



# *Branches of Forensic Science*

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# Overview

What is Forensic science?

What is the scope in real world?

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What are the core branches of  
Forensic science?





# What is Forensic Science?

Both words are derived from Latin:

- **Forensic** = from Latin *forensis*, meaning "of the forum" (i.e., related to courts or public discussion)
- **Science** = from Latin *scientia*, meaning "knowledge"
- Putting it together, Forensic Science literally means:

**"The knowledge used in courts or legal matters."**



- Forensic Science is the application of scientific methods and principles to investigate crimes and legal issues.
- It involves the collection, preservation, examination, and analysis of physical evidence from crime scenes to assist law enforcement, legal professionals, and courts in solving crimes and delivering justice.
- Forensic Science encompasses a wide range of specialized fields. Let us now explore some of its core branches that form the foundation of forensic investigation and analysis.





# 1. *Forensic Biology*

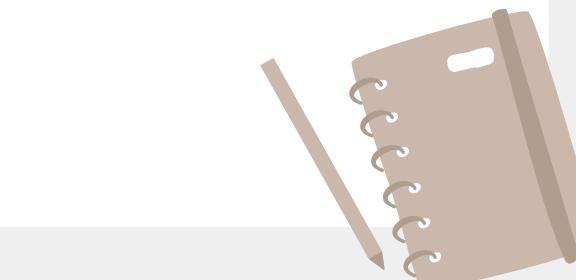
## **Definition:**

It the study of application of biology to law enforcement, primarily focused on analyzing bodily fluids and tissues found at crime scenes.



## **Scope:**

DNA profiling  
blood pattern analysis  
species determination.  
identification of biological samples



## **Job Roles:**

Forensic biologist  
crime laboratory analyst  
DNA analyst  
biology technician in forensic labs.





## 2. Forensic Serology

### Definition:

The study and identification of body fluids such as blood, semen, saliva, and urine for investigative purposes.



### Scope:

Determination of blood groups  
detection of bodily fluids  
aiding in linking suspects to crime scenes.



### Job Roles:

Forensic Serologist  
forensic lab assistant  
biological evidence examiner.





# 3. Forensic DNA Analysis

## Definition:

The use of genetic material to identify individuals involved in criminal or civil cases.



## Scope:

Criminal identification  
paternity disputes  
mass disaster victim identification.



## Job Roles:

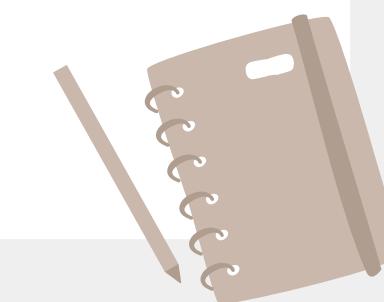
DNA forensic scientist  
Genetic analyst  
Molecular biologist in forensic settings.



# 4. Forensic Chemistry

## Definition:

It is a branch of forensic science that applies principles of chemistry to analyze physical evidence from crime scenes.



## Scope:

Drug identification  
Analysis of explosives and fire debris,  
unknown substance detection.



## Job Roles:

Forensic Chemist  
Narcotics Analyst  
Explosives Analyst  
Trace Evidence Examiner  
Quality Control Chemist  
Environmental Forensic Analyst



# 5. Forensic Toxicology

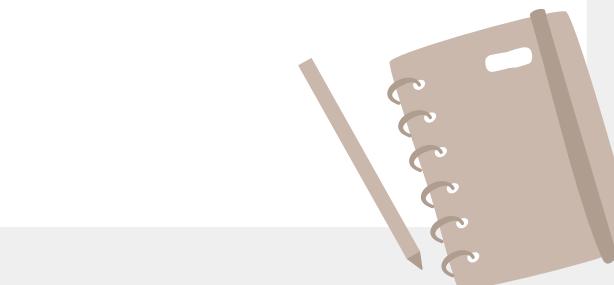
## Definition:

It is the study of drugs, poisons, and other toxic substances and their effects on the human body, especially in the context of law and criminal investigations.



## Scope:

Postmortem toxicology  
workplace drug testing  
poison identification.



## Job Roles:

- Forensic Toxicologist
- Postmortem Toxicology Analyst
- Drug Testing Specialist
- Poison Control Analyst
- Crime Laboratory Analyst
- Environmental Toxicologist
- Medical Examiner's Toxicology Assistant





# 6. Forensic Pathology

## Definition:

Forensic Pathology is the study of determining cause and manner of death by examining bodies through autopsies.



## Scope:

- Investigating suspicious death
- Analyzing injuries
- Estimating time of death
- Providing evidence for legal cases.



## Job Roles:

- Forensic Pathologist
- Medical Examiner
- Autopsy Technician
- Medico-legal Investigator
- Forensic Consultant.





# 7. Forensic Anthropology

## Definition:

Forensic Anthropology is the study of human bones to help identify deceased individuals and determine cause of death in legal investigations.



## Scope:

- Identify human remains
- Determine age, sex, and ancestry from bones
- Estimate time since death
- Analyze trauma or injury on bones
- Assist in mass disaster victim identification



## Job Roles:

- Forensic Anthropologist
- Human Osteologist
- Disaster Victim Identification Specialist
- Forensic Consultant
- Academic Researcher





# 8. Forensic Odontology

## Definition:

Forensic Odontology is the application of dental science to identify human remains and analyze bite marks in legal investigations.



## Scope:

- Identify victims
- Analyze bite marks
- Estimate age
- Assist in disasters
- Provide legal evidence



## Job Roles:

- Forensic Odontologist
- Forensic Dentist
- Dental Identification Specialist
- Disaster Victim Identification Team
- Member
- Legal Consultant



# 9. Forensic Entomology

## Definition:

Forensic Entomology is the study of insects to help determine time and circumstances of death in legal investigations.



## Scope:

- Estimate time of death
- Analyze insect activity
- Locate body movement
- Detect neglect or abuse



## Job Roles:

- Forensic Entomologist
- Crime Scene Investigator
- Research Scientist
- Forensic Consultant



# 10. Forensic Psychology

## Definition:

Forensic Psychology is the application of psychology to legal and criminal investigations.



## Scope:

- Assess mental state of offenders
- Provide expert testimony
- Assist in criminal profiling
- Evaluate competency for trial
- Support victim counseling



## Job Roles:

- Forensic Psychologist
- Criminal Profiler
- Legal Consultant
- Victim Advocate



# 11. Forensic Psychiatry

## Definition:

Forensic Psychiatry is the branch of psychiatry that deals with the assessment and treatment of mentally disordered individuals in legal contexts.



## Scope:

- Assess mental fitness for trial
- Evaluate criminal responsibility
- Treat mentally ill offenders
- Provide expert testimony in court
- Conduct risk assessments



## Job Roles:

- Forensic Psychiatrist
- Mental Health Evaluator
- Legal Consultant
- Court Advisor





# 12. Forensic Ballistics

## Definition:

Forensic Ballistics is the study of firearms, ammunition, and the effects of projectiles in legal investigations.



## Scope:

- Analyze firearms and bullets
- Match bullets to weapons
- Investigate shooting incidents
- Examine gunshot residues
- Reconstruct crime scenes



## Job Roles:

- Forensic Ballistics Expert
- Firearms Examiner
- Crime Scene Analyst
- Forensic Consultant



# 13. Questioned Document Examination

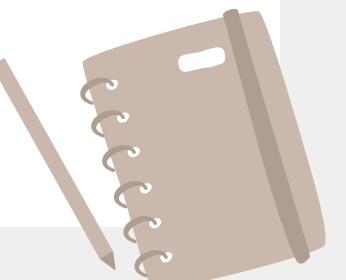
## Definition:

Questioned Document Examination is the analysis of documents to verify authenticity, authorship, or detect forgery in legal cases.



## Scope:

Forgery detection  
handwriting verification  
counterfeit document identification.



## Job Roles:

Document examiner  
handwriting expert  
forensic linguist



# 14. Digital Forensics

## Definition:

Digital Forensics (also known as Cyber Forensics) is the investigation of digital devices to recover, analyze, and preserve electronic evidence for legal purposes.



## Scope:

- Recover deleted data
- Investigate cybercrimes
- Trace digital evidence
- Analyze mobile and computer data
- Ensure data integrity in court



## Job Roles:

- Digital Forensic Analyst
- Cybercrime Investigator
- Mobile Forensic Expert
- Network Security Analyst
- Forensic Consultant



# 15. *Forensic Linguistics*

## **Definition:**

Forensic Linguistics is the study of language used in legal contexts to analyze written or spoken evidence.



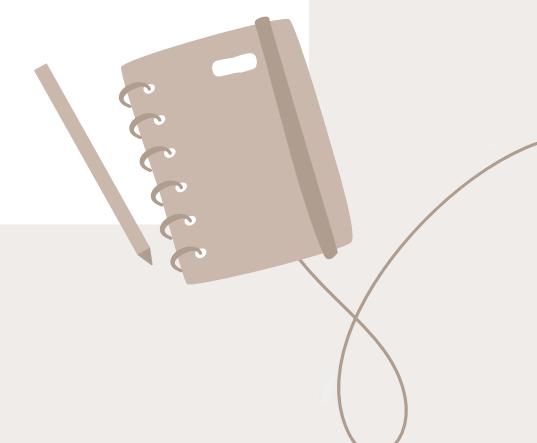
## **Scope:**

- Analyze written threats or ransom notes
- Identify authorship of texts
- Examine legal documents
- Interpret recorded conversations
- Support in voice identification



## **Job Roles:**

- Forensic Linguist
- Authorship Analyst
- Legal Language Expert
- Voice Analysis Consultant





# 16. Forensic Engineering

## Definition:

Forensic Engineering is the application of engineering principles to investigate failures, accidents, or crimes.



## Scope:

- Analyze structural failures
- Investigate accidents and explosions
- Examine materials and machinery
- Reconstruct events
- Provide expert reports



## Job Roles:

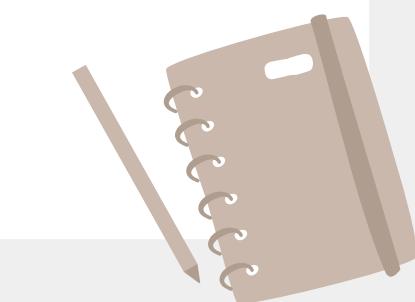
- Forensic Engineer
- Accident Reconstruction Expert
- Structural Failure Analyst
- Legal Consultant



# 17. Forensic Accounting

## Definition:

Forensic Accounting is the use of accounting skills to investigate financial crimes and disputes.



## Scope:

- Detect fraud and embezzlement
- Analyze financial records
- Investigate money laundering
- Support litigation cases
- Calculate economic damages



## Job Roles:

- Forensic Accountant
- Fraud Examiner
- Financial Investigator
- Litigation Support Analyst





# 18. *Forensic Geology*

## **Definition:**

Forensic Geology is the application of geological techniques to solve crimes by analyzing soil, minerals, and earth materials.



## **Scope:**

- Analyze soil evidence
- Link suspects to crime scenes
- Compare geological samples
- Assist in locating buried remains
- Study environmental crime scenes



## **Job Roles:**

- Forensic Geologist
- Soil Evidence Analyst
- Crime Scene Investigator
- Environmental Forensics Expert



# 19. Wildlife Forensics

## Definition:

Wildlife Forensics is the application of forensic science to investigate crimes involving animals and wildlife.



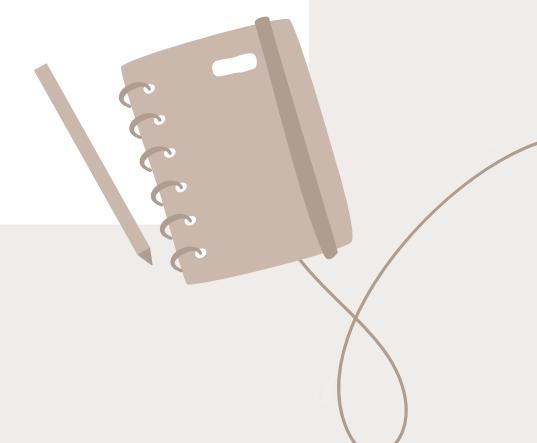
## Scope:

- Identify species from remains
- Investigate poaching and trafficking
- Analyze animal DNA
- Enforce wildlife protection laws
- Support conservation efforts



## Job Roles:

- Wildlife Forensic Scientist
- Conservation Forensics Expert
- DNA Analyst (Wildlife)
- Wildlife Crime Investigator





# 20. Environmental Forensics

## Definition:

Environmental Forensics is the use of scientific techniques to identify sources and causes of environmental contamination.



## Scope:

- Trace pollution sources
- Analyze soil, water, and air samples
- Investigate illegal dumping
- Support environmental litigation
- Assist in cleanup efforts



## Job Roles:

- Environmental Forensic Scientist
- Pollution Analyst
- Environmental Consultant
- Legal Advisor (Environmental Cases)



# 21. Forensic Nursing

## Definition:

Forensic Nursing is the application of nursing practice to care for victims of trauma while collecting legal evidence.



## Scope:

- Care for victims of violence and abuse
- Collect and preserve forensic evidence
- Document injuries
- Testify in court
- Support legal investigations



## Job Roles:

- Forensic Nurse
- Sexual Assault Nurse Examiner (SANE)
- Legal Nurse Consultant
- Clinical Forensic Specialist





# 22. Forensic Biotechnology

## Definition:

Forensic Biotechnology is the use of biotechnological techniques in solving crimes and legal investigations.



## Scope:

- DNA profiling
- Genetic identification
- Analyze biological evidence
- Study microbial forensics
- Assist in paternity and kinship testing



## Job Roles:

- Forensic Biotechnologist
- DNA Analyst
- Molecular Forensic Expert
- Genetic Evidence Examiner





# 22. Forensic Biotechnology

## Definition:

Forensic Biotechnology is the use of biotechnological techniques in solving crimes and legal investigations.



## Scope:

- DNA profiling
- Genetic identification
- Analyze biological evidence
- Study microbial forensics
- Assist in paternity and kinship testing



## Job Roles:

- Forensic Biotechnologist
- DNA Analyst
- Molecular Forensic Expert
- Genetic Evidence Examiner





# 23. Criminalistics

## Definition:

Criminology is the study of crime, criminal behavior, and the criminal justice system.



## Scope:

- Study causes of crime
- Analyze criminal behavior
- Research crime trends
- Assist in crime prevention
- Support rehabilitation programs



## Job Roles:

- Criminologist
- Crime Analyst
- Criminal Behavior Expert
- Policy Advisor





# 24. Fingerprint Analysis

## Definition:

Fingerprint Analysis is the study and comparison of fingerprints to identify individuals in forensic investigations.



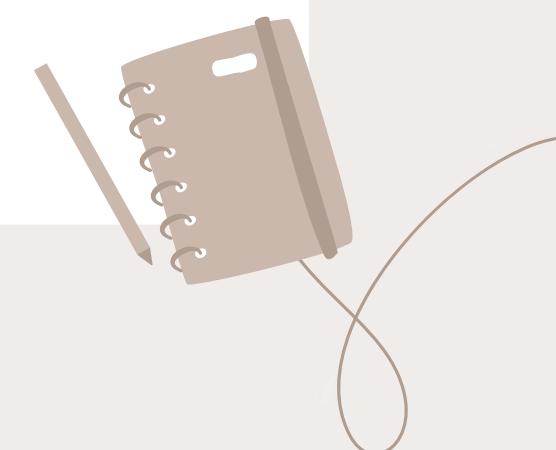
## Scope:

- Identify individuals from prints
- Compare latent prints
- Maintain fingerprint databases
- Link suspects to crime scenes
- Verify identity



## Job Roles:

- Fingerprint Expert
- Latent Print Examiner
- Forensic Analyst
- Crime Scene Technician





- **lecturer/ Forensic scientist**

M.Sc. in Forensic Science (with specialization in the chosen branch) + NET  
+ Ph.D (optional)

- **Researcher**

M.Sc. in Forensic Science (with specialization in the chosen branch) + NET  
+ Ph.D



# Conclusion

Forensic Science is a dynamic and multidisciplinary field that plays a vital role in the criminal justice system. Each branch offers unique opportunities to apply scientific knowledge in solving crimes, delivering justice, and supporting law enforcement. With the right qualifications—such as a B.Sc., M.Sc., and further specialization through a Ph.D.—individuals can pursue diverse career paths including laboratory analysis, field investigation, teaching, and research. Whether you choose to become a forensic expert, consultant, lecturer, or researcher, this field holds vast potential for meaningful and impactful work.



Thank You So Much