
3. Qualitative test for (a) Carbohydrates (b) Proteins (c) Lipids
4. Estimation of amino-acid by ninhydrine methods.
5. Verification of Beer's and Lambert's Law.
6. To determine the λ max for different compounds.
7. To study the properties of light -
   (a) Reflection,
   (b) Absorption,
   (c) Transmission,
   (d) Fluorescence
8. To study Photographic detector
9. To study Photoelectric detector

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