



# Branches of Forensic Science

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# Overview

What is Forensic science?

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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