



**List of Courses Focus on Employability/ Entrepreneurship/  
Skill Development**

**Department : Forensic Science**

**Programme Name : B.Sc.**

**Academic Year : 2019-20**

**List of Courses Focus on Employability/ Entrepreneurship/Skill Development**

Sr. No.	Course Code	Name of the Course
01.	LS/FSC/GE-101/L	Elementary Forensic Science
02.	LS/FSC/GE-101/P	Practical's Based on Crime Scene Investigation
03.	ECA	Extra Curricular Activities/ Tour/Field Visit/ Industrial Training/ NSS/Swachchhata/ Vocational Training/ Sports/Others
04.	LS/FSC/GE-102/L	Applied Forensic Science
05.	LS/FSC/GE-102/P	Practical's Based on Applied Forensic Science
06.	ECA	Extra Curricular Activities/ Tour/Field Visit/ Industrial Training/ NSS/Swachchhata/ Vocational Training/ Sports/Others
07.	LS/FSC/GE-303-L	Crime Scene Management
08.	LS/FSC/GE-303-P	Practical's Based on Crime Scene Management
09.	LS/FSC/SEC-301-L	Introduction To Biometry
10.	LS/FSC/GE-404-L	Advanced Forensic Science
11.	LS/FSC/GE-404-P	Practical's Based on Advanced Forensic Science
12.	LS/FSC/SEC-402-L	Handwriting Identification And Recognition



## Scheme and Syllabus

### B.Sc. Hon's Forensic Science

Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
I	Core-1	LS/FSC/C-101L	Introduction to Forensic Science	4	4
	Core -1 Practical	LS/ FSC/C-101P	Practicals based on Crime Scene	2	4
	Core -2	LS/ FSC/C-102L	Crime and Society	4	4
	Core -2 Practical	LS/ FSC/C-102P	Practicals based on Crime and Society	2	4
	Generic Elective - 1 (GE- I)	LS/ FSC/GE-101/L	Elementary Forensic Science	4	4
	Generic Elective - Practical	LS/ FSC/GE-101/P	Practicals based on Crime Scene Investigation	2	4
	Ability Enhancement Compulsory Course (AECC)	LS/ FSC/AECC-101/EC	English Communication / MIL (Hindi Communication)	4*	4
	ECA	LS/FSC/ECA/	ECA-Extracurricular activity/ Tour, Field visit/ Industrial training/ NSS/ Swachhta/ vocational Training/ Sports/ others	2	(2)
<b>Total</b>				<b>24</b>	<b>28</b>
II	Core-3	LS/FSC/C-203-L	Criminal Law	4	4
	Core -3 Practical	LS/FSC/C-203-P	Practicals based on preparing schedules	2	4
	Core -4	LS/FSC/C-204-L	Forensic Psychology	4	4
	Core -4 Practical	LS/FSC/C-204-P	Practicals based on Forensic Psychology	2	4
	Generic Elective - 2 (GE-2)	LS/FSC/GE-202-L	Applied Forensic Science	4	4
	Generic Elective - Practical	LS/FSC/GE-202-P	Practicals based on Applied Forensic Science	2	4
	Ability Enhancement Compulsory Course (AECC)	LS/FSC/AE-201/ES	Environmental Science	4*	4
	ECA		ECA-Extracurricular activity/ Tour, Field visit/ Industrial training/ NSS/ Swachhta/	2	(2)



			vocational Training/ Sports/ others		
			<b>Total</b>	<b>24</b>	<b>28</b>
<b>SUMMER Internship: 15 days</b>			<b>Swayam Swachhta / NSS / Industrial Tour/ others</b>	<b>2</b>	<b>100</b>
III	Core-5	LS/FSC/C-305-L	Forensic Dermatoglyphics	4	4
	Core -5 Practical	LS/FSC/C-305-P	Practicals based on Finger Prints	2	4
	Core -6	LS/FSC/C-306-L	Technological Methods in Forensic Science	4	4
	Core -6 Practical	LS/FSC/C-306-P	Practicals based on Technological Methods	2	4
	Core - 7	LS/FSC/C-307-L	Criminalistics	4	4
	Core – 7 Practical	LS/FSC/C-307-P	Practicals based on Crime scene samples	2	4
	Generic Elective - 3 (GE-3)	LS/FSC/GE-303-L	Crime Scene Management	4	4
	Generic Elective - Practical	LS/FSC/GE-303-P	Practicals based on Crime Scene Management	2	4
	Skill Enhancement Course (SEC - 1)	LS/FSC/SEC-301-L	Introduction to Biometry	4*	2 (4)
		<b>Total</b>	<b>28</b>	<b>34</b>	
IV	Core-8	LS/FSC/C-408-L	Forensic Chemistry	4	4
	Core -8 Practical	LS/FSC/C-408-P	Practicals based on Forensic Chemistry	2	4
	Core -9	LS/FSC/C-409-L	Questioned Documents	4	4
	Core -9 Practical	LS/FSC/C-409-P	Practicals based on Questioned Documents	2	4
	Core - 10	LS/FSC/C-410-L	Forensic Biology	4	4
	Core -10 Practical	LS/FSC/C-410-P	Practicals based on Forensic Biology	2	4
	Generic Elective - 4 (GE-4)	LS/FSC/GE-404-L	Advanced Forensic Science	4	4
	Generic Elective - Practical	LS/FSC/GE-404-P	Practicals based on Advanced Forensic Science	4	4
	Skill Enhancement Course (SEC -2)	LS/FSC/SEC-402-L	Handwriting Identification and Recognition	4*	2 (4)
		<b>TOTAL</b>	<b>28</b>	<b>34</b>	
<b>SUMMER Internship: 15 days</b>			<b>Swayam Swachhta / NSS / Industrial/ others</b>	<b>2</b>	<b>100</b>
V	Core-11	LS/FSC/C-511-L	Forensic Ballistics	4	4

**गुरु घासीदास विश्वविद्यालय**  
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)  
**कोनी, बिलासपुर - 495009 (छ.ग.)**



**Guru Ghasidas Vishwavidyalaya**  
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)  
**Koni, Bilaspur - 495009 (C.G.)**



**Three year UG Course in Forensic Science**  
**Semester – IV LS/FSC/GE-404 L**  
**Generic Elective-4**  
**Advanced Forensic Science**

**Unit I: Forensic psychology**

Forensic psychology, Importance of forensic psychology, Role of forensic psychology in Civil and Criminal cases, Modus Operandi and its role in criminal investigations, criminal profiling, methods of investigations, Narco analysis, Hypnosis, Brain Fingerprinting.

**Unit II: Wildlife Forensics**

Introduction to Wild life Forensics, Protected and endangered species of Animals and Plants, Identification of wild life materials, Identification of Pug marks of various animals, Forensic (medico-legal) necropsy of wildlife, Identification of Pollen grains.

**Unit III: Forensic Anthropology**

Definition and Scope, Identification of different types of bones, Age and gender determination from skull, Pelvis, and skeletal remains, Significance of Somatoscopy, Somatometry, Osteometry and Craniometry in Personal Identification.

**Unit IV: Forensic Genetics**

General principles of DNA extraction and PCR, Personal identification techniques - PCR, RFLP, Y-STR, Mitochondrial DNA, DNA profiling applications in disputed paternity cases, child swapping, missing person's identity.

**Recommended Books:**

1. Encyclopedia of criminal and deviant behavior (2001) Clifton D. Pryart, Editor in chief routeledge, Taylor and Francis group.
2. David Canter, Forensic Psychology, Oxford University Press.
3. Irving B. Weiner, Allen K. Hess. The Handbook of Forensic Psychology. John Wiley & Sons.
4. Denis Howitt. Introduction to forensic and criminal psychology . Pearson Education, Ltd.
5. Jane E. Huffman, John R. Wallace Wildlife Forensics: Methods and Applications, Wiley Blackwell.



5. Barry, A.J. Fisher.; Techniques of Crime Scene Investigation, 6th Edition Ed, C.R.C Press NY(2003)
6. Nordby, J Deed Reckoning ; The Art of Forensic Detection, CRC Pre LLC(2000)
7. Eckett, W.G & James S.H; Interpretation of Bloodstains, Evidence of Crime Scene, Elsevier Pub. NY (1989)

**Three year UG Course in Forensic Science**  
**Semester - III LS/ FSC/GE-303 P**  
**Generic Elective -3 Practical**  
**Practicals based on Crime Scene Management**

1. Reconstruction of crime scene.
2. Searching of physical evidence at crime scene.
3. Collection, packing and preservation of Physical evidences
4. Lifting of prints and impressions by caste and replicas.
5. Evaluation of Crime scene and photographs.
6. Sole prints comparison and their lifting from the scene of crime.



Three year UG Course in Forensic Science  
Semester – III LS/FSC/GE-303 L  
Generic Elective-3  
Crime Scene Management

**Unit I: Crime Scene Management**

Introduction to Crime scene investigation, Types of Crime scene, Locard's Exchange Principle, Expert's Team composition, Methodological Approach to processing the Crime scene, Sketching and mapping, Role of First responding Officer.

**Unit II: Processing a Crime Scene**

History and Development of Forensic Science, Basic Principles of Forensic Science, Organizational structure of Forensic Science Laboratories at State and Central level, White Collar crime, Organized Crimes, Economic crimes, Cyber crimes, Crime against children and Women.

**Unit III: Searching the Crime Scene**

Searching the Crime scene, Types of Searches, Zone Search: Ever Widening, Circle Strip Search, and Grid Search, Indoor searches and outdoor searches, searching of pattern and marks, Collection.

**Unit IV: Collection and Packaging of evidence**

Physical Evidences: Collection, Packaging and Forwarding of different types of evidences to the laboratories, Techniques for Handling Evidence, Biological evidence, Impression Evidence, Firearms and Ballistic Evidence, Drug Evidence, Toxicological Evidences.

**Recommended Books:**

1. Sharma, B.R.: Forensic Science in Criminal Investigation and Trials, Central Law Agency, Allahabad, 1974.
2. Saferstein: Forensic Science Handbook, Vol I, II & III, Prentice Hall Inc. USA.
3. Saferstein: Criminalistics, 1976, Prentice Hall Inc. USA.
4. Siegel, J. A., Saukko, P. J. And Knupfer, G.C., Encyclopedia of Forensic Sciences, Academic Publishers, London .



7. Michael J. Deverlanko et al: Hand Book of Toxicology CRC Press, USA.
8. Parikh C.K; Text Book of Medical Jurisprudence Forensic Medicines and Toxicology. CBS Pub. New Delhi.
9. Arms Acts, 1959 and Arms Rule, 1962.
10. Working procedure Manual: Ballistics, DFS New Delhi, Publication, 2005.
11. Sharma, B.R.: Forensic Science in Criminal Investigation and Trials, Central Law Agency, Allahabad, 1974.

**Three year UG Course in Forensic Science**  
**Semester – II LS/ FSC/GE-202 P**  
**Generic Elective -2 Practical**  
**Practicals based on Applied Forensic Science**

1. Characterization of blood by Presumptive test and Crystallization assay
2. Identification of Saliva, Semen, Urine by Preliminary tests.
3. Analysis of narcotic drugs.
4. Identification of Dhatura alkaloids by TLC
5. Determination of methanol and ethanol in liquor sample.
6. Detection of adulterant in vegetable oil
7. Identification of firearms, cartridges, bullets, gunpowder, etc.
8. Matching bullets and cartridge cases by comparison microscope.





Three year UG Course in Forensic Science  
Semester – II LS/FSC/GE-202 L  
Generic Elective-2  
Applied Forensic Science

**Unit I: Forensic Biology**

Preliminary and Confirmatory examination of Blood, Saliva, Semen, Urine and its Forensic Significance. Microscopic examination of Human and Animal Hair, Importance of Wild Life Forensics and Identification of Pug marks of various animals. DNA Fingerprinting in Forensic Science.

**Unit II: Forensic Medicine and Toxicology:**

Poisons–Definition, Scope, Classification, Legislations concern to poisoning in India, Medico-legal Autopsy, Medico-legal Report, P M Findings in unnatural death, Introduction to methods of isolation of poison from Viscera, Collection and Preservation of viscera in fatal cases.

**Unit III: Forensic Chemistry**

Definition and Scope, Examination of Fire and Arson, Country made and Illicit liquor, Vitriolage cases, Analysis of Petrol and Diesel, Drugs: Definition, Classification and legislations, Introduction to Narcotic, Depressants, stimulants, and Hallucinogens, Designer Drugs & Nootropics.

**Unit IV: Forensic Ballistics**

Ballistics: Definition and scope, Firearms: Definition, Classification and Characteristics, Ammunition: Definition as per Indian Arms Act and classification, General Introduction to explosives.

**Recommended Books**

1. Richard Saferstein; Forensic Science Hand Book, Vol II Prentice Hall, Englewood Cliff, NJ.
2. Goutam Shubhra. ; An Introduction to Forensic Hair Examination; Selective and Scientific Book, New Delhi
3. Saferstein R. – Criminalistics Prentice Hall, Inc, New York.
4. Working procedure manual: Biology/ Serology; DFS, New Delhi
5. Saferstein, Criminalistics: An Introduction to Forensic Science. Prentice Hall
6. Goutam, M. P. and Goutam S Analysis of Plant Poison, Selective & Scientific Books, New Delhi.



7. Esharenana, Adoni, Frame works for ICT Policy Government, Social and Legal Issues. Information Science Reference, Harsey, New YORK.
8. Robert C. Newman ,Computer Forensics: Evidence Collection and Management Auerbach Publications.
9. Eoghan Casey , Handbook of Computer Crime Investigation: Forensic Tools and Technology Academic Press
10. Clark, Franklin, and Diliberto, Ken, (1996). Investigating computer Crime, CRC Press, Boca Raton, Florida, USA

**Three year UG Course in Forensic Science**  
**Semester – ILS/ FSC/GE-101P**  
**Generic Elective -1 Practical**  
**Practicals based on Crime Scene Investigation**

1. Sketching and Photography of Crime scene.
2. Searching and collection of physical evidence at crime scene.
3. Recording and Identification of Fingerprints.
4. Development of latent finger print on glass, paper, polished surface.
5. Examination of Erasures on Questioned document
6. Comparison of Handwriting and Signatures.
7. Imaging of hard disc, restoration of deleted file.
8. Password cracking and e-mail tracking.



Three year UG Course in Forensic Science  
Semester – ILS/FSC/GE-101L  
Generic Elective-1  
Elementary Forensic Science

**Unit I: Elementary Forensic Science**

Forensic Science and its branches, Principles of Forensic Science; Scene of Crime – Types, Sketching and Searching methods, Chain of custody; Collection, packing and forwarding of Physical evidences; Forensic Experts; Introduction to IPC, IEA, CrPC.

**Unit II: Criminology and Police Science**

Crime and Criminal, Criminology and Penology; Classification of Offences under IPC; Police Science and Organizational structure of Police; State Armed Force (SAF), Home Guard, Research and Analysis Wing (RAW), CID, CBI, BPR&D and Interpol.

**Unit III: Finger Prints and Questioned Documents**

Questioned Documents: Definition, Classification Types, Principles of Hand writing Identification and its Characteristics Fingerprints: History, Classification, Development, Pattern, Types and characteristics for personal identification.

**Unit IV: Cyber Forensics**

Cyber Forensic, Cyberspace, Computer crime, LAN, WAN, MAN, IT ACT 2000, OSI Model, Basic principle of security, Active attack, Passive attack, Basic of Forensic Speaker Identification, Hacking and Types of Hackers, Basic of Cryptography and Steganography.

**Recommended Books:**

1. Hilton; O. Scientific Examination of Questioned Documents, Elsevier, NY.
2. Albert S. Osborn; Questioned Documents, 2nd Ed., Universal Law Pub., Delhi.
3. Wilson R. Harrison; Suspect Documents Their Scientific Examination.
4. Saferstein, Criminalistics: An Introduction to Forensic Science. Prentice, Hall.
5. Sharma, B.R.: Forensic Science in Criminal Investigation and Trials, Central Law Agency, Allahabad, 1974.
6. Relevant sections of Information technology Act 2000.



6. Vincent J. M. Di Maio, Suzanna E. Dana Handbook of forensic pathology CRC/Taylor & Francis.
7. Krogman, W.M. And Iscan, M. (1987): Human Skeleton in Forensic Medicine Charles & Thomas, U.S.A.
8. Nath, S An Introduction to Forensic Anthropology. Gian Publishing House, New Delhi.
9. A Seigel, P.J Saukoo and G C Knupfer; Encyclopedia of Forensic Sciences Vol. I, II and III, Acad. Press (2000)
10. Beals, R.L. and Hoizer, H. (1985): An introduction to Anthropology, Macmillan, New Delhi.
11. Saferstein, Richard, Handbook of Forensic Science, Vol. I, II, (Ed.) Prentice Hall, Eaglewood Cliffs, NJ.
12. William Goodwin, Adrian Linacre, SibteHadi; An introduction to forensic genetics John Wiley &son's ltd, UK.
13. John M. Butler. Forensic DNA Typing, Second Edition: Biology, Technology, and Genetics of STR Markers Elsevier Academic Press.
14. Siegel, J.A., Saukko, P.J., Knupfer, G. C., Encyclopedia of Forensic Science, Academic Press, London, 2000.
15. Evett, I.W. & Weir, B.S. 1998 Interpreting DNA Evidence: Statistical Genetics for Forensic Scientists. Sunderland Mass: Sinauer.

**Three year UG Course in Forensic Science**  
**Semester – IV LS/ FSC/GE-404 P**  
**Generic Elective -4 Practical**  
**Practicals based on Advanced Forensic Science**

1. Identification of pollen grains
2. Identification of Pug marks of animals
3. Determination of sex from Skull Sutures & Pelvis
4. Determination of age from teeth & Skull
5. DNA extraction of conventional method
6. DNA typing by PCR



B.Sc III<sup>rd</sup> Semester

LS/FSC/SEC/301-L

Skill Enhancement Course (SEC-1)

Introduction to Biometrics

*Learning Objectives: After studying this paper the students will know –*

- The fundamental principles on which the science of fingerprinting is based.*
- Fingerprints are the most infallible means of identification.*
- The world's first fingerprint bureau was established in India.*
- Biometrics uses in different aspects.*
- Different types of Biometric parameters*

**Unit 1:** Definition of Biometrics, Features and function of biometric system, working of biometrics, Classification of biometric systems – physical and behavioral. Strength and weakness of physical and behavioral biometrics.

**Unit 2:** Physical Biometrics: Fingerprints, Iris, Retina, Facial recognition, Hand geometry, DNA.

**Unit 3:** Behavioral Biometrics: Speaker recognition, Signature, Gait biometrics.

**Unit 4:** Biometric parameters: FM, FNM, FTC, FTE, FAR, FRR, EER, ROC, DET; Emerging Biometric Technologies.

**Suggested Readings:**

1. J.E. Cowger, Friction Ridge Skin, CRC Press, Boca Raton (1983).
2. D.A. Ashbaugh, Quantitative-Qualitative Friction Ridge Analysis, CRC Press, Boca Raton (2000).
3. C. Champod, C. Lennard, P. Margot and M. Stoilovic, Fingerprints and other Ridge Skin Impressions, CRC Press, Boca Raton (2004).
4. Lee and Gaensle's, Advances in Fingerprint Technology, 3rd Edition, R.S. Ramotowski (Ed.), CRC Press, Boca Raton (2013).

*[Handwritten signatures]*

**गुरु घासीदास विश्वविद्यालय**  
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**Courses Focus on Employability/Entrepreneurship/Skill Development**

  
**विद्याप्रदेश (1.1.3)**  
कारिगरी एवं कौशल विकास  
Department of Applied Science  
गुरु घासीदास विश्वविद्यालय  
Guru Ghasidas Vishwavidyalaya  
बिलासपुर (छ.ग.)  
BILASPUR (C.G.)



B.Sc IV<sup>th</sup> Semester

LS/FSC/SEC/402-L

Skill Enhancement Course (SEC-2)

Handwriting Identification and Recognition

*Learning Objectives: After studying this paper the students will know –*

- The importance of examining questioned documents in crime cases.*
- The tools required for examination of questioned documents.*
- The significance of comparing hand writing samples.*
- The importance of detecting frauds and forgeries by analyzing questioned documents.*

**Unit 1: Handwriting Identification**

Basis of handwriting identification. Characteristics of handwriting – scope and application. Class and individual characteristics. Arrangement, alignment, margin, slant, speed, pressure, spacing, line quality, embellishments, movement and pen lifts. Factors influencing handwriting – physical, mechanical, genetic and physiological.

**Unit 2: Handwriting Examination**

Basis of handwriting comparison. Collection of handwriting samples. Forgery detection. Counterfeiting. Examination of altered and erased documents. Tools used in handwriting examination.

**Unit 3: Handwriting Recognition**

Basis of handwriting recognition. Off-line and on-line handwriting recognition. Steps involved in handwriting recognition – pre-processing, feature extraction and classification. Applications of handwriting recognition.

**Unit 4: Basic tools for examination of Documents**

Application of Basic tools for the examination of Questioned document, Ultraviolet, Visible and Fluorescence Spectroscopy. Photomicrography, Microphotography. Video Spectral Comparator, Electrostatic Detection Apparatus.

**Suggested Readings:**

1. O. Hilton, Scientific Examination of Questioned Documents, CRC Press, Boca Raton (1982).
2. A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4th Edition, Foundation Press, New York (1995).
3. Albert S. Osborn; Questioned Documents, 2nd Ed., Universal Law Pub., Delhi.
4. Wilson R. Harrison; Suspect Documents Their Scientific Examination.
5. Saferstein, Criminalistics: An Introduction to Forensic Science. Prentice, Hall.
6. Sharma, B.R.: Forensic Science in Criminal Investigation and Trials, Central Law Agency, Allahabad, 1974.

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**List of Courses Focus on Employability/ Entrepreneurship/  
Skill Development**

**Department : Forensic Science**

**Programme Name : M.Sc.**

**Academic Year : 2019-20**

**List of Courses Focus on Employability/ Entrepreneurship/Skill Development**

Sr. No.	Course Code	Name of the Course
01.	IFSC704	Question Document
02.	IFSC706	Practical Based on Question Document
03.	IFSC 1002 (F)	Question Document
04.	IFSC 1002 (G)	Forensic Photography
05.	IFSC 1002 (H)	Practical Based on Biometrics (Through Portrait Parle Method )
06.	IFSC 1003 (F)	Practical Based on Question Document
07.	IFSC 1003 (G)	Practical Based on Forensic Photography
08.	IFSC 1003 (H)	Practical Based on Biometrics (Through Portrait Parle Method )

**विभागाध्यक्ष  
HEAD  
फॉरेंसिक साइंस विभाग  
Department of Forensic Science  
गुरु घासीदास विश्वविद्यालय,  
Guru Ghasidas Vishwavidyalaya,  
बिलासपुर (छ.ग.)  
BILASPUR (C.G.)**





## Scheme and Syllabus

*Department of Forensic Science, GGU, Bilaspur*

<b>Semester – VII</b>					
Semester	Paper Code	Paper	Title of the Paper	Hours/ Week	Credits
<b>Seventh Semester</b>	IFSC701	I	Forensic science & Criminology	4	3
	IFSC702	II	Forensic techniques & Instrumentation	4	3
	IFSC703	III	Crime Scene Management	4	3
	<b>IFSC704</b>	<b>IV</b>	<b>Questioned Documents</b>	<b>4</b>	<b>3</b>
	IFSL705	V	Practical based on crime scene search study	6	3
	<b>IFSL 706</b>	<b>VI</b>	<b>Practical based on questioned document</b>	<b>6</b>	<b>3</b>
	IFSS 707	VII	Seminar	2	2
<b>Credits</b>					<b>20</b>
<b>Semester – VIII</b>					
<b>Eighth Semester</b>	IFSC801	I	Instrumental analysis-Chemical & Physical	4	3
	IFSC802	II	Instrumental Analysis – Biological Methods	4	3
	IFSC803	III	Forensic Anthropology and Finger prints	4	3
	IFSC804	IV	Forensic Chemistry and Toxicology	4	3
	IFSL 805	V	Practical based on Forensic Anthropology and Finger prints	6	3
	IFSL 806	VI	Practical based on Chemistry and toxicological analysis	6	3
	IFSS 807	VII	Seminar	2	2
<b>Credits</b>					<b>20</b>
<b>Semester IX</b>					
<b>Ninth Semester</b>	IFSC901	I	Computer Forensics and Digital investigations	4	3
	IFSC902	II	Forensic Ballistics and Physics	4	3
	IFSC903	III	Forensic Biology and Serology	4	3
	IFSC904	IV	Forensic Medicine	4	3
	IFSL905	V	Practical Based on Forensic Ballistics and Physics	6	3
	IFSL906	VI	Practical Based on Forensic Biology and Serology	6	3
	IFSC907	VII	Seminar	2	2
<b>Credits</b>					<b>20</b>

2 | Page



*Department of Forensic Science, GG'V Bilaspur*

	IFSC 1001	I	Quality Management & Research Methodology	4	3
	IFSC 1002		Elective Papers	4	3
	IFSC 1002 (A)	II	Advanced Forensic Chemistry		
	IFSC 1002 (B)		Advanced Forensic Toxicology and Pharmacology		
	IFSC 1002 (C)		Drugs of Abuse		
	IFSC 1002 (D)		Advanced Forensic Physics		
	IFSC 1002 (E)		Advanced Forensic Ballistics		
	IFSC 1002 (F)		Questioned Documents		
	IFSC 1002 (G)		Forensic Photography		
	IFSC 1002 (H)		Biometrics (Through portrait Parle Technique)		
	IFSC 1002 (I)		Advanced Forensic Biology		
	IFSC 1002 (J)		Advanced Forensic Serology & Immunology		
	IFSC 1002 (K)		Advanced Forensic Genetics & DNA Profiling		
	<b>IFSL 1003</b>		<b>Elective Practical's</b>	6	4
	IFSL 1003 (A)	III	Practical based on Advanced Forensic Chemistry		
	IFSL 1003 (B)		Practical based on Advanced Forensic Toxicology and Pharmacology		
	IFSL 1003 (C)		Practical based on Drugs of Abuse		
	IFSL 1003 (D)		Practical based on Advanced Forensic Physics		
	IFSL 1003 (E)		Practical based on Advanced Forensic Ballistics		
	IFSL 1003 (F)		Practical based on Questioned Documents		
	IFSL 1003 (G)		Practical based on Forensic Photography		
	IFSL 1003 (H)		Practical based on Biometrics (Through portrait Parle Technique)		
	IFSL 1003 (I)		Practical based on Advanced Forensic Biology		
	IFSL 1003 (J)		Practical based on Advanced Forensic Serology & Immunology		
	IFSL 1003 (K)		Practical based on Advanced Forensic Genetics & DNA Profiling		
	IFSD 1004		Dissertation		10
Credits					20
<b>Total Credits</b>					<b>80</b>



Five Year Integrated UG/PG Course in Forensic Science  
Semester -VII, IFSC- 704  
Paper - IV

**Questioned Documents**

Maximum Marks: 100

Allotted credits: 03

**UNIT I**

Nature and problems of Document examination, Classification of documents, Types of Forensic Documents; Collection, handling, preservation, marking and forwarding of documents to the laboratory; Writing instruments and their characteristics.

**UNIT II**

Principle of handwriting identification, Hand writing and its characteristics, Individual characteristics, Factors affecting hand writing, Samples for comparison and comparison of handwriting, Examination of Signature characteristics, Disguised, Indented and secrete writings, Anonymours letters.

**UNIT III**

Alterations in Documents, Examination of Paper & Ink, Examination of typed documents, Examination of Seal, rubber & other mechanical impressions, Handling and examination of charred documents, Examination of Forged currency notes.

**UNIT IV**

Forgery, Methods of Forgery, Age determination of documents, Basic tools needed for Forensic document examination, Photography of documents, Principle and Forensic significance of Video Spectral comparator (VSC), Electrostatic detection apparatus (ESDA).

**Recommended Books**

1. Hilton; O. Scientific Examination of Questioned Documents,, Elsevier, NY
2. Albert S. Osborn; Questioned Documents, 2nd Ed., Universal Law Pub., Delhi
3. Wilson R. Harrison; Suspect Documents Their Scientific Examination, Universal Law Pub. Delhi Indian
4. Hard less H.R; Disputed Documents, Handwriting and Thumbs - Print identification, profusely illustrated, Law Book, Allahabad
5. Morris Ron N. Forensic Handwriting Identification; AcadPress, London.
6. Roy A Huber, A.M. Headrick; Handwriting Identification- Facts and Fundamental, CRC Press
7. Laboratory working procedure manual, Documents DFS, New Delhi, 2005



*Department of Forensic Science, GG'V Bilaspur*

**Five Year Integrated UG/PG Course in Forensic Science  
Semester –VII, IFSL-706  
Paper – VI**

**Practical Based on Questioned Documents**

**Maximum Marks: 100**

**Allotted credits: 03**

1. Examination of Erasures on Questioned document.
2. Examination of Obliteration on Questioned document.
3. Examination of Addition on Questioned document.
4. Decipher unknown Secret Writings.
5. Chromatographic comparison of different ink.
6. Comparison of Handwriting and Signatures.



Five Year Integrated UG/PG Course in Forensic Science  
Semester – X, IFSE- 1002 (f)  
Paper –II

Questioned Documents

Maximum Marks: 100

Allotted credits: 03

UNIT – I

**Questioned Document**–Definition, Nature and History of document examination, Classification of Forensic documents-Admitted, Request and Typescript specimens, Holographic documents, Care and Handling of documents, Basic tools needed for Forensic Document Examination - Hand lens, Stereo microscope, Electrostatic detection device (EDD), Video Spectral Comparator (VSC)

UNIT – II

**Handwriting** : Principle, General qualities, Writing habits, Individual Characteristics; Factors that causes changes in Handwriting, Systematic Examination of Handwriting; Examination of signatures, Characteristics of genuine and forged signatures; Alteration of Documents, Secret writings, Anonymus writing, Disguised writing, indented writings, Charred documents.

UNIT – III

**Forgery** : Various types of forgery and their examination, Determination of sequence of strokes; Age of Documents, Examination and Identification of Paper, Ink, Typescripts, seal, rubber, Carbon copies & other mechanical impressions, counterfeiting and examination of forged currency notes, Presentation of evidence in court.

UNIT -IV

**Photography**; Basic principles and techniques of Black & White and colour photography, Cameras and lenses, developments and printing, Different kinds of developers and fixers, Linkage of Cameras and Film negatives, Digital photography, digital water marking & digital imaging, Photogrammetry and videography, crime scene and laboratory photography IR, UV and Portrait photography, Recent developments in photography.

Recommended Books:

1. Ordway Hilton; Scientific Examination of Questioned Documents, Elsevier, NY
2. Albert S. Osborn; Questioned Documents, 2nd Ed., Universal Law Pub., Delhi
3. Albert S Osborn; The Problem of Proof, 2nd Ed., Universal Law Pub. Delhi
4. Charles C. Thomas; I.S.Q.D. Identification System for Questioned Documents, Willy Prior Bates Springfield, Illinois, USA
5. Wilson R. Harrison; Suspect Documents Their Scientific Examination, Universal Law Pub. Delhi Indian Reprint
6. Goutam, Shubhra and Goutam M.P. Physical Evidences- Introduction and Bibliography on their forensic analysis, Shiv Shakti Book Traders, New Delhi.
7. Morris Ron N; Forensic Handwriting Identification, Acad .Press, London (2001)
8. Lerinson Jay; Questioned Documents, Acad Press, London
9. Mcmenamin, G. R; Forensic Linguistics- Advances in Forensic Stylistics, CRC
10. Ellen David; Questioned Documents- Scientific Examination, Taylor & Francis, Washington (1997)
11. H.L. Blitzer and J.Jacobia; Forensic Digital Imaging and Photography, Academic Press (2002)



Department of Forensic Science, GG<sup>V</sup> Bilaspur

Five Year Integrated UG/PG Course in Forensic Science  
Semester – X, IFSEL- 1002 (g)  
Paper –II

**Forensic Photography**

Maximum Marks: 100

Allotted credits: 03

**Unit I:**

Photography definition and scope, Introduction to Camera, lens, shutter depth of film

**Unit II:**

Videography, Videography for fire and crime scene, motor vehicle accident scene, surveillance photography and photographic aspects of injuries.

**Unit III:**

Basics of Digital photography, digital imaging, resolution, digital cameras, Monitors and scanners.

**Unit IV:**

Crime scene photography, photography of foot and fingerprints, Significance of photography in document examination, Photography in hit and run cases.

**References:**

1. David R Redsicker: The practical methodology Forensic photography: (second edition) CRC press
2. Duckworth J E: Forensic photography. Springfield I L. Charles C Thomas
3. Samsone SJ: Modern photography for police and fireman, Cincinnati TI OH WH. Anderson Company. 1971.



Five Year Integrated UG/PG Course in Forensic Science  
Semester – X, IFSEL- 1002 (h)  
Paper –II  
**Biometrics (Through Portrait parle technique)**

Maximum Marks: 100

Allotted credits: 03

**Unit I:**

History and definition of Biometrics, Types, features and function of Biometrics, Gait scan and principles. Face, voice, signature scan and their principles.

**Unit II:**

Fundamentals of fingerprints, History, Fingerprint patterns, Definition of patterns: Arch, Loop and Whorl, Ridge counting and Ridge tracing, Henry's system of classification (primary to key classification).

**Unit III:**

DNA and its principles in personal identification

**Unit IV:**

Introduction to skin prints, lip prints, ear prints, bare foot prints and their significance in personal identification, conventional method for development of Latent fingerprints.

**References:**

1. Ellen David; Questioned Documents- Scientific Examination, Taylor& Francis, Washington (1997).
2. H.L. Blitzer and J. Jacobia; Forensic Digital imaging and Photography, Academic Press (2002).
3. R.E. Jaconson, S.F. Ray, G.G. Attridge, N.R. Oxford; The Manual of Photography- Photographic and Digital Imaging, 9<sup>th</sup> Ed., Focal Press (2000).
4. B.H.E. Jacobson, Ray GG Attridge; The Manual of Photography, Focal Press, London (1998).
5. Upton, Kobre, Brill; Photography, Pearson Education, Inc.  
David R. Redsicker; the Practical Methodology of Forensic Photography- 2<sup>nd</sup> Ed. CRC Press LLC(2001).



**Five Year Integrated UG/PG Course in Forensic Science  
Semester – X, IFSEL- 1004 (e)  
Paper –IV**

**Practical based on - Advanced Forensic Ballistics**

**Maximum Marks: 100**

**Allotted credits: 04**

1. Chemical tests for powder residues (Walker's test) and Barrel wash
2. Identification of propellants
3. Examination and Comparison of fired Cartridges/cases (Caliber, firing pin, breech face, Extractor / Ejector marks etc.)
4. Determination of shot number from size and weight of shots.
5. Examination and Comparison of fired bullets – Caliber, rifling, characteristics, probable type of firearms
6. Characteristics of Firearms – Caliber, Choke, Trigger pull, Proof marks etc.
7. Determination of range of firing
8. Examination and Comparison of fired bullets – Caliber, rifling, characteristics, type of firearms
9. Restoration of Erased marking on firearm

**Five Year Integrated UG/PG Course in Forensic Science  
Semester – X, IFSEL-1004(f)  
Paper –IV**

**Practical Based on Questioned Document**

**Maximum Marks: 100**

**Allotted credits: 04**

1. Examination of ink by TLC
2. Examination of paper
3. Examination of rubber stamp.
4. Examination of typescripts and printed matters
5. Examination of photocopy documents for machine defect marks.
6. Detection and decipherment of alterations, additions and over writing.
7. Detection of forgeries including traced and simulated forgery and built up documents.
8. Decipherment of indented writings, secret writings and charred documents
9. Examination of security documents Currency notes, Stamp Papers and lottery tickets.
10. Examination of erasures-mechanical and chemical erasures.





Five Year Integrated UG/PG Course in Forensic Science  
Semester – X, IFSEL- 1004 (g)  
Paper –IV

**Practical based on Forensic Photography**

Maximum Marks: 100

Allotted credits: 04

1. Photography of crime scene
2. Photography of Tyre print impressions
3. Photography of Hanging
4. Photography of trace evidencde
5. Photography of vehicular accidents

Five Year Integrated UG/PG Course in Forensic Science  
Semester- X, IFSEL- 1004 (h)  
Paper-IV

**Practical based on Biometrics (Through Potrait Parle Technique)**

Maximum Marks: 100

Allotted credits: 04

1. Examination of photocopy documents for machine defect marks.
2. Detection and decipherment of alteration, additions and overwriting.
3. Detection of forgeries including traced and simulated forgery and built up documents.
4. Decipherment of indented writings, secret writings and charred documents.
5. Examination of security documents Currency notes, Stamp papers and Lottery tickets.
6. Examination of erasures-mechanical and chemical erasures.
7. Photography of documents/ Crime Scene.