



Shri Vaishnav Vidyapeeth Vishwavidyalaya

M.Sc. (Forensic Science)

SEMESTER II / VIII (M.Sc. / B.Sc.+M.Sc.)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN201		Forensic Chemistry and Toxicology	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: The course aims to provide the students with

1. Chemistry of fire and arson cases.
2. Forensic analysis of Beverages and effect of alcohol on body.
3. Analysis of Explosives and explosion process.
4. Collection, preservation and transportation of drug evidences.

Course Outcomes: After studying this course students will

1. Be able to know Forensic investigation of Fire
2. Be able to perform analysis of beverages
3. Be able to perform collection, preservation and transportation of evidences

UNIT I: Introduction to Forensic Chemistry

Definition and scope of Forensic Chemistry. Sampling of chemical evidences, presumptive, screening (color/ spot test), Detective dyes-importance in trap cases. Arson: Chemistry of fire, searching of fire scene, collection, preservation and examination of arson evidences. Adulteration in Food and Petroleum products: Examination procedures involving standard methods and instrumental techniques.

UNIT II: Beverages,

Introduction and Classification of Beverages, analysis of beverages- alcoholic and non-alcoholic beverages. Country made liquor, Alcohol, effects of alcohol on body, sign & symptoms of alcohol Intoxication. Significance of alcohol in breath and breath screening devices. Difference between licit & illicit liquor, clinical and forensic analysis of alcohol.

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UNIT III: Explosives

Nature and Classification, Characteristics of explosives, Uses and abuses of explosives, synthesis and characteristics of Tri-nitrotoluene (TNT), Pentaerythritol Tetranitrate (PETN), Diazodinitrophenol (DDNP), Dynamite, and Research and Development Explosives (RDX). searching of scene of explosion. Post blast residue collection and analysis, Detection of explosives traces, Identification of explosives, preliminary test, Improvised explosive devices.

UNIT IV: Introduction to Forensic Toxicology

Definition of Forensic Toxicology. Role of Forensic Toxicologist. Toxins and their types. Definition and classification of poison. Types of Poisoning-Acute and chronic poisoning, Accidental, homicidal and suicidal poisoning. Factors Modifying the Action of Poisons. Removal of Unabsorbed Poison- Administration of Antidotes. Preservation of sample for Toxicological Analysis

UNIT V: Drugs of Abuse

Natural and synthetic drugs of abuse. Drug dependence and Drug addiction, classification of drugs-Narcotics, Hallucinogens, Depressants, Stimulants, Anabolic steroids. Psychotropic and Psychedelic drugs of abuse. Field and laboratory tests of drugs of abuse. Instrumental methods of analysis, collection, preservation and transportation of drug evidences.

Reference Books:

1. Niesink,RJM; Toxicology-Principles and Applications,CRCPress,1996.
2. Modi,JP, Textbook of Medical Jurisprudence & Toxicology, N.M.Tripathi Pub,2001.
3. Chadha, PV; Handbook of Forensic Medicine& Toxicology, Jaypee Bro, Delhi, 2004.
4. Parikh,C.K;Text Book of Medical Jurisprudence, Forensic Medicine & Toxicology, CBS Pub.New Delhi,1999.
5. Morrison R. Tand Boyd R.N: Organic Chemistry 6thEd Prentice Hall,2003.
6. Laboratory Procedure Manual: Petroleum Products, Directorate of Forensic Science, MHA, Govt. of India, 2005.
7. Working Procedure Manual on Chemistry; Directorate of Forensic Science, MHA Govt. of India.
8. Goutam M.P. and Goutam Shubhra, "Analysis of Plant Poison" SSB, New Delhi 2006
9. Bureau of Indian Standard Specifications related to Alcohols and Petroleum Products.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN202		Instrumental Techniques (Chemical)	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: The course aims to provide the students with

1. Different separation and sample treatment Techniques.
2. The working principle and Forensic applications of different chromatographic techniques.
3. Forensic applications of Electrophoresis and its classification.

Course Outcomes: After studying this course students will

1. Be understand different separation techniques
2. Be able to perform chromatographic analysis.
3. Be know technique of electrophoresis

UNIT I: Separation Technique

General idea and basic principle of distillation, various types of distillation techniques. Sample treatment techniques – Centrifuge, Filtration, Evaporation, Crystallization etc. Distribution Law, Solvent extraction technique like LLE, SPE, micro SPE.

UNIT II: Chromatographic Techniques I

Theory of chromatography, Classification of chromatography, General idea on planar chromatography, Column chromatography, Adsorption, Partition Chromatography, General principles and working of Planer chromatography: TLC, PC, HPTLC Forensic Application of planar chromatography.

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UNIT III: Chromatographic Techniques II

General principles and working of Column Chromatography Selection of mobile phase, column and detectors Ion-exchange chromatography Brief idea on working of HPLC, GC, Ion Exchange Chromatography, Exclusion (Permeation) chromatography, Affinity chromatography etc. Forensic Application of column chromatography

UNIT IV: Electrophoresis Techniques

General principles, Classification of electrophoresis Factors affecting electrophoresis, Preparative, Horizontal, Vertical, two dimensional electrophoresis Brief idea of Low voltage electrophoresis, High voltage electrophoresis, Gel electrophoresis, Isoelectric focusing etc General idea and working of Capillary Electrophoresis Forensic Application of electrophoresis, electrochemical techniques: General principles Electron transport process, Polarography and variants.

UNIT V: Mass Spectrometry

Mass Spectrometry (MS): Principle and Instrumentation, Correlation of MS with molecular structure. A brief idea about the various forms of Mass Spectrometry. Coupling MS with GC, LC, and CE etc. Application of MS in Forensic Science

Reference Books:

1. Robinson, J.W; Atomic Spectroscopy, 2ndEd.Revised & Expanded, Marcel Dekkar, Inc, NewYork, 1996.
2. Workman, J; Art Springsteen; Applied Spectroscopy-A compact reference for Practitioners, Academic Press, London, 1997.
3. Subrahmanyam, N.&LalB; A text Book of Optics, S. Chand & Company, New Delhi, 2004.
4. Willard, H.H.LynneL. Merrett, J.Dean, A.Frank, A.Settle.J; Instrumental Methods of Analysis, 7th Edn. CB Spub. & Distributors, NewDelhi, 1986.
5. Khandpur, R.S; Handbook of Analytical Instruments, Tata McGraw Hill Pub. Co. New Delhi, 2004.
6. Thomson, K.C. &Renolds, R.J; Atomic Absorption Fluorescence & Flame Emission Spectroscopy, A Practical Approach, 2nd Edn. Charles Griffith & Company, New South Wales, 1978.
7. Dudley, H. Williams & Fleming, I; Spectroscopic Methods in Organic Chemistry, 4th Edn, Tata McGraw- Hill Publishing Company, New Delhi, 1994.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN203		Forensic Dermatoglyphics and Other Impressions	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
*Teacher Assessment shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: The course aims to provide the students with

- 1 History and development of Dermatoglyphics.
- 2 Modern methodologies in finger printing.
- 3 Automated finger print identification system.
- 4 Modern techniques of Foot prints, tip prints and Ear prints.

Course Outcomes: After studying this course students will

1. Be understand historical aspects of fingerprint
2. Know moderns techniques of fingerprint
3. Be able to perform chromatographic analysis.
4. Know technique of electrophoresis

UNIT I: Introduction to Dermatoglyphics

History and development of Dermatoglyphics, Practical Application in Identification. Formation of ridges characteristics of skin ridges, Ridge configurations, skin creases. Comparative Dermatoglyphics-Morphological plan of volar pads and configurational area, variation in Primates, Primate Affinities.

UNIT II: Dactyloscopy-I

Fundamentals of finger-print construction , Pattern types, Transitions between pattern types. Methods of analysis, Ridge counting, Ridge Tracing, Ridge characteristics. Pattern size, Pattern form. Configurations of middle and proximal phalanges. Classification of fingerprints- Henry's system of classification, single-digit classification, Extension of Henry's classification.

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UNIT III: Dactyloscopy-II

Composition of sweat, development of chance, latent, visible and plastic prints. Taking of finger prints from living and dead person, preserving and lifting of finger prints. Conventional methods of development of latent prints-fluorescent methods, magnetic powder method, fuming method, chemical method etc. Application of laser and other radiations to develop latent finger prints, metal deposition method and development of latent prints on skin .Automated Fingerprint Identification System(AFIS).Modern methodologies in fingerprinting.

UNIT IV: Palm prints and foot Prints

Topography. Tracing and formulation of main lines of palm prints and foot prints. Formulation of axial triradii in palm prints and foot prints. Formulation of configurational areas in palm prints and sole/foot prints. Other methods of formulation.Comparison of palm prints on the basis of individual ridge characteristics. Collection, tracing, lifting and casting of foot prints. Enhancement of footwear impressions, analysis and comparison of foot, Gaitpattern.

UNIT V: Lip prints, Ear prints and their significance

Lip Print: Nature of Lip prints. Types of Lip prints, location, collection and evaluation of lip prints. Forensic Significance of Lip prints.

Ear prints- Nature of Ear print, location, collection and evaluation. Forensic significance of Ear prints. Modern techniques and developments of Lip prints and Ear prints

Reference Books:

1. Bridges, B.C; Criminal Investigation, Practical Fingerprinting, Thumb Impression, Hand writing expert Testimony, Opinion Evidence., Univ. Book Agency, Allhabad, 2000.
2. Chatterjee, S.K; Speculationin Fingerprint Identification, Jantralekha printing Works, Kolkata,1981.
3. Cossidy, M.J; Footwear Identification, Royal Canadian, Mounted Police, 1980.
4. Cowger James F;Friction Ridge Skin-Comparison & Identification of Fingerprints, CRC Press, NY,1993.
5. Harold Cummins and Charles Midlo. Finger Prints, Palms And Soles: An Introduction To Dermatoglyphics
6. Henry, C.L. & Ganesslen, R.E; Advancesin Fingerprint Technology, CRC Press, London,1991.
7. Iannavelli,A.V;EarIdentification,ForensicIdentificationSeries,Paramount,1989.
8. JainA.K., Flynn, P. & Ross A.A., Handbook of Biometrics, Springer, New York2008
9. Mehta, M.K; Indentification of Thumb impression & cross examination of Finger prints, N.M. Tripathi Pub. Bombay,1980.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN204		Questioned Documents and Counterfeit Currency	60	20	20	0	0	4	1	0	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.**

Course Objectives: The course aims to provide the students with

1. Forensic identification of class and individual characteristics of handwriting.
2. Examination of fake credit cards, e-documents, digital signature.
3. Automated finger print identification system.
4. Analysis of signature forgery.

Course Outcomes: After studying this course students will

1. Be able to identify characteristics of fingerprint
2. Be able to examine forgery in documents
3. Be able to examine signature forgery

Unit I: Introduction to Document Examination

Nature and problems of document examination, classification of forensic documents, Specimen /Admitted writings/ type writings etc: handling, preservation and marking of documents, importance of natural variations and disguise in writing, various types of forensic documents-genuine and forged documents, holographic documents, principles of handwriting identification, basic tools needed for Forensic Document Examination & their use, analysis of paper and inks.

Unit II: Handwriting examination

Definition of Handwriting, Various writing features and their estimation, general characteristics of handwriting, individual characteristics of handwriting, ethnic and gender variability of handwriting, various types of forgeries and their detection.

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Unit III: Signature examination

Examination of signatures—characteristics of genuine and forged signatures, identification of forger, identification of writer of anonymous letters and application of Forensic Stylistics/ Linguistics in the identification of writer, examination of built up documents and determination of sequence of strokes.

Unit IV: Type written and Printed Documents

Identification of type scripts-identification of typist, various types of printing processes, identification of printed matter including printing of security documents and currency notes, identification of electronic typewriters, dot matrix, inkjet and laser jet printers, examination of black and white and color photocopies, fax messages and carbon copies.

Unit V: Forgery Detection

Determination of age of documents by examination of signatures, paper, ink etc., Examination of alterations, erasures, over writings, additions and obliterations, decipherment of secret writings, indentations & char red documents, physical matching of documents, examination of seal, rubber and other mechanical impressions, examination of counterfeit currency notes, Indian passport/ visas, stamp papers, postal stamps etc., examination of fake credit cards, e-documents, digital signatures, an introduction of computer forensics, preliminary examination of documents, opinion writings and reasons for opinion.

Suggested Readings:

1. Hilton, O; Scientific Examination of Questioned Documents. Revised Edition, Elsevier, New York, 1982.
2. Osborn, A.S; Questioned Documents, 2nd Ed., Universal Law Publications, Delhi, 1998.
3. Osborn, A.S; The Problem of Proof, 2nd Ed., Universal Law Pub.Delhi,1998.
4. Thomas, C.C; Identification System for Questioned Documents, Billy Prior Bates Springfield, Illinois, USA, 1971.
5. Harrison, W.R; Suspect Documents Their Scientific Examination, Universal Law Publication, Delhi, 2001.
6. Morris, R.N; Forensic Hand writing Identification, Academy Press, London,2001.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN2051		Biometric Technologies in Forensic science	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: The course aims to provide the students with

1. Importance of biometric analysis
2. The significance of voice identification.
3. The information and working procedure in brain fingerprinting Narco analysis.

Course Outcomes: After studying this course students will

1. Be able to know importance of biometric system
2. Know significance of voice identification

UNIT I: Introduction of Biometric systems

Introduction, Biometric systems: Enrolment and recognition phases, sensor module, feature extraction module, database module, matching module, Biometrics Functionality: Verification & Identification, Biometrics system errors performance measures, Design cycle of biometric System: Nature of the application, Choice of biometric trait, Data collection, Choice of features and matching, Application of biometric system, Security and privacy issues

UNIT II: Security of Biometric

Introduction to Security of Biometric System, Adversary attacks: Insider Attacks, Infrastructure attacks, Attacks on user Interface: Impersonation, Obfuscation, Spoofing, Countermeasure of spoof detection, Attacks on biometrics processing: On system modules & at interconnections, Attack on template database & Countermeasures in biometric template security.

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UNIT III: An Introduction to Statistical Measures of Biometrics

Recommended Biometric for Network Security: Introduction, Implementation of Biometrics for Network Security. Finger Biometrics, Voice Biometric, Definition & applications of FAR, FRR, FTE, EER. Biometric Transaction: User, Biometric reader, Matching location, Biometric Reader: Trusted, Non-Trusted.

UNIT IV: Types of Biometric Technology and Verification Systems

Introduction, Biometric verification, Use of Biometric, Biometric Technologies for Personal Identification, Retina recognition, Signature Dynamics or Recognition, Keystroke Dynamics, Speaker recognition, RFID Chip implant Business and Federal.

UNIT V: Applications of Biometric Technologies

Applications of Biometric Technologies, Challenges and Issues in Using Biometrics, Risk Management Is the Foundation of Effective Strategy, Barriers to Future Growth, Biometric technologies under development: Blood pulse, Nailbed Identification, Body salinity Identification, Palm print, Palm print, vein Pattern, Facial thermography, Skin Luminescence, Brain Wave Pattern, Electronic Nose Identification, Foot Dynamics.

Reference Books:

1. S. Nanavati, M. Thieme and R. Nanavati, Biometrics, Wiley India Pvt. Ltd. (2002).
2. P. Reid, Biometrics for Network Security, New Delhi (2004).
3. J.R. Vacca, Biometric Technologies and Verification Systems, Butterworth-Heinemann, Oxford (2007).
4. Jain A.K., Flynn, P. & Ross A.A., Handbook of Biometrics, Springer, New York 2008

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN2052		Microscopy in Forensic Science	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: The course aims to provide the students with

1. The use microscopy in different branch of forensic science.
2. The principle applications and working process of light microscope.
3. The working process and types of electron microscope and their importance.
4. The different photo micrographic methods their instrumentation application, etc.

Course Outcomes: After studying this course students will

1. know different branch of forensic science
2. Know working of light Microscope
3. Be able to perform photo micrographic methods

UNIT I: Introduction to Microscopy:

History, Electromagnetic radiation, Properties of light, Magnification, Resolution, Resolving Power, Depth of field, Depth of Focus, Numerical aperture, Lens, Aberration of lenses.

Simple Microscope: Image formation.

UNIT II: Light Microscopy I:

Principle of bright field and dark field microscopy. Theory, Principle & Working of Compound Microscope, Comparison microscope, Stereo Microscope, Fluorescence Microscope, Polarizing Microscope, Phase Contrast Microscope.

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UNIT III: Light Microscopy II:

Theory, Principle & Working of Interference Microscope, Confocal Microscope, Oil Immersion Microscope, Ultraviolet Microscope, Infra-red Microscope, X-ray Microscope.

UNIT IV: Electron Microscopy:

Introduction, Historical review, Types of Electron Microscopy, Scanning electron microscopy (SEM): Theory & Principle, Specific feature, instrumentation, sample preparation, specimen interaction, specimen interaction volume, signal produced by specimen & Forensic applications.

Transmission electron microscopy (TEM): Theory and basic principles, Instrumentation & Forensic applications. Comparison of SEM and TEM. Comparison of Light Microscopy and Electron Microscopy.

UNIT V: Miscellaneous Microscopy:

Photomicrography: Introduction, Principles & procedure of photomicrography, Ultra- Violet Photography Infra-red Photography, Microphotography, Comparison of Light Microscopy and Photomicrography. Principle and applications of Magnetic Resonance Microscope, Scanning Probe Microscope, Ultrasonic Microscope (Scanning acoustic microscope).

Reference Books:

1. An Introduction to Microscopy, Suzanne Bell : Keith Morris
2. Forensic Science Handbook Volume I : Richard Saferstein
3. Light Microscopy, R. G. E. Murray : Carl F. Robinow
4. [Fundamentals of Light Microscopy and Electronic Imaging](#) : Douglas B. Murphy, Michael W. Davidson.
5. Physical Principles of Electron Microscopy An Introduction to TEM, SEM, and AEM: Ray F. Egerton.
6. The History of Photomicrography :Normand Overney and Gregor Overney

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN2053		Advance Criminalistics	60	20	20	0	0	3	0	0	3

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***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: The course aims to provide the students with

1. The different types of physical evidences.
2. The management of different crime scene.
3. The evaluation of evidence report
4. The identification and individualization of impression i.e Tyre marks, Lip print etc.

Course Outcomes: After studying this course students will

1. Know types of evidences
2. Know management of crime scene
3. Be able to examine impression

UNIT I : Crime Scene Investigation (CSI)

Types of crime scenes: indoor, outdoor, mobile, & hydro. Physical evidences, Crime scene search methods, Recovery & packaging of evidences, Crime scene documentation: Notes taking, Sketching, Photography & Videography. Chain of custody

UNIT II: Various Crime Scenes

Homicide, Suicide, Accidents (Vehicular, Train, Air-crash, Industrial etc), Mass Murders, House Breaking and Theft (HBT), Dacoity, Cybercrimes, Terrorism, etc. Crime Scene Management (CSM), Introduction & Components of CSM, Technology & Equipment, Logistics Management. Role of various experts at crime scene. Security, safety and preservation of crime scene. Contamination control. Scene Survey and initial documentation.

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Shri Vaishnav Vidyapeeth Vishwavidyalaya

M.Sc. (Forensic Science)

SEMESTER II / VIII (M.Sc. / B.Sc.+M.Sc.)

UNIT III: Physical Evidences

Physical evidences-definition, types, classes & individual characteristics. Principle of exchange, general information provided by physical evidences. Handling of physical evidence, packing, Labeling, preservation, transportation & forwarding of the following physical evidences- **Biological samples:** blood, semen, saliva, urine, vomit, fecal material, hair etc. **Chemical samples** volatile liquids, nonvolatile liquids, flammable liquids, solid chemicals etc.

UNIT IV: Report and Evidence Evaluation

Components of reports and Report formats in Crime Scene and findings. Constitutional validity of Forensic Evidence, Expert Testimony: Admissibility in court of law, Pre-Court preparations & Court appearance.

UNIT V:

Tyre marks / prints and skid marks and comparison with control samples. **Cheiloscopy:** Nature, location, collection and evaluation of lip print. **Ear prints:** Introduction, growth & development, evaluation and analysis of ear print. Tool marks & Mechanical fits.

Reference Books:

1. Bevel, T., Gardner, M. R., Bloodstain Pattern Analysis with an Introduction to Crime Scene Reconstruction, Third Edition.
2. Bevel, T., Gardner, M. R., Practical Crime Scene Analysis and Reconstruction
3. Lee, C. H., Palmbach, T., Miller, T. M., Henry Lee's Crime Scene Handbook
4. Moenssens: Finger Prints Techniques, Chitton Book Co., Philadelphia, New York.
5. Mehta, M. K.: Identification of Thumb Impression & Cross Examination of Finger Prints, N. M. Tripathi (P) Ltd. Bombay.
6. Bridges : Practical Finger Printing, Funk and Washalls Co. New York.
7. Holt : Genetics of Dermal Ridges.
8. William J. Bodziak Footwear Impression Evidence Elsevier Science Publishing Co. New York.
9. James, S.H and Nordby, J.J. Forensic Science: An introduction to scientific and investigative techniques CRC Press, USA.
10. Saferstien : Forensic Science, Handbook, Vol. I, II & III, Prentice Hall Inc. USA.
11. Kirk : Criminal Investigation, 1953, Interscience Publisher Inc. New York.
12. Cummins & Midlo : Finger Prints, Palms and Soles, The Blakiston office London.
13. O'Hara & Osterburg : Introduction to Criminalistics.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN206		Practicals based on paper 1 & 2	0	0	0	60	40	0	0	4	2

Practicals

1. To determine molarity of HCl pH metrically provided N\10 NaOH .
2. To find refractive index of the given liquid sample and find molar refraction and specific refraction
3. To verify Beer Lambert's law by colorimetric measurements.
4. Detailed study of the basic principle of Gas Chromatography and study its various parts.
5. Detailed study of Mass Spectrometer.
6. To study the principle fundamental law and application of UV – Visible Spectrometer.
7. To find the amount of dissolved oxygen in sample using DO meter.
8. How to trap a person while taking bribe.
9. To separate the component of ink by using paper chromatography.
10. To identify the poison in the suspected material by presumptive test and color test.
11. To identify the poison in the suspected material by presumptive test and color test.
12. To identify the poison in the suspected material by presumptive test and color test.
13. To detect the adulteration in petrol with kerosene / diesel by filter paper test.
14. Preliminary test for metallic poison.
15. Analysis of Alcohol.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN207		Practicals based on paper 3 & 4	0	0	0	60	40	0	0	4	2

Practicals

1. Print your own 10 digit fingerprint card using black ink.
2. Primary and secondary classification of given finger print chart.
3. Identification of ridge characteristics.
4. Comparison of fingerprints by individual and class characteristics.
5. Development and lifting of latent fingerprints using various powders.
6. Development of latent fingerprint using iodine fuming method.
7. Development of latent fingerprint using chemical methods.
8. Documentation of Fingerprint evidence.
9. Casting and matching of foot/footwear print on soft surface.
10. Comparison and identification of individuals from lip print evidence.
11. Forensic identification of class and individual characteristics of handwriting.
12. Analysis of signature forgery.
13. Examination of anonymous letters and disguised writing.
14. To detect and decipher alterations in a document.
15. To decipher secret writings, indentations and charred documents.
16. To study the handwriting of ethnic and population groups.
17. To examine forgery in currency notes.
18. To examine security features of Indian passports.
19. To examine credit cards under Visual Spectral Comparator.
20. Rubber seal examination
21. Document opinion Report writing.

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