



પરિપત્ર:

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી સંલગ્ન સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ કોલેજોનાં આચાર્યશ્રીઓને સવિનય જણાવવાનું કે સાયન્સ વિદ્યાશાખા હેઠળનો NEP-૨૦૨૦ અંતર્ગતનો ફોરેન્સિક-સાયન્સ વિષય (બી.એસ.સી ફોરેન્સિક-સાયન્સ વિથ ઓનર્સ) સેમેસ્ટર-૧ના અભ્યાસક્રમમાં રિવાઈઝડ પેપર સ્ટાઈલ (SOP, શિક્ષણ વિભાગ, ગુજરાત સરકાર ની ગાઈડલાઈન્સ પ્રમાણે) જેની સાથેનો ૨૦૨૩-૨૪નો અભ્યાસક્રમ આ સાથે સામેલ છે. જે આપને વિદિત થાય.

માનનીય કુલપતિશ્રીની મંજૂરી અનુસાર સદર અભ્યાસક્રમ શૈક્ષણિક વર્ષ જુન, ૨૦૨૩ થી અમલવારી કરવાની રહે છે. સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજો ધ્વારા તેની અમલવારી કરવા જણાવવામાં આવે છે.



[Signature]
76/10/2024

ખાસ ફરજ પરના અધિકારી
(એકેડેમિક)

ક્રમાંક/બીકેએનએમયુ/ એકેડેમિક/૧૩૮૮/૨૦૨૪

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી,

સરકારી પોલીટેકનિક કેમ્પસ,

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી રોડ,

ખડીયા, જૂનાગઢ-૩૬૨૨૬૩

તા.૧૬/૧૦/૨૦૨૪

પ્રતિ,

- ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી સંલગ્ન સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમો ચલાવતી તમામ કોલેજોના આચાર્યશ્રીઓ તરફ....

નકલ સાદર રવાના:-

- માન.કુલપતિશ્રી/કુલસચિવશ્રીનાં અંગત સચિવશ્રી.
- પરીક્ષા નિયામકશ્રી, ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી, જુનાગઢ

નકલ રવાના જાણ તથા યોગ્ય કાર્યવાહી અર્થે:

- સીસ્ટમ મેનેજરશ્રી, આઈ.ટી.સેલ વિભાગ (વેબસાઈટ ઉપર પ્રસિદ્ધ થવા અર્થે.)



**BHAKTA KAVI NARSINH MEHTA UNIVERSITY
JUNAGADH**



**BOARD OF FORENSIC-SCIENCE STUDIES
FACULTY OF SCIENCE
SYLLABUS FOR
B.Sc. (FORENSIC SCIENCE) (HONOURS)
PROGRAMME
(SEMESTER- I)
EFFECTIVE FROM JUNE, 2023**

Preamble

This National Education Policy 2020 is the first education policy of the 21st century and aims to address the many growing developmental imperatives of our country individual. It is based on the principle that education must develop not only cognitive capacities - both the ‘foundational capacities’ of literacy and numeracy and ‘higher-order’ cognitive capacities, such as critical thinking and problem solving – but also social, ethical, and emotional capacities and dispositions.

The rich heritage of ancient and eternal Indian knowledge and thought has been a guiding light for this Policy. The pursuit of knowledge (Gyan), wisdom (Pragyaa), and truth (Satya) was always considered in Indian thought and philosophy as the highest human goal. The aim of education in ancient India was not just the acquisition of knowledge as preparation for life in this world, or life beyond schooling, but for the complete realization and liberation of the self. World-class institutions of ancient India such as Takshashila, Nalanda, Vikramshila, Vallabhi, set the highest standards of multidisciplinary teaching and research and hosted scholars and students from across backgrounds and countries. The Indian education system produced great scholars such as Charaka, Susruta, Aryabhata, Varahamihira, Bhaskaracharya, Brahmagupta, Chanakya, Chakrapani Datta, Madhava, Panini, Patanjali, Nagarjuna, Gautama, Pingala, Sankardev, Maitreyi, Gargi and Thiruvalluvar etc.

Over the past decades the higher education system of our country has undergone substantial structural and functional changes resulting in both quantitative and qualitative development of the beneficiary. The upgradation of undergraduate programmes in the line of NEP, 2020 will play an extremely important role in promoting human as well as societal well-being and in developing India as envisioned in its Constitution – a democratic, just, socially conscious, cultured, and humane nation upholding liberty, equality, fraternity, and justice for all. A holistic and multidisciplinary education would aim to develop all capacities of human beings – intellectual, aesthetic, social, physical, emotional, and moral in an integrated manner. Such an education will help develop well-rounded individuals that possess. Such changes will further result in learning outcome-based curriculum to maximize the benefits of the newly designed curriculum. The learning outcome-based curriculum in general and in Forensic Sciences will definitely help the teachers of the discipline to visualize the curriculum more specifically in terms of the learning outcomes expected from the students at the end of the instructional process. It is pertinent to mention here that the purpose of education is to develop an integrated personality of the individual and the educational system provides all knowledge and skills to the learner for this. The template of learning outcome-based framework has categorically mentioned very well-defined expected outcomes for the program like core competency, communication skills, critical thinking, affective skills, problem-solving, analytical, reasoning, research-skills, teamwork, digital literacy, moral and ethical awareness, leadership readiness and so on along with very specific learning course outcomes at the starting of each course. Therefore, this template on Learning Outcomes based Curriculum Framework (LOCF) for B.Sc. with Forensic Sciences/Forensic Sciences Honours under the University will be in the line of NEP, 2020 – more flexible, multi-disciplinary, holistic and will definitely be a landmark in the field of outcome-based curriculum construction.

Forensic Science is the use of scientific procedures and the examination of scientific information to assist the legal and law enforcement systems. Bachelor's degree programs in Criminology and Forensic science offer a well-balanced education in science, including statistics, biology, chemistry, and physics. Bachelor's degree programs in Forensic Science combine lecture and laboratory classes and may include internships and exposure to Forensics Science Laboratories (FSL's) and related agencies. This program is designed to introduce students to Forensic Science and its interdisciplinary nature through an exploration and examination of Forensic sub-disciplines and emerging techniques including Forensics Medicine, Forensic Chemistry, Forensic Physics, Forensic Fingerprinting, Cyber Security and among others. Beyond providing

students with a broad overview of Forensic Science, students will be encouraged to explore and develop their own specific interests within the field. All these aspects have been given due weightage over the eight semesters. It is essential for the undergraduate students to acquaint themselves with various tools and techniques for exploring the field of Forensic Sciences. Papers on this aspect are proposed to provide such an opportunity to the students before they engage themselves with the learning of modern tools and techniques in Forensic Sciences. Keeping the employment entrepreneurship in mind, applied courses have also been introduced. These courses shall provide the Forensic Sciences students with hands-on experience and professional input. On the whole, the curriculum is a source of lot of information and is supported by rich resource materials. It is hoped that a student graduating in Forensic Sciences with the new curriculum will be a complete Forensic Sciences at Honours level.

This National Education Policy envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower. The Policy envisages that the curriculum and pedagogy of our institutions must develop among the students a deep sense of respect towards the Fundamental Duties and Constitutional values, bonding with one's country, and a conscious awareness of one's roles and responsibilities in a changing world. The vision of the Policy is to instill among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen. We tried our level best to fulfill the vision of NEP by providing Forensic Sciences syllabus for first year students to transform our Indian knowledge system with modern concept of Forensic Sciences. The new curriculum of B.Sc. in Forensic Sciences offers essential knowledge and technical skills to study Forensic Sciences used in the legal or justice system to support and uphold the law. When a crime has been committed and evidence is collected at the scene, scientists analyze it, arrive at scientific results and give expert court testimony about their findings. Forensic science concentrates on facts that prove something did or did not happen in a criminal or civil case.

The curriculum framework considers the need to maintain globally competitive standards of achievement in terms of the knowledge and skills in Forensic Science and allied courses, as well develop scientific orientation, spirit of enquiry problem, solving skills and, professional values which foster rational and critical thinking in the students. B.Sc. Forensic Sciences Program covers academic activities within the classroom sessions along with practical concepts at laboratory sessions. Infield, outstation activities and projects are also required to be organized for real-life experience and learning. Candidates who have curiosity in Crime Scene Investigation, Forensic Cyber Security, Forensic Fingerprinting, or wish to work as researchers or professions like Forensic Scientists, Investigating Officer, Forensic Expert, etc. can choose B.Sc. Forensic Science cou

Conceptual Framework for SEM-1

SEMESTER - 1

Course Type	Course Code	Credit	Work Hours/ Week	External Exam Hours	Marks		Total
					Internal	External	
Discipline Specific Core Courses (Theory)- I	DSCFS- 101	3+1	3+2	2	50	50	100
Discipline Specific Core Courses (Theory)- II	DSCFS- 102	3+1	3+2	2	50	50	100
Discipline Specific Minor Courses Chemistry (Theory)	DSMFS- 101	3+1	3+2	2	50	50	100
Multidisciplinary Courses Physics (Theory)	MDCFS- 101	3+1	3+2	2	50	50	100
Ability Enhancement Courses	AECC- 101	2	3(1 T + 2 P)	2	25	25	50
Skill Enhancement Courses	SECFS- 101	2	4 (Only P)	3	25	25	50

Pattern of Examination:

Students will have to attend theory and practical both during the semester and at the end of semester, University exams will be conducted. Examination contains 70% external and 30% internal marks. A student's performance during every practical session is assessed and marks for a maximum of 15 are recorded. External practical evaluation will carry 35 marks, so total 50 marks for each practical per paper examination will be counted. Internal assessment for theory can be following any one as mentioned below.

Total Scheme of evaluation

Semester	Total distribution of mark						
	Internal					External	Total
	Exam	Assignment	MCQ	Attendance	Practical		
I	10	10	05	05	20	50	100

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Syllabus of Bachelor of Science (B.Sc) as per NEP
Syllabus of Sem-1
Effective from June, 2023
Subject: Forensic Science

FORENSIC SCIENCE

Instructions:

1. This question paper contains **five** questions. **All** questions are compulsory.
2. Write answers to **all** the questions in main answer sheet.
3. Draw neat and labelled diagram wherever necessary.
4. Figures to the right side indicate full marks for the question.

EXTERNAL ASSESSMENT BY UNIVERSITY		
Que. No.	Particulars	Marks
Que-1	(From UNIT-1) Answer any one in detail: (Any One)	10
Que-2	(From UNIT-2) Answer any one in detail: (Any One)	10
Que-3	(From UNIT-3) Answer any one in detail: (Any One)	10
Que-4	(From UNIT-4) Answer any one in detail: (Any One)	10
Que-5	(From Any UNIT) Answer any one in detail: (Any One)	10

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Program Specific Outcome (PSO):

 Sem – 1

In 1st semester student:

- ☞ Understand the general history & development of forensic science.
- ☞ Understand organizing setup and function of different division biology division, fingerprint division, toxicology division, Physics division, Biology division etc.
- ☞ Understand the basic concept of general crime & to manage crime scene.
- ☞ Understand the criminal behaviour and its linkage to different crime scenario like Murder & Rap.
- ☞ Classify and evaluate crime and its connection with victim.
- ☞ Understand the Legal Action and Penalties against Murder & Rap in India.
- ☞ Understand the application of Microscopy in Forensic Biology

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F.Y.B.Sc.	Forensic Science	Semester - I	Paper - I
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DSCFS101 - I: Introduction to Forensic Sciences

Unit – I History & Development of Forensic Sciences

- I.1** History of Forensic Sciences
- I.2** Fundamental of Forensic Sciences
- I.3** Basic Principles and significance of Forensic Sciences

Unit - II Organizational Structure of Forensic Science Laboratories-I

II.1 Physics division:

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

II.2 Ballistics:

Firearms and firearm comparison, motion and direction of projectiles, impact analysis firearms range and distance

II.3 Digital forensic science:

Cybercrime investigation, data recovery, SIM card analysis, computer forensic science, data retrieve from any storage device, detection of network crime, authentication of digital data

II.4 Photography:

Forensic photographic evidences, super imposition technique

II.5 Documents Division:

Examination of questioned documents such as handwritings, signature, stamp, erased writing alteration, addition, typewriting, etc....

II.6 Fingerprint division:

Detection of latent fingerprints and its comparison with database

Unit – III Organizational Structure of Forensic Science Laboratories-II

III.1 Chemistry:

Analysis of unknown chemicals, petroleum products, arson cases, duplicate ghee and food additives

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III.2 Toxicology:

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

III.3 Blood alcohol:

Detection and determination of percentage of alcohol in blood samples

III.4 Prohibition and possession division:

Examination of alcohol in foreign liquor, country made liquor, illicit alcohol

III.5 Explosives:

Examination of explosive materials

III.6 Narcotics division:

Examination and detection of narcotic and psychotropic drugs

Unit – IV Organizational Structure of Forensic Science Laboratories-III

IV.1 Biology division:

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

IV.2 Serology division:

Determination of origin and grouping of blood, saliva, semen, samples and iso-enzyme typing

IV.3 DNA Division:

DNA profiling of any body fluids, tissues, hair, etc. for personal identification, gang rape, and disputed paternity cases

IV.4 Forensic psychology:

Lie detection, polygraph analysis, brain finger printing

III.5 Homeland security and antiterrorism

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

III.6 Other divisions

Forensic anthropology, Forensic entomology, Forensic medicine, etc....

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Suggested Experiments

1. To Study the History & Development of Forensic Sciences Laboratory.
2. To Know the Pioneers of Forensic Science.
3. To know the physical comparison of objects.
4. To know the document examination.
5. To take rolled and plain fingerprints impression of individual and recognize the fingerprint patterns.

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

DSCFS102 - II : Basic Understanding of Forensic Sciences w.r.t. Crime

Unit – I CRIME:

- I.1** Definition & causation, crime scene, types of crime scene,
- I.2** Protection and recording of crime scene
- I.3** Processing of crime scene: Search of physical clues, preservation, packing and forwarding of physical clues.
- I.4** Blood spattering / Pattern analysis

Unit – II Crime: MURDER

- II.1** Introduction, Definition of Murder, Difference between Murder, Homicide, and Manslaughter
- II.2** Degrees of Murder, Contributing factors for Murder
- II.3** Different Case Study for Murder in India.

Unit – III Crime: RAPE

- III.1** Introduction, what is Rape, Types of Rape,
- III.2** Theories of Rape & Motives
- III.3** Different Case Study for Rape in India.

Unit – IV Crime Awareness: Murder & Rape

- IV.1** Legal Action and Penalties for Murder in India.
- IV.2** Legal Action and Penalties for Rape in India.
- IV.3** Social Aspect& Ethic.

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Suggested Experiments

1. To study the history of crime cases from forensic science perspective.
2. To study a case in which suspect gets conviction for grievous murder.
3. To study a case in which suspect gets conviction for heinous rape.
4. To study different section of Indian Penal Code for murder & rape case.
5. To make report w.r.t National Crime Record Bureau (NCRB) on murder & rape case of current year.

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F.Y.B.Sc.

Forensic Science

Semester - I

SECFS101: MICROSCOPY

- ❖ Basic principles of Microscopy
- ❖ Types of Microscopes: Light Microscope & Electric Microscope
 - Simple and Compound microscope,
 - Comparison Microscope,
 - Phase contrast Microscope,
 - Stereoscopic microscope,
 - Polarizing microscope,
 - Fluorescent Microscopy,
 - Infra-red Microscopy,
 - Scanning Electron Microscope (SEM) & Transmission Electron Microscope (TEM)
- ❖ Uses of Microscope.