

# Curriculum

## DNB Broad Specialty

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# Forensic Medicine

- ◆ Objectives of the Programme
- ◆ Teaching - Learning Methods
- ◆ Conceptual Framework
- ◆ Module
- ◆ Syllabus
- ◆ Log Book

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## I. OBJECTIVES OF THE PROGRAMME:

The DNB (Forensic Medicine) is the program to strengthen the teaching and training at postgraduate level in India for larger benefit to community and law enforcing agencies with aim of improving the criminal justice system.

1. **Programme Goals:** This programme aims at training a registered medical practitioner to a competent skilful expert, researcher and teacher of Forensic Medicine with updated knowledge of advances and developments of the subject.
2. **Programme Objectives:** This programme aims at training a Medical Graduate (registered medical practitioner) in Forensic Medicine who at the end of the training will be able to:
  - a. Identify and define the existing as well as future Medico-legal problems as they emerge in the community and work to resolve such problems by planning, implementing, evaluating and modulating Medico-legal services.
  - b. Undertake medico-legal responsibilities and discharge Medico-legal duties which arise in day to day general practice as well as in hospitals/Health Centres.
  - c. Keep himself/herself abreast with all recent development and emerging trends in the field of Medical Ethics and the Law.
  - d. Evaluate his/her professional activities, educational needs and select appropriate learning resources periodically.
  - e. Deal with general principles and practical problems related to forensic, clinical, emergency, environmental, medico-legal and occupational aspects of toxicology.
  - f. Impart education and assess knowledge and skills in Forensic Medicine among under-graduate and post-graduate students with the help of modern teaching aids.
  - g. Undertake and guide research in the field of Forensic Medicine with adoption of research methodology.
3. **Specific Objectives:** At the end of the DNB (Forensic Medicine) course, a Diplomate student should have acquired:
  - a. **Knowledge (Cognitive Domain) of:**
    - Medico-legal system of the country and Laws and Acts as related to medical practice.
    - Types, Principles and Objectives of autopsy/Postmortem Examination
    - Statutory Requirements of Conducting Autopsy/Postmortem Examination

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- Performing Medico-legal autopsy independently with required physical assistance, prepare report and derive inferences.
  - Role of other allied disciplines (Forensic Science including various sub disciplines (Ballistics, Serology etc., Analytical Toxicology) in medico legal practice.

**b. Professionalism (Affective Domain) for:**

- Cooperative and adjusting nature while working in a team or while interacting with professional colleagues
- Good Communication Skills
- Ethical Principles and Etiquettes in Practices and dealings with medical fraternity.
- Dealing with situations in gender neutral manner.

**c. Skills (Psychomotor Domain) of:**

- Conducting Medico-legal autopsy independently with required physical assistance, prepare report and derive inferences.
- Conducting Medico Legal Examination and preparation of report in
  - Cases of consumption of alcohol, drugs and poisons
  - Sexual Offences
  - Emergency Settings
  - Examination of Bones
  - Examination of Exhibits-Clothing's, weapon etc.
  - Estimation of Age
- Interpret his to-pathological, microbiological, radiological, chemical analysis, DNA analysis and other investigative reports for Medico-legal matters,
- Understand the various legal/court procedures applicable to medico-legal/medical practice and depose as an expert witness in a court of law on medico-legal matters.
- Identify, examine and prepare reports in various Medico-legal cases/matters.
- Appropriate Collection, Preservation and dispatch of various biological Samples/exhibits and other trace evidences for examination by other competent authorities
- Plan, Organise and supervise Medico-legal work in general/ teaching/district level health care set up and also advise authorities on medico-legal matters.
- Planning, organizing and managing basic analytical toxicology laboratory services and Clinical forensic medicine services in health care set up.

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- Planning, and managing medico-legal responsibilities/in situations of mass disasters/multiple deaths
  - Interpret analyse & review Medico-legal reports prepared by other Medical Officers.
  - Identify and articulate medical ethics in relation to the patient, profession, society, state and humanity at large.
  - Interpret and advice authorities on matters related to Medical Ethics and the Law.

## **II. TEACHING - LEARNING METHODS:**

1. Participation in Undergraduate classes
2. Didactic/Integrated Lectures: -
3. Posting for
4. Autopsy work
5. Clinical Forensic Medicine
6. Clinical toxicology
7. Allied subjects
8. Journal review
9. Autopsy Case Discussion
10. Clinical Forensic Medicine Case Discussion
11. Seminar/Symposium on Clinical & Autopsy case problems
12. Problem solving discussion on cases for expert opinion.
13. Rotational Postings
14. Participation in Research Methodology Course/How to write Research paper/Teaching Methods and Assessment Techniques
15. BLS/ACLS Course
16. Online Video Lectures
17. Posting under "District Residency Programme" (DRP):

The candidate shall undergo a compulsory rotation of three months in District Hospitals/ District Health System as a part of the course curriculum. Such rotation shall take place in the 3rd or 4th or 5th semester of the Postgraduate programme and the rotation shall be termed as "District Residency Programme"

## **III. CONCEPTUAL FRAMEWORK:**

### **1. Unit 0:**

- a. Introduction to General Principles of Forensic Medicine & Toxicology, Forensic Sciences.

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- b. Development of Basic Autopsy Skills
  - c. Thesis-Topic Selection
  - d. Thesis Protocol Submission

## 2. Unit 1 & 2:

- a. Training in Medico-Legal work in Emergency Department
- b. Practical Experience in the Forensic Aspects of Radiology, Psychiatry, Pathology, Obstetrics and Gynaecology, FSL, Anatomy
- c. Autopsy work
- d. Toxicology Lab Work
- e. Attending Court Summons

## 3. Unit 3, 4 & 5:

- a. Autopsy work
- b. Clinical Forensic Medicine
- c. All aspects of Toxicology i.e. (Collection, Preservation, Transportation, Analysis of Biological Samples)
- d. Practical Experience in the Forensic Aspects of Obstetrics and Gynaecology, Psychiatry, Pathology, Radiology, FSL, Anatomy
- e. Medico-legal Work in Emergency Department
- f. Toxicology Lab Work
- g. Attend Court Summons
- h. Research, Analysis and Presentation of Data
- i. Submission of Thesis

## IV. MODULE:

### 1. Unit 0 (Upto 6 Months):

#### a. General:

- Orientation General Principles of Forensic Medicine. Introduction to Medical Toxicology.
- Learning Basic autopsy skills under supervision.
- Thesis-Topic Selection
- Thesis Protocol Preparation

#### b. Organized Teaching Sessions.

- Participation in undergraduate classes.
- Simulation Based Teaching(Optional)

#### c. Posting for Autopsy work, Clinical Forensic Medicine and Toxicology

#### d. Orientation to organization and functioning of toxicology Lab.

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e. Preparation of Thesis Protocol.

**2. Unit 1 (6-12 Months) & Unit 2 (12-18 Months):**

a. Clinical Forensic Medicine work for practical experience in Medico legal procedures and on the job practical training in the Medico-legal aspects of the functioning of the following disciplines:

- Anatomy
- Physiology
- Biochemistry
- Microbiology
- Pathology
- Blood Bank
- Psychiatry
- Radiology
- Obstetrics and Gynecology
- Emergency Medicine
- Central /State Forensic Science Laboratory

b. **Organized teaching session.**

- Undergraduate classes (Attend & participate)
- Journal review / Review of latest advances - once a fortnight
- Autopsy case discussion & Gross Autopsy Conference - once a fortnight
- Clinical forensic medicine case discussion - once a fortnight
- Seminars - once a week
- Toxicology conference - once in a month
- Thesis work and other research work.
- Mounting of Specimen for Forensic Museum
- Mortality Meeting/Death Audit once a month

c. Posting for Autopsy work, Clinical Forensic Medicine and Toxicology Laboratory. The candidate will be required to assist or conduct Postmortem examinations under supervision in at least 50 cases.

d. Attend court summons for cases conducted or assisted by themselves or when deputed where an expert is required to attend by court of law

**3. Unit 3 (18-24 Months), Unit 4 (24-30 Months) & Unit 5 (30-36 Months):**

a. **Organized teaching session.**

- Attend and participate in undergraduate classes.
- Journal review - once a fortnight

- Autopsy case discussion - once a fortnight
  - Clinical forensic medicine case discussion - once a fortnight
  - Seminars - once a fortnight
  - Toxicology conference once in month
- b. Submission of Thesis.
  - c. Posting for Autopsy work, Clinical Forensic Medicine and Toxicology laboratory to continue. The candidate will be required to conduct or assist in a minimum of 100 cases during his/her entire period of training.
  - d. Attend Court summons for cases conducted by themselves or when deputed where an expert is required to depose by Court of Law. The candidate will be required to accompany and expert to attend a minimum of ten court summons of which at least two should be in a clinical case.

**4. Note: -**

- a. Candidate must maintain a Log Book giving details of work carried out. The same to be sent to NBEMS duly countersigned by the Head of Department at the end of each semester and also at the end of course.
- b. Candidate can be encouraged to present a paper/poster at International /national /regional /state level conference

**V. SYLLABUS:**

**1. Basic Sciences and allied Subjects:**

	<b>Subject</b>	<b>Learning Objectives</b>
i.	Anatomy:	<p>Anatomy of parts and organs of the body which are important from the medico-legal aspect</p> <ol style="list-style-type: none"> <li>a. Describe surface and regional anatomy of head, neck, chest and abdomen.</li> <li>b. Describe gross anatomy and blood supply of heart, brain, lungs, spleen, liver and kidneys.</li> <li>c. Describe gross anatomy of male and female genitalia.</li> <li>d. Describe the comparative anatomy of male and female skeleton.</li> <li>e. Perform histological examination of various tissues.</li> <li>f. Describe the development of foetus.</li> <li>g. Describe the embalming techniques for preservation of deceased body.</li> </ol>

ii.	Physiology and Biochemistry:	<p>Mechanism of phenomena that is important in the body from the medico-legal viewpoint.</p> <ol style="list-style-type: none"> <li>Describe mechanism of fluid and electrolyte balance.</li> <li>Describe thermoregulation in newborn and adults.</li> <li>Describe endocrine functions in Human Body.</li> <li>Describe physiology of sexual behavior.</li> <li>Describe physiological functioning of circulatory system, digestive system, respiratory system, hemopoietin system, central nervous system and reproductive system including pregnancy.</li> <li>Describe components and biochemical changes in various body fluids</li> </ol>
iii.	Pathology:	<p>Patho-physiology of vital processes and response mechanisms that modulate tissue and organ reaction to all forms of injury and have a bearing on ante-mortem and post-mortem appearance in medico-legal cases, assessment of the duration of injuries and correlate trauma and disease.</p> <ol style="list-style-type: none"> <li>Describe pathology of inflammation and repair, immunity and hypersensitivity, Thrombosis and embolism, electric and ionizing radiation injuries, genetic factors in disease, deficiency disorders and malnutrition.</li> <li>Describe pathology of myocardial infarction, congenital heart diseases, tuberculosis of lungs, cirrhosis of liver, diseases of glomeruli and tubules and interstitial; tissues of Kidney, tumours, endocrine disorders, venereal diseases, spontaneous intracranial hemorrhages.</li> <li>Describe the pathology of sudden death.</li> <li>Describe local and systemic response to trauma and patho-physiology of shock.</li> <li>Describe pathology of common infections and infestations of medico-legal significance.</li> </ol>
iv.	Dentistry	Adequate knowledge of dentistry for solution of medico-legal problems like, injuries, age determination and identification
v.	Radiology	Adequate knowledge of radiological procedures for solution of medico-legal problems.
vi.	Obstetrics and Gynaecology	Adequate knowledge to deal with medicolegal problems related to pregnancy, termination of pregnancy, delivery, abortions and examination of survivor of sexual violence.

vii.	Fundamentals of Forensic Medicine:	<ul style="list-style-type: none"> <li>a. Describe the general forensic principle of ballistics, serology, analytical toxicology and photography.</li> <li>b. Interpret the scene of crime.</li> <li>c. Describe role of DNA profile and its application in medico-legal practice.</li> <li>d. Examine bloodstains for blood grouping, nuclear sexing, HLA typing, seminal stains and hair for medico-legal purpose.</li> <li>e. Describe ethical aspects of Forensic Procedures including Narco-analysis, Brain mapping and Polygraph</li> </ul>
viii.	Microbiology	Adequate knowledge of microbiological sample collections, and interpretation of reports for solution of medico-legal problems

## 2. General principles of Forensic Medicine and Toxicology:

- a. Identify the role of anatomy, physiology, biochemistry, microbiology, pathology, blood bank, psychiatry, radiology, obstetrics and gynaecology forensic science laboratory and other disciplines of medical science to logically conclude in Medico-legal autopsies and examination of Medico-legal cases.
- b. Describe the basic principles of the techniques used in toxicological laboratory namely TLC, GLC, AAS,
- c. HPLC, and Breath Alcohol Analyzer.

## 3. Medical Ethics & Law (Medical Jurisprudence):

- a. Describe the history of Forensic Medicine
- b. Describe the Legal and Medico-legal system in India.
- c. Describe medical ethics and the law in relation to medical practice, various declarations, Medical Council of India, disciplinary control, duties of a registered medical practitioner, consent, confidentiality, medical negligence and consumer protection act.
- d. Describe medical ethics and law in relation to organ transplantation, biomedical human research and experimentation, human right and citizen charter.
- e. Describe the ethics and law in relation to artificial insemination, abortion, antenatal sex, fetus, genetics, and euthanasia.
- f. Interpret the ethics and law applicable to human and animal experimentation.

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- g. Describe ethics in relation to the aged, women and children.
  - h. Describe medical ethics and law in relation to nursing and other medical services.
  - i. Understanding Bio Ethics

#### **4. Clinical Forensic Medicine:**

- a. Examine, assess legal implications and prepare report or certificate in cases of physical assault, suspected drunkenness, sexual offences, consummation of marriage and disputed paternity.
- b. Collect, preserve & despatch specimen/material to the concerned authority and interpret the clinical and laboratory findings which are reported.
- c. Examine injured person, prepare Medico-legal report and initiate management.
- d. Determine the age of a person for medico-legal purpose.
- e. Examine a 'person and assess disability in industrial accidents and diseases.
- f. Perform examination and interpret findings for medico legal purposes in cases pertaining to pregnancy, delivery, artificial insemination, abortion, sterilization, impotence & HIV, AIDS and infectious diseases.
- g. Describe normal and abnormal sexual behaviour and its medico-legal implications.
- h. Examine and assess the medical fitness of a person for insurance, government service, sickness and fitness on recovery from illness, general fitness before taking a person into custody.
- i. Examine medico-legal problems related to all clinical and Para clinical disciplines of Medicine.
- j. Examine medicolegal problems related to Children, women and elderly
- k. Examine the cases of Torture and Violation of Human Rights and related issues.
- l. Sensitization related to gender neutrality.

#### **5. Forensic Psychiatry:**

- a. Explain the common terminologies of Forensic importance in Psychiatry.
- b. Describe the Medico-legal aspects of Psychiatry and mental health.
- c. Describe medico-legal aspects of Drug addiction.
- d. Describe role of Psychiatry in crime investigation, punishment and trial.
- e. Describe the civil and criminal responsibilities of insane mentally ill person.

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- f. Describe the role of Psychology in Crime Investigation, punishment and trial

**6. Medical Toxicology:**

- a. Describe the law relating to poisons, drugs, cosmetics, narcotic drugs and psychotropic substances.
- b. Examine & diagnose the poisoning cases and apply principles of general management and organ system approach for the management of poisoning cases.
- c. Describe the basic principles of toxicokinetics and toxicodynamics of poisonous substances.
- d. Describe the toxic hazards of occupation, industry, environment and the principles of Predictive Toxicology.
- e. Collect, Preserve and despatch the material for analysis, interpret the laboratory findings and perform the Medico-legal formalities in a case of poisoning.
- f. Describe the methods of identification and bedside analysis of common poisons.
- g. Describe the signs, symptoms, diagnosis and management of common acute and chronic poisoning due to-
- Corrosives
  - Non-metallic Substances
  - Pesticides/Insecticides and Weed Killers
  - Metallic Substances
  - Irritants of Plant and animal origin and toxic envenomation
  - Somniferous Compounds
  - Inebriant substances
  - Deliriant Substances
  - Food contamination / adulteration.
  - Substance causing Spinal and cardiac toxicity
  - Substances causing Asphyxia (Asphyxiants)
  - Household toxins
  - Biological and Chemical warfare.
  - Environmental Intoxicants
  - Occupational Toxicants

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## 7. Forensic Pathology:

- a. Apply the principals involved in methods of identification of human remains by race, age, sex, religion, complexion, stature, hair, teeth, anthropometry, dactylography, foot prints, hairs, tattoos, poroscopy and superimposition techniques.
- b. Perform medico-legal postmortem and be able to exhume, collect, preserve and despatch specimens or trace evidence to the appropriate authority.
- c. Diagnose and describe the pathology of wounds, mechanical and regional injuries, ballistics and wound ballistics, electrical injuries, neglect and starvation, thermal injuries, deaths associated with sexual offences, pregnancy, delivery, abortion, child abuse, dysbarism and barotraumas.
- d. Describe pathology of wounds, mechanical and regional injuries, ballistics and wound ballistics, electrical injuries, neglect and starvation, thermal injuries, deaths associated with sexual offences, pregnancy, delivery, abortion, child abuse, dysbarism and barotraumas.
- e. Describe 'patho-physiology of shock & neurogenic shock.
- f. Describe the patho-physiology of asphyxia, classification, medico legal aspects and postmortem findings of different types of asphyxial deaths.
- g. Diagnose and classify death, identify the signs of death, postmortem changes, interpret the autopsy findings, artefacts and results of the other relevant investigations to logically conclude the cause; manner (suicidal, homicidal and accidental) and time of death.
- h. Manage medico-legal responsibilities in mass disasters involving multiple deaths like fire, traffic accident, aircraft accident, rail accident and natural calamities.
- i. Demonstrate postmortem findings in infant death to differentiate amongst live birth, still birth and dead born.
- j. Perform postmortem examination in cases of death in custody, torture and violation of human rights.
- k. Perform postmortem examination in cases of death due to alleged medical negligence as in Operative and Anesthetic Deaths.
- l. Apply knowledge of Forensic Entomology in respect to time since Death.

## 8. Fundamentals of Forensic Sciences:

- a. Describe the general forensic principles of ballistics, serology; analytical toxicology and photography.
- b. Interpret the scene of crime.

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- c. Examine - bloodstains for blood grouping, seminal stains & hair for medico-legal purpose.

#### **9. Rotation:**

- a. Department of Emergency Medicine/Trauma Care- 3 Months (One Month Every Year)
- b. Radiology-30 Days (10 Days Every Year)
- c. Psychiatry-15 Days (5 Days Every Year)
- d. SFSL/CFSL) 1 month (2 weeks Every Year for last 2 years)
- e. Department of Pathology- 3 Months (One Month Every Year)
- f. Department of Obstetrics and Gynaecology- 2 weeks (One Week Every Year in First Two Years)
- g. Department of Anatomy-2 weeks Every Year in First Two Years

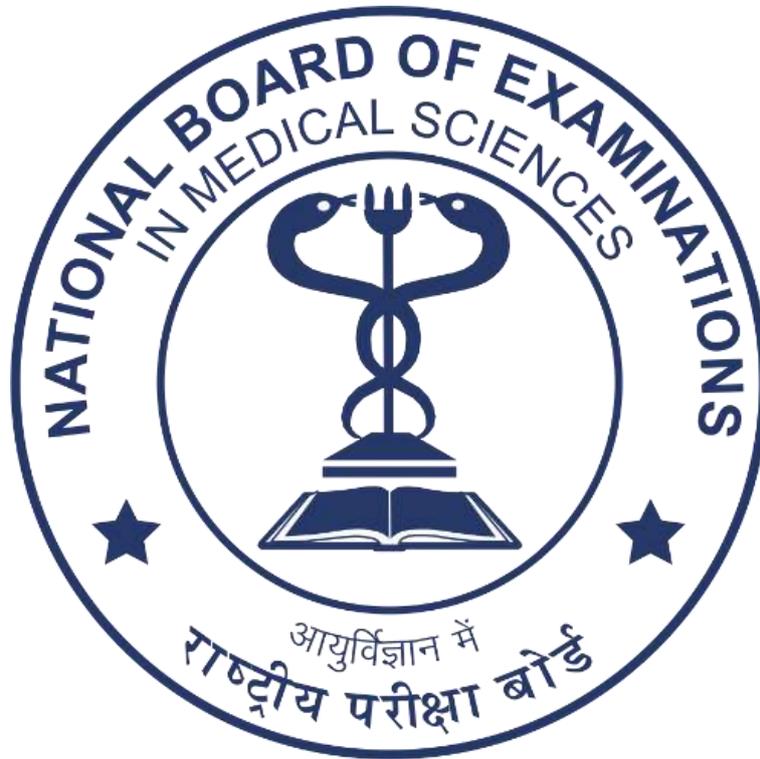
### **VI. LOG BOOK:**

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s) The candidate will maintain the record of all academic activities undertaken by him/her in log book.

1. Personal profile of the candidate
2. Educational qualification/Professional data
3. Record of case histories
4. Procedures learnt
5. Record of case Demonstration/Presentations
6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
7. In the absence of production of log book, the result will not be declared.



**आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड**  
स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार  
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