

Government Institute of Forensic Science, Nagpur
Department of Forensic Biology

Course Outcome
(Bachelor of Science)

After Every semester of Forensic Biology student will get acquainted to....

B.Sc. SEMESTER-I

- Cell Structure and function
- Taxonomy, anatomy, transport of nutrients in angiosperms
- Classification, properties and functions of carbohydrates, proteins, lipids and nucleic acids.
- Blood composition and circulation
- Physiology of humans
- BMR
- Qualitative analysis of sugar, proteins, lipids and nucleic acids
- Study of conducting tissue, -xylem and phloem elements in angiosperms and Gymnosperms as seen in L.S.
- Study of morphological types of red blood cells
- Chromatography- separation of Amino acids, sugars, lipids using paper chromatography and thin layer chromatography, determination of RF values

B.Sc. SEMESTER-II

- Introduction to Microbiology, Classification, isolation of microorganisms
- Introduction to Recombinant DNA technology, southern and western blotting
- Microscopy – Principle and types
- Evolution -Basic concepts
- Genetics – Structure of DNA, RNA.
- Mendel's Laws, Sex linked inheritance
- Immunity – Basic concepts, antigen, antibody
- T-cell and B- cell developments
- Preparation of media and sterilization
- Antigen-antibody reaction (blood groupings)
- Isolation of chromosomal DNA
- Restriction digestion of DNA

B.Sc. SEMESTER-III

- Investigation of crime scene
- Search, collection, preservation, packaging and transportation of biological evidences
- Biological fluid analysis in brief.
- Presumptive and confirmatory tests for blood, saliva, semen detection
- Concept of monoclonal, polyclonal antibodies, antiglobulins
- Hair – human and animal (morphology and microscopic analysis)
- Gel electrophoresis
- Structure of human genome, chromosome, DNA
- Extraction, quantification and amplification of DNA
- DNA databases

B.Sc. SEMESTER-IV

- Forensic Anthropology, odontology, pathology, entomology, botany
- Facial reconstruction
- Bite mark analysis
- Post-mortem examination
- Ecology – bio geo chemical cycles, endangered species of plant and animals

B.Sc. SEMESTER- V

- Forensic Serology
- Forensically important blood groups
- Polymorphic enzymes typing
- Wild life forensics
- Ornithology
- Forensic Microbiology
- Bio terrorism
- Forensic Palynology
- Detection of species origin
- Blood grouping from other body fluids
- Identification of birds from feathers
- Study of pollen grains and spores of forensic significance.
- Examination of fur, nails, horn, teeth.

B.Sc. SEMESTER- VI

- Introduction to DNA fingerprinting
- Molecular markers – VNTRs, STRs, SNPs
- Mitochondrial DNA analysis
- Case studies
- Legal perspective for admissibility of DNA profiling
- Forensic anthropology- age estimation
- Documentation & Expert Witness Testimony
- Bite mark analysis
- Forensic Entomology
- Identification of orders of insects and other arthropods of forensic significance
- Age and sex determination from skeletal remains
- Identification of birds from feathers
- Study of pollen grains and spores of forensic significance.
- Examination of fur, nails, horn, teeth.

Government Institute of Forensic Science, Nagpur
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Course Outcome
(Master of Science)

M.Sc. SEMESTER-I, Paper III, Forensic Biology & Serology

- Apply the knowledge of body fluids for Collection and preservation of at crime scenes.
- Identify different blood group systems in forensic cases.
- Make the use of evidences other than biological sources at the crime scene.

M.Sc. SEMESTER-II, Paper III, Forensic Biology & Serology

- Understand the carbohydrate and lipid metabolism, Eukaryotic Genome, Chromosomal Basis of Inheritance, recombinant DNA technology, demonstrate the knowledge of immunology.

M.Sc. SEMESTER-III, (Special Paper I: Forensic Biology)

- Apply the knowledge of Hair and Fiber examination in various cases.
- Able to examine, evaluate, locate, collect, identify botanical, entomological and, other biological evidences etc.

M.Sc. SEMESTER-III, (Special Paper II- S2P2: Forensic Serology)

- Able to test and analyse body fluids.
- Understand the use of serological tests, electrophoresis and blotting techniques.

M.Sc. SEMESTER-III, (Special Paper II- S2P3: DNA Fingerprinting)

- Able to understand DNA and Non-human DNA sample sources, extraction, quantification methods, amplification, fingerprinting techniques in various cases and their interpretation.

M.Sc. SEMESTER-III, (Special Paper IV: Forensic pathology and Microbial forensic)

- Able to understand cause, manner, identification and examination of death.
- Medico-legal aspects.
- Report Writing and Interpretation etc.
- Apply knowledge of Microbial Forensics and related techniques for various cases.

M.Sc. SEMESTER-IV, (Special Paper I: Forensic Anthropology and Odontology)

- Apply the knowledge of forensic anthropology and odontology to various cases where skeletal remains at crime scene to identify age, sex and race.

M.Sc. SEMESTER-IV, (Special Paper II: Microbial Forensics and Bioinformatics)

- Able to understand the Biological agents in warfare, their forensic importance and introduction to Bioinformatics. Sequence alignment, Phylogenetic analysis.

M.Sc. SEMESTER-IV, (Special Paper III: DNA Fingerprinting)

- Able to understand the advanced techniques in DNA profiling, DNA Fingerprinting applications, forensic DNA evidence interpretation and the DNA Databank and Quality Assurance.

M.Sc. SEMESTER-IV, (Special Paper IV: Wildlife and Environmental Forensics)

- Able to understand forensic aspect of wildlife and environmental with examples of various cases.