

Institute for Excellence in Higher Education (IEHE), Bhopal

Department of Forensic Science

Syllabus 2019-2020

B.Sc. Forensic Science (Honour)
B.Sc. Forensic Science (Subsidiary)

Institute for Excellence in Higher Education (I.E.H.E.), Bhopal

BOS FORENSIC SCIENCE DEPARTMENT

Abstract of revision of syllabus

Date & time of Meeting:-

Session 2019-2020

Semester I, II, III and IV

B.Sc. (HONOURS):- Forensic Science

SN	SEM	PAPER	PAPER TITLE	CHANGED TITLE OF PAPER	COURSE CONTENT	% CHANGE in Syllabus
1	I	H-1	Instrumental Methods- Chemical	Changed	Changed	100
2	I	H-2/ Sub	Criminalistics	Changed	Changed	100
3	II	H-1	Instrumental Methods- Biological	Changed	Changed	100
4	II	H-2/ Sub	Fundamentals of Forensic Science	Changed	Changed	100
5	III	H-1	Forensic Medicine and Anthropology	New	New	-
6	III	H-2/ Sub	Forensic Biology and Serology	New	New	-
7	IV	H-1	Forensic Physics and Ballistics	New	New	-
8	IV	H-2/ Sub	Cyber Forensic	New	New	-

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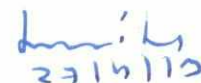
Name

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1. Dr. R. Verma



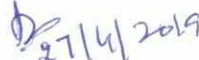
8. Dr. Suman Joshi


27/4/19

2. Dr. Dewashish Bose


27/4/19

9. Dr. Suman Malik


27/4/2019

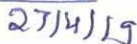
3. Dr. Vinay Mishra

10. 

4. Dr. Saori Shrivastava

11. 

5. Dr. Anjali Asharya


27/4/19

12. Sumitra Gori


Sumitra

7. _____

Institute for Excellence in Higher Education (IEHE), Bhopal

Board of Studies Forensic Science

Abstract of Syllabus

Date & Time of Meeting

Session: 2019-20

B.Sc. Forensic Science (Honours)

Semester: I, II, III and IV

B.Sc. Forensic Science (Subsidiary)

S. No.	Semester	Paper	Paper Title (Theory)	Paper Title (Practical)
1.	I st	Honour (I)	Instrumental Methods- Chemical	Instrumental Techniques- Chemical
		Honour (II) (Subsidiary)	Criminalistics	Crime Scene Management
2.	II nd	Honour (I)	Instrumental Methods- Biological	Instrumental Techniques- Biological
		Honour (II) (Subsidiary)	Fundamentals of Forensic Science	Fundamentals of Forensic Science
3.	III rd	Honour (I)	Forensic Medicine and Anthropology	Forensic Medicine and Anthropology
		Honour (II) (Subsidiary)	Forensic Biology and Serology	Forensic Biology and Serology
4.	IV th	Honour (I)	Forensic Physics and Ballistics	Forensic Physics and Ballistics
		Honour (II) (Subsidiary)	Cyber Forensic	Computer Forensic

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1. Dr Rajendra Verma

5. Dr. Smriti Joshi - 27/4/19

2. Dr Dewashish Bose

6. 27/4/2019

3. Dr Vinay Mishra

7. 27/4/2019

4. Dr Sanita Shrivastava

8. Sumitra Gizi Sumitra

9. Dr Anjali Acharya 27/4/19

Institute for Excellence in Higher Education (IEHE), Bhopal

Board of Studies Forensic Science

Abstract of Syllabus

Date & Time of Meeting

B.Sc. Forensic Science (Honours)

B.Sc. Forensic Science (Subsidiary)

Session: 2019-20

Semester: I, II, III, IV, V, VI

S.No.	Semester	Paper	Paper Title (Theory)	Paper Title (Practical)
1.	I st	Honour (I)	Instrumental Methods- Chemical	Instrumental Techniques- Chemical
		Honour (II) (Subsidiary)	Criminalistics	Crime Scene Management
2.	II nd	Honour (I)	Instrumental Methods- Biological	Instrumental Techniques- Biological
		Honour (II) (Subsidiary)	Fundamentals of Forensic Science	Fundamentals of Forensic Science
3.	III rd	Honour (I)	Forensic Chemistry and Toxicology	Forensic Chemistry and Toxicology
		Honour (II) (Subsidiary)	Criminal Justice System and Police Science	Police Science
4.	IV th	Honour (I)	Forensic Physics and Ballistics	Forensic Physics and Ballistics
		Honour (II) (Subsidiary)	Cyber Forensic	Computer Forensic
5.	V th	Honour (I)	Forensic Biology and Serology	Forensic Biology and Serology
		Honour (II) (Subsidiary)	Fingerprints, Questioned Documents and other impressions	Fingerprints, Questioned Documents and other impressions
6.	VI th	Honour (I)	Forensic Medicine and Anthropology	Forensic Medicine and Anthropology
		Honour (II) (Subsidiary)	Tools and Techniques in Forensic Science	Project

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1. Dr Rajendra Verma

5. Dr. Smith Joshi

2. Dr Dewashish Bhatnagar

6. Dr

3. Dr Vinay Mishra

7. Dr

4. Dr Saurabh Shrivastava

8. Sumidra Girdi

9. Dr Anjali Acharya

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Institute for Excellence in Higher Education (IEHE), Bhopal

Board of Studies Forensic Science Abstract of Syllabus

Date & Time of Meeting

Session:

B.Sc. Forensic Science (Honours)

Semester: III and IV

B.Sc. Forensic Science (Subsidiary)

S. No.	Semester	Paper	Paper Title (Theory)	Paper Title (Practical)
1.	I st	Honour (I)	Forensic Dermatoglyphics & Questioned document	Forensic Dermatoglyphics & Questioned document
		Honour (II) (Subsidiary)	Introduction to Forensic Science	Crime Scene management
2.	II nd	Honour (I)	Criminalistics	Criminalistics
		Honour (II) (Subsidiary)	Forensic Chemistry, Forensic toxicology and Technological Methods	Forensic Chemistry, Forensic Toxicology
3.	III rd	Honour (I)	Forensic Medicine and Anthropology	Forensic Medicine and Anthropology
		Honour (II) (Subsidiary)	Forensic Biology and Serology	Forensic Biology and Serology
4.	IV th	Honour (I)	Forensic Physics and Ballistics	Forensic Physics and Ballistics
		Honour (II) (Subsidiary)	Cyber Forensic	Computer Forensic
5.	V th	Honour (I)	Criminal Law and Criminal Justice System	Criminal law and Criminal Justice System
		Honour (II) (Subsidiary)	Crime and Society	Crime and Society
6.	VI th	Honour (I)	Forensic Pharmacology and Drugs of Abuse	Forensic Pharmacology and Drugs of Abuse
		Honour (II) (Subsidiary)	Tools and Techniques in Forensic Science	Project

Members of Board of Studies (BOS)

Name

Signature

Name

Signature

1. Dr Rajendra Verma

5. Dr. Smith Joshi

2. Dr Dewashish Bose

6. Dr V. K. Seoria

3. Dr Vinay Mishra

7. Dr S. Malik

4. Dr Sadita Shrivastava

8. Sumitra Giori

9. Dr Anjali Arora

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B.Sc. (Honour) Part-I

Semester- I

Subject: Forensic Science

Title: Instrumental Methods- Chemical

Paper: Honour-I

Max. Marks: 100

SYLLABUS

Sample Preparation Techniques

Evaporation, Filtration, Crystallization, Decantation, Precipitation, Membrane Separation etc. General Idea and Principle of Centrifuge and its types, Distillation, Various Types of Distillation, Distribution Law and Solvent Extraction, Acid Dissolution & Digestion, Dry Ashing etc.

Basic Concept of Spectroscopy

General Idea on Spectroscopy, Electromagnetic Spectrum, Various Source of Radiation Their Utility and Limitation. Interaction of Radiation with Matter i.e., Reflection, Absorption, Fluorescence, Phosphorescence, Diffraction, Refraction etc.

Basic Principle, Instrumentation and Forensic Application of Ultraviolet-Visible and Infrared Spectroscopy, Atomic Absorption, Atomic Emission, X-Ray Spectrometry, NMR, NAA.

Chromatographic Techniques

General Idea of Chromatography, theory and classification of chromatography, planar and column chromatography, adsorption and partition chromatography, ion exchange chromatography, exclusion chromatography, affinity chromatography

Planer Chromatography

Introduction, basic principle, procedure and forensic application of Paper chromatography, thin layer chromatography, high performance thin layer chromatography

Column Chromatography

Introduction, basic principle, procedure and forensic application of High performance liquid chromatography and gas chromatography

27/4/19

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1. Sharma B.K., (2000). Instrumental Methods of Chemical Analysis. India, Krishna Prakashan Media.
2. Skoog D.A., Holler F.J. & Stanley R.C. (2017). Principles of Instrumental Analysis, USA, Cengage Learning.
3. Willard H.H., Merrett L. L. Frank J.A.D. & Settle A. (1986). Instrumental Methods of Analysis. USA, CBS Pub. & Distributors.
4. Chatwal and Anand. (2016). Instrumental Methods of Chemical Analysis. India, Himalaya Publishing House Pvt. Ltd.
5. Lindsay, S. (1992). High Performance Liquid Chromatography. New York: Wiley Pub.
6. Robards K. Jackson P.E. & Haddad P.A. (2012). Principles and Practice of Modern Chromatographic Methods. Germany, Elsevier pub.
7. Saferstein R. (2001). Forensic Science Handbook Vol. I. London, Prentice Hall.
8. Shrivastava & Shrivastava (1991). Introduction to Chromatography. India, S. Chand & Co.
9. Silverstein R.M. & Webster F.X., (1997). Spectrometric Identification of Organic Compounds. USA, John Wiley & Sons, Inc.
10. Smith and Bogusz M. (2007). Handbook of Analytical Separation. Germany, Elsevier Pub.
11. Srivastava M. (2010). High-Performance Thin-Layer Chromatography (HPTLC). Germany, Springer Science & Business Media.
12. Stahl E. (2013). Thin Layer Chromatography. Germany, Springer Science & Business Media.
13. Subrahmanyam N. & Brij Lal (2004). A Text Book of Optics. India, S. Chand & Co
14. Thompson K.C. & Renolds R.J. (1978). Atomic Absorption Fluorescence & Flame Emission Spectroscopy: Practical Approach. London, Charles Griffin & Co.
15. Willard H. & Lynne L.M. (1986). Instrumental Methods of Analysis. USA, CBS Publishers & Distributors.

Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-I

Semester- I

Subject: Forensic Science

Title: Instrumental Methods- Chemical (Practical)

Paper: Honour-I

Max. Marks: 100

SYLLABUS

1. Isolation of non-volatile poison by solvent extraction.
2. Extraction of ethanol by simple distillation.
3. Measurement of absorption maxima of some organic solvents by UV visible spectrophotometer.
4. To know the concentration of given liquid by colorimeter.
5. Separation of some metal ions by paper chromatography.
6. Separation of some basic drugs by thin layer chromatography.
7. Separation of some pesticide by thin layer chromatography.
8. To know practical working and handling of low voltage and high voltage electrophoresis.

Approved for the session 2019-20

Divya

Amir
27/11/19

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Sumida

Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-I

Semester- I

Subject: Forensic Science

Paper: Honour-II/ Subsidiary

Title: Criminalistics

Max. Marks: 100

SYLLABUS

Crime scene management- I

Meaning of crime scene management, crime scene management- information management, technology management, logistic management, man power management, crime scene search methods.

Crime scene management- II

Classification of scene of crime, security of scene of crime, first responding officer at the scene of crime, duties of first responding officer, coordination between police personals and forensic scientists at crime scene, safety measures at crime scene, legal considerations at crime scenes.

Processing the crime scene

Processing the crime scene- Plan of Action, Note Taking, Crime Scene Search, Crime Scene Photography, Types of Cameras, Admissibility of Photographs, Videotape, Sketching the Crime Scene Information Included in Crime Scene Sketches, Equipment, Types of Sketches, Locating Objects in the Sketch, Computer Programs, Admissibility of Sketches, Collection of Evidence

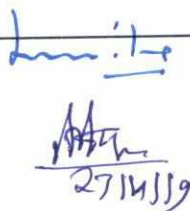
Organizational set up of Forensic Science Laboratories –

Introduction of forensic science laboratories, set up of Central Forensic Science Laboratories, state of forensic science laboratories, Mobile unit, examiners of questioned document, Fingerprint Bureaus, police academies, other services.

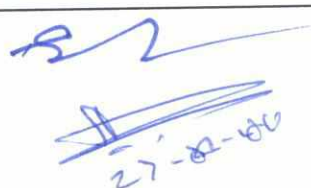
Elementary Police Science

Police science: definition and scope, investigator and his qualities, interview of witness, interrogation of suspect, Investigation: FIR, Case diary, Cognizable and non-cognizable offences and their investigation.

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References:

1. Saferstein: Criminalistics – An Introduction to Forensic Science, Prentice hall Inc. USA 91995)
2. James, S.H. and Nordby, J.J.; Forensic Science; an Introduction to Scientific and Investigative Techniques, CRC Press, USA (2003)
3. O' Hara & Osterberg: An Introduction to Criminalistics.
4. Sharma J D: Apradhonka Vigyanik Anveshan.
5. Sharma B R: Forensic Science in Criminal Investigation and trials.

Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-I

Semester- I

Subject: Forensic Science

Paper: Honour-II/ Subs

Title: Crime Scene Management (Practical)

Max. Marks: 100

SYLLABUS

1. Fundamentals of sketching of scene of crime
2. Location of physical evidence at scene of crime
3. Role of investigating officer at scene of crime
4. Indoor scene of crime
 - (A) Sketching of a theft case
 - (B) Sketching of a dacoity case
 - (C) Sketching of homicidal case
5. Outdoor scene of crime
 - (A) Sketching of an accidental case (hit & run)
 - (B) Sketching of a loot case
 - (C) Sketching of homicide case
6. Report writing of case by investigating officer i.e. Case Dairy, Panchnama

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B.Sc. (Honour) Part-I

Semester- II

Subject: Forensic Science

Title: Instrumental Methods- Biological

Paper: Honour-I

Max. Marks: 100

SYLLABUS

Forensic Microscopy

Introduction, definition & history of microscopy, types of microscopes, working principles and components of various types of microscopes i.e. simple, compound, comparison, stereo microscope etc. Forensic application microscopy.

Centrifuge

Basic principles of separation, introduction to centrifuge, and types of centrifuge i.e. density gradient centrifugation, prerogative centrifugation, refrigerated & ultra-centrifuge. Forensic application of centrifugation.

Enzyme techniques

Introduction & definition of enzyme, classification of enzyme, nomenclature of enzyme, models of enzyme mechanism, enzyme kinetics, purification and protein estimation, enzyme assay techniques, UV-visible spectrophotometric methods, luminescence method, radioisotope methods, immuno-chemical method.

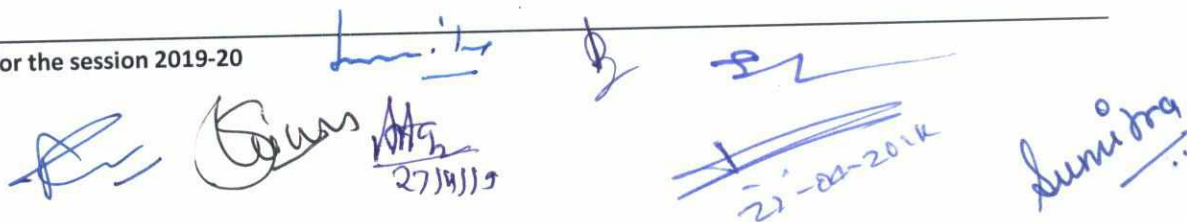
Electrophoretic techniques

Introduction, basic principles, classification of electrophoresis, factors affecting electrophoresis. Brief idea of low voltage electrophoresis, high voltage electrophoresis, gel electrophoresis, capillary electrophoresis, isoelectric focusing etc. Forensic application of electrophoresis.

Immunochemical methods

Introduction, Basic principles, production of antibodies, precipitation reaction, gel immunodiffusion, immune-electrophoresis.

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References

1. Albert S., Bray B. Lewis D, Roberts K. & Watson J.D. (1989). Molecular Biology of Cell. New York: Garland Pub.
2. Ball S., (1991). Environmental Law – The Law and Policy relating to Protection of Environment. India: Universal Law Pub Co, Delhi.
3. Biology Methods Manual (1978). London: Metropolitan Police Forensic Science Laboratory.
4. Catts E.P. & Haskell N.H. (1990). Entomology and Death: A Procedural Guide. London: Joyce's Print Shop.
5. Clifford & B.J.(1971). The Examination and Typing of Bloodstains in the Crime Laboratory. USA: US Court Printing Press.
6. Edwin & Caney H. M. (1993). Human Genetics: The Molecular Revolution. London: Jones & Bartlett Pub.
7. Gardner E.J., Simmons M. I. & Snustad D.P.(1991). Principles of Genetics. New York: John Wiley.
8. Kimball & John W. (1974). Biology. New Delhi: Arvind Publishing Co.
9. Lewis. B. (1980). Gene IV. England: Oxford University Press.
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11. Morrison & Robert D. (2000). Environmental Forensics Principles and Applications. New York: CRC Press.
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13. Pandey R.P. (1998). Plant Anatomy. New Delhi: S. Chand.
14. Saferstein R. (1995). Criminalistics – An Introduction to Forensic Science. USA. Prentice Hall Inc.
15. Walker J.M. & Rapley R. (2009). Molecular Biology and Biotechnology. London: Royal Society of Chemistry.
16. Williams P. L. & Warwick R.(1980). Gray's anatomy. London: Churchill Livingstone.

Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-I

Semester- II

Subject: Forensic Science

Paper: Honour-I

Title: Instrumental techniques- Biological (Practical)

Max. Marks: 100

SYLLABUS

1. To understand working and handling of simple microscope.
2. To understand working and handling of compound microscope.
3. To understand the handling of centrifuge
4. Separation of components of blood by centrifugation.
5. To perform experiment on low voltage electrophoresis
6. To perform experiment on high voltage electrophoresis

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Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-I

Semester- II

Subject: Forensic Science

Paper: Honour-II/ Sub

Title: Fundamentals of Forensic Science

Max. Marks: 100

SYLLABUS

Introduction to Forensic Science

Definition & historical development of forensic science in India as well as abroad, role of basic science in forensic science, need of forensic science, function of forensic science, basic principle of forensic science, ethics in forensic science, Forensic Scientist and the functions of a Forensic Scientist.

Branch and scope in Forensic Science

Branches of forensic science, Application of forensic science in different sectors i.e. Governmental, Private and NGO's, Forensic science in international perspectives Code of conduct for forensic scientists

Physical Evidence

Introduction and definition of physical evidence, classification of physical evidence- on the basis of class, nature and size, different search methods for physical evidences, collection, preservation, packaging, labelling, sealing and forwarding of physical evidences, chain of custody.

Evidences of Biological Origin

Different search methods for biological evidences, preservation, packaging, labelling, transportation and forwarding biological evidences, biological samples such as blood, semen, urine, saliva etc. precautions at the scene of crime while collecting evidences.

Evidences of Chemical Origin

Different search methods for chemical evidences, preservation, packaging, labelling, transportation and forwarding chemical evidences, biological samples such as blood, semen, urine, saliva etc. precautions at the scene of crime while collecting evidences

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References:

1. Saferstein: Criminalistics – An Introduction to Forensic Science, Prentice hall Inc. USA 1995)
2. C.G.G. Aitken and D.A. Stoney; The use of statistics in Forensic Science, Ellis Harwood Limited, England (1991)
3. James, S.H. and Nord by, J.J.; Forensic Science; an Introduction to Scientific and Investigative Techniques, CRC Press, USA (2003)
4. O' Hara & Osterberg : An Introduction to Criminalistics.
5. Forest: Forensic Science, An Introduction.
6. Lee, Henry: Advances in Forensic Science.
7. Sharma J D: VidhivigyanAvamVishVigyan
8. Sharma J D: ApradhonkaVigyanikAnveshan.
9. Sharma B R: Forensic Science in Criminal Investigation and trials.

Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-I

Semester- II

Subject: Forensic Science

Paper: Honour-II/ Subs

Title: Fundamentals of Forensic Science (Practical)

Max. Marks: 100

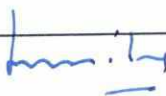
SYLLABUS

1. Collection, preservation, packing & Labelling of physical evidence according to its nature i.e. biological: Evidences of biological origin like blood, saliva, hair etc.
2. Collection, preservation, packing & Labelling of physical evidence according to its nature i.e. chemical: pharmaceutical products, food, cement, primary explosives, petroleum products etc.
3. Collection, preservation, packing & Labelling of physical evidence according to its nature i.e. toxicological: plant poison, pesticides etc.
4. Collection, preservation, packing & Labelling of glass, soil, fiber, paint etc.

Visiting of Forensic Science Laboratory, Institutions and preparation of report for the visit.

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Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-II

Semester- III

Subject: Forensic Science

Paper: Honour-I

Title: Forensic Medicine and Anthropology

Max. Marks: 100

SYLLABUS

Basics of Forensic Medicine

Introduction, definition and scope of forensic medicine, medico legal experts and their role in criminal investigation, Subpoena & oath of medical expert, types of medical evidence, kinds of witness and rules for giving evidence.

Personal Identification

Introduction, definition and importance of personal identification, parameters contributing to personal identification, Race, Sex, Age, Complexion, Features & Photographs, Fingerprints, Footprints, tattoo marks, lip prints, ear prints, scars, occupational Marks, handwriting, personal belongings, Voice & Speech, DNA, superimposition techniques for skull, disputed paternity

Injury

Introduction and definition of injury, classification of injuries and their characteristics, difference between anti mortem and post mortem injuries, medico legal importance of injuries

Death and Post Mortem Examination

Introduction, definition of Thanatology, modes of death (coma, syncope, asphyxia) and their characteristics, sign of death, time since death, post mortem changes, cause of death, suspended animation and medico legal importance of death

Post mortem examination, definition, classification, concepts and objectives, Precaution to be taken during Post Mortem Examination, exhumation and medicolegal importance of post mortem examination

Forensic Anthropology

Introduction and definition of forensic anthropology, historical background, nature and scope of forensic anthropology, somatometry, osteometry and craniometry their forensic importance recovery and identification of skeletal remains in accident cases and mass disasters, portrait parle, forensic odontology and bite marks examination, facial reconstruction, skull superimposition

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Sunita

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B.Sc. (Honour) Part-II

Semester- III

Subject: Forensic Science

Title: Forensic Medicine and Anthropology (Practical)

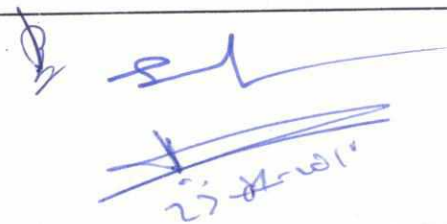
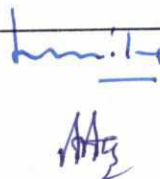
Paper: Honour-I

Max. Marks: 100

SYLLABUS

1. Recording of bite marks and their comparison.
2. Recording of lip prints and their comparison.
3. Recording of ear prints and their comparison.
4. Individualization of a person by ABO and Rh blood grouping method.
5. Identification of bones of the human skeleton.
6. Measurements of long bones for the determination of sex differences.
7. Photographic superimposition of the skull.
8. Identification of nature of wound.

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Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-II

Semester- III

Subject: Forensic Science

Paper: Honour-II/ Subs

Title: Forensic Biology and Serology

Max. Marks: 100

SYLLABUS

Fundamentals of Biology

Cell: Definition, theories, cell organelles and their functions, difference between eukaryotic and prokaryotic cell, difference between plant and animal cell, difference between somatic and germinal cell.

General idea about anatomy and physiology of digestive, respiratory, circulatory, skeleton, nervous, excretory and reproductive system etc.

General idea about amino acids, proteins, carbohydrates

Forensic Biology

Hair: Structure, development, anatomy, pigmentation, identification characters, Forensic examination of Hair

Fibers: Definition, classification, characters, difference between plant and animal fiber and forensic aspects of fiber examination – density, microscopy, hot stage microscopy, fluorescent, refractive index, birefringence, dye analysis and spectroscopic techniques

Forensic Botany: Examination of plant exhibits by morphological features, identification and examination of pollen grains, diatoms and their forensic significance.

Forensic Entomology: Definition, forensically important species of insect, significance of entomology in forensic science.

Biological fluids and their examination

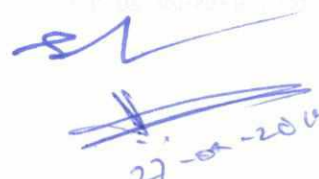
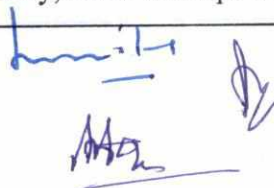
Blood: Composition, histology, different blood grouping methods, examination of blood and its stains.

Semen: Composition, structure of spermatozoa, methods of detection and identification of seminal stains

Composition of saliva, urine and other biological fluids and their examination

Determination of origin of species, antigens and antibodies, antigen-antibody reaction, biochemical markers of individuality, basic concept of DNA profiling

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27-02-2020



References

1. Saferstein R. (1995). *Criminalistics – An Introduction to Forensic Science*. USA. Prentice Hall Inc.
2. Gunn A. (2019). *Essential Forensic Biology*, 3rd edit. Wiley international
3. Li R. (2015). *Forensic Biology* 2nd edit. CRC Press
4. Albert S., Bray B. Lewis D, Roberts K. & Watson J.D. (1989). *Molecular Biology of Cell*. New York: Garland Pub.
5. Catts E.P. & Haskell N.H. (1990). *Entomology and Death: A Procedural Guide*. London: Joyce's Print Shop.
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10. Williams P. L. & Warwick R.(1980). *Gray's anatomy*. London: Churchill Livingston.

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B.Sc. (Honour) Part-II

Semester- III

Subject: Forensic Science

Paper: Honour-II/ Subs

Title: Forensic Biology and Serology (Practical)

Max. Marks: 100

SYLLABUS

1. Primary examination of blood samples.
2. Primary examination of semen samples.
3. Primary examination of saliva samples.
4. Primary examination of urine samples.
5. Identification of species from different hair samples.
6. Examination of different fiber by physical methods.
7. Microscopic examination of pollen grains.
8. Collection and identification of forensically important insects.

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27-02-20



Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-II

Semester- IV

Subject: Forensic Science

Paper: Honour-I

Title: Forensic Physics and Ballistic

Max. Marks: 100

SYLLABUS

Forensic Physics

Density, Refractive Index, Birefringence and Other Optical Properties of Crystalline Material. Examination of Fiber, Soil, Dust, Paints, Glass and Glass Fracture, Tool Marks and Explosives.

Restoration of Erased / Obliterated Marks, Examination of Wire/ Cables, Counterfeit Coins, Physical Matching of Severed / Broken Objects

Speaker Identification and Tape Authentication:

Voice Production Theory-Vocal Anatomy, Speech Signal Processing & Pattern Recognition-Basic Factors of Sound in Speech, Acoustic Characteristics of Speech Signal, Fourier Analysis, Frequency & Time Domain Representation of Speech Signal, Analogue to Digital Signal and Conversion, Fast Fourier Transform, Quantization, Digitization and Speech Enhancement, Analysis of Audio-Video Signal for Authenticity

General Idea about Firearms

History and Background of Firearms, Their Classification and Characteristics, Various Components of Firearms, Different Systems and Their Functions, Rifling - Purpose of Rifling, Types of Rifling, Trigger and Firing Mechanism, Cartridge-Firing Mechanism, Projectile Velocity Determination Identification of Origin, Improvised/Country-Made/Imitative Firearms and their Constructional Features

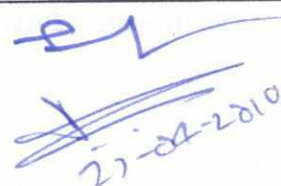
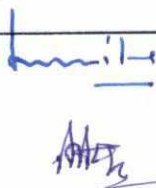
Ammunition

Types of Ammunition, Classification and Constructional Features of Different Types of Cartridges, Types of Primers and Priming Composition, Propellants and their Compositions, Various Types of Bullets and Compositional Aspects, Smooth Bore Firearm Projectile, Identification of Origin, Improvised Ammunition and Safety Aspects for Handling Firearms.

Internal & External Ballistics

Definition, Ignition of Propellants, Shape and Size of Propellants, Manner of Burning, Various Factors Affecting the Internal Ballistics, Principal Problems of Exterior Ballistics, Vacuum Trajectory, Effect of Air Resistance on Trajectory, Base Drag, Yaw, Shape of Projectile and Stability, Ballistics Coefficient and Limiting Velocity, Measurements of Trajectory Parameters.

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27-02-2020



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2. Hatcher, Jury & Weller. (1977). Firearms Investigation, Identification and Evidence. Harrisburg, Stackpole Books.
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6. O'Hara C.E. & Osterburg J.W. (1972). An Introduction to Criminalistics. Blomington, Indiana University Press.
7. OrdogG.J. (1983). Management of Gunshot Wounds. USA, Elsevier.
8. Rose P. (2001). Forensic Speaker Identification; Forensic Science Series. London, Taylor and Francis.
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Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-II

Semester- IV

Subject: Forensic Science

Paper: Honour-I

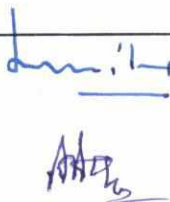
Title: Forensic Physics and Ballistic (Practical)

Max. Marks: 100

SYLLABUS

1. Identification and Matching of Dust/ Soil Sample by Physical Method (Including Density Gradient Method)
2. Calculation of Refractive Index of the Glass.
3. Restoration of Erased Punched Mark on Metal Piece by Chemical Treatment.
4. Digital Matching of Suspected Tyre marks
5. Comparison of Tool Marks
6. Comparison of Fired Cartridge/ Bullet
7. Physical Matching of Cloth Sample.
8. Identification of Glass Fractures.
9. Identification of Shots and Pallets.

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Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-II

Semester- IV

Subject: Forensic Science

Paper: Honour-II/ Subs

Title: Cyber Forensic

Max. Marks: 100

SYLLABUS

Basics of Computer and internet

Introduction, History and development of computers, hardware, software and other accessories, operating system, use of computer in criminal activities, world wide web, search engine, email, chat etc. methods of storing data

Computer/ Cyber Crime

Definition and types of computer crimes. Distinction between computer crimes and conventional crimes. Reasons for commission of computer crimes. Breaching security and operation of digital systems. Computer virus, and computer worm – Trojan horse, trap door, super zapping, logic bombs. Types of computer crimes – computer stalking, pornography, hacking, crimes related to intellectual property rights, computer terrorism, hate speech, private and national security in cyber space. An overview of hacking, spamming, phishing and stalking.

Cyber Crime investigation

Computer forensic experts and their role in cyber-crime investigation, challenges and limitations

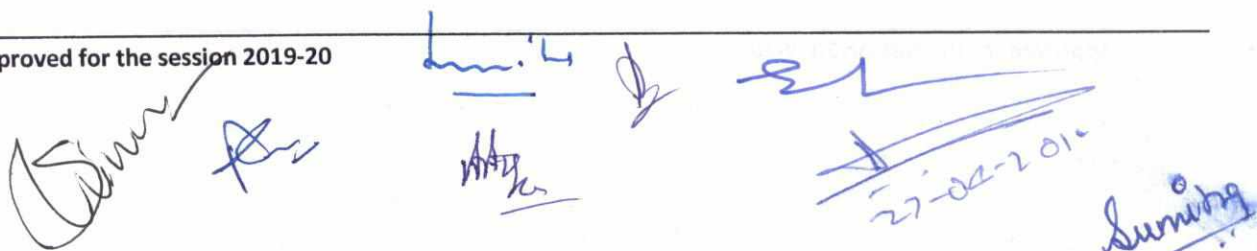
Seizure of suspected computer. Preparation required prior to seizure. Protocol to be taken at the scene. Extraction of information from the hard disk. Treatment of exhibits. Creating bitstream of the original media. Collection and seizure of magnetic media. Legal and privacy issues. Examining forensically sterile media. Restoration of deleted files. Password cracking and E-mail tracking. Encryption and decryption methods. Tracking users.

Computers and networking

Introduction to network, LAN, WAN and MAN. Concept of network security and cybercrime investigation. Basic of security planning: Multi layered security, intrusion triangle, removing intrusion opportunities, importance of physical security, protecting server, work station and network devices, protection of removable storage disks.

Concept of Network Security and Cyber-Crime Investigation, Relevant Section of Information Technology (IT) Act 2000.

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The bottom of the page features several handwritten signatures and dates in blue ink. On the left, there are two distinct signatures. In the center, there is a signature that appears to be 'A. K. Singh' and another signature below it. To the right, there is a large, stylized signature, and below it, the date '27-02-2020' is written. At the bottom right corner, there is another signature that looks like 'Sunita'.

References

1. Albert J. M. & Guillosoy F. (2012). Cyber Forensics: From Data to Digital Evidence. New Jersey: Wiley Corporate F&A.
2. Casey E. (2009). Handbook of Digital Forensics and Investigation. USA: Academic Press.
3. Marcella A. & Menendez D. (2007). Cyber Forensics: A Field Manual for Collecting, Examining, and Preserving Evidence of Computer Crimes. NY: CRC Press.
4. R.K. Tiwari, P.K. Sastry and K.V. Ravikumar, (2003). Computer Crimes and Computer Forensics, Select Publishers, New Delhi
5. C.B. Leshin, (1997). Internet Investigations in Criminal Justice, Prentice Hall, New Jersey
6. R. Saferstein, (2004). Criminalistics, 8th Edition, Prentice Hall, New Jersey
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Institute for Excellence in Higher Education (IEHE), Bhopal

B.Sc. (Honour) Part-II

Semester- IV

Subject: Forensic Science

Paper: Honour-II/ Subs

Title: Computer Forensic (Practical)

Max. Marks: 100

SYLLABUS

1. Collection and Handling of Digital Evidences.
2. Software for Protection of Data & Security.
3. Software's in Detection of Various Types of Cyber Crime.
4. To trace routes followed by e-mails and chats.
5. To identify the IP address of the sender of e-mails.
6. Use of email, creating email sending and receiving of email with and without attachment.
7. To identify, seize and preserve digital evidence from crime scenes.
8. To detect deletions, obliterations and modifications of files using encase software.
9. Case study on cyber-crimes.

Approved for the session 2019-20

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27-04-2019

[Signature]

डॉ. विकास मिश्रा आदि विषय के विद्वानों ने संस्थान की स्थिति एवं संसाधनों को देखते हुए वर्ष 2019-20 B.Sc.I, B.Sc.II Forensic Science (H) में निम्नलिखित पेपर निर्धारित किए हैं—:

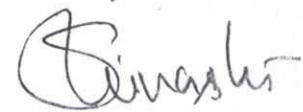
B.Sc.I Forensic (H)

- Sem I (H) Instrumental methods - chemical.
(S) Criminalistics
(H) Instrumental methods Biological.
Sem II (H) Introduction to Forensic Sc. [Fundamentals]
(H) Forensic medicine and Anthropology
Sem III (S) Forensic Biology and Serology
Sem IV (H) Forensic Physics and Ballistics
(S) Cyber Forensic

वर्ष 2020-21 हेतु पाठ्यक्रम में निर्धारित papers के अतिरिक्त समिति द्वारा सर्वसम्मति से दसवें ग्राफ़िक्स विस्तार वर्ष 2020-21 की B.O.S. में किया जाना तय किया। उपरोक्त पाठ्यक्रम की पूर्ण स्वीकृति एवं विस्तार अकादमिक समिति की ओर प्रेषित किया गया।

प्रभावी
अकादमिक समिति


I.D.P.
प्रभावी


विभागाध्यक्ष
संसाधन शाखा

विषय - B.O.S. सत्र 2019-20 Forensic Science (H)

आज दि 27/4/19 को रसायनशास्त्र विभाग में सत्र 2019-20 पाठ्यक्रम निर्धारण हेतु Forensic Science (H) तथा (he H) Forensic (S) की B.O.S. की Meeting आयोजित की गई। इस बैठक में निम्नलिखित सदस्य उपस्थित रहे।

1. Dr. Dewashish Bhatta ~~Dewashish Bhatta~~ 27/4/19 Dr. Smriti Jaiswal
2. Dr. Rajendra Verma ~~Rajendra Verma~~ 8. 27/4/2019
3. Dr. Vinay Mishra 9. ~~Vinay Mishra~~
4. Dr. Suman Malik 10. Dr. Smriti Shrivastava (S)
5. Dr. V.K. Sharma 11
6. Dr. Anjali Acharya ~~Anjali Acharya~~ 12. Sumiha 27/4/19

सत्र 2019-20 हेतु सदस्यों द्वारा B.Sc I Forensic Science (H) तथा (S) एवं B.Sc II Forensic Sc (H) एवं (S) का पाठ्यक्रम अनुमोदित किया गया। संस्थान द्वारा यह पाठ्यक्रम वर्ष 2018-19 से प्रारंभ किया गया। IOP योजना के अन्तर्गत प्रारंभ किए गए इस पाठ्यक्रम का Syllabus वर्ष 2018-19 में प्रथम बार बनाया गया। IOP से सूचित राशि संस्थान को प्राप्त न होने से पाठ्यक्रम में इस वर्ष परिवर्तन किया गया क्योंकि अब यह संस्थान स्तर से तथा संस्थान के संसाधनों से निरंतर रहेगा अतः समिति सदस्यों ने इसका पुनर्निर्धारण किया है। विषय विशेषज्ञों द्वारा गुणवत्ता का स्तर, आकादमिक, रोजगारपरक एवं वर्तमान परिदृश्य को देखते हुए Syllabus निर्धारित किया गया। इस पाठ्यक्रम में Institutional, Academic, Field Visit एवं Project कार्य को भी स्वास्मिहित किया गया है। विषय विशेषज्ञ डॉ. देवाशीष जोस, डॉ. राजेन्द्र नमो डॉ.