# Department of General Medicine

| S.No | Name of the Fellowship | Eligibility | Duration |
|---|---|---|---|
| 01 | Fellowship in Geriatric Medicine | MBBS, MD/DNB Gen Med | 1 yr |
| 02 | Fellowship in Family Medicine | MBBS,MD/DNB Gen Med | 1 yr |
| 03 | Fellowship in Diabetology | MBBS, MD/DNB Gen Med | 1 yr |
| 04 | Fellowship in Obesity & Metabolism | MBBS, MD/DNB Gen Med, Biochem | 1 yr |
| 05 | Fellowship in Medical Nutrition & Dietetics | MBBS,MD/DNB Gen Med | 1 yr |
| 06 | Fellowship in Sleep Medicine | MBBS,MD/DNB Gen Med, Resp Med | 1 yr |
| 07 | Fellowship in Sports Medicine | MBBS,MD/DNB Gen Med, Ortho, Physio | 1 yr |
| 08 | Fellowship in Lab orator Medicine | MBBS,MD/DNB Patho, Biochem, Micro | 1 yr |
| 09 | Fellowship in Blood Banking | MBBS, MD/DNB Patho | 1 yr |
| 10 | Fellowship in Infectious Diseases | MBBS,MD/DNB Gen Med, Paed, Resp Med | 1 yr |
| 11 | Fellowship in Allergy & Immunology | MBBS, MD/DNB Gen Med, Paed, DVL | 1 yr |
| 12 | Fellowship in Ultrasonography | MBBS,MD/DNB Gen Med, Paed, MS/DNB Gen surg, Obgy | 1 yr |
| 13 | Fellowship in Clinical Cardiology | MD/DNB Gen Med | 1 yr |
| 14 | Fellowship in Clinical Neurology | MD/DNB Gen Med | 1 yr |
| 15 | Fellowship in Clinical Nephrology | MD/DNB Gen Med | 1 yr |
| 16 | Fellowship in Medical Gastro Enter ology | MD/DNB Gen Med | 1 yr |
| 17 | Fellowship in Clinical Endocrinology | MD/DNB Gen Med, Biochem | 1 yr |
| 18 | Fellowship in Clinical Rheumatology | MD/DNB Gen Med | 1 yr |

| | | | |
|---|---|---|---|
| 19 | Fellowship in Liver & Biliary Diseases | MD/DNB Gen Med | 1 yr |
| 20 | Fellowship in Diabetic Neurology (Autonomic Neuropathy) | MD/DNB Gen Med | 1 yr |
| 21 | Fellowship in Diabetic Nephrology | MD/DNB Gen Med | 1 yr |
| 22 | Fellowship in Diabetic Foot Management | MD/DNB Gen Med | 1 yr |
| 23 | Fellowship in Diabetic Retinal Sciences | MD/DNB Gen Med ,MS/DNB in Ophthal | 1 yr |
| 24 | Fellowship in Epilepsy | MD/DNB Gen Med, DM/DNB Neurology | 1 yr |
| 25 | Fellowship in Andrology & Male Infertility | MD/DNB Gen Med, MS/DNB in Gen surg<br>M.Ch/DNB Urology | 1 yr |
| 26 | Fellowship in Pain Management | MBBS, MD/DNB Anaes, Gen Med, Radio Onco<br>DM/DNB Med Onco, M.Ch/DNB in Surg Onco | 1 yr |
| 27 | Fellowship in Palliative Care | MBBS, MD/DNB Anaes, Gen Med, Radio Onco<br>DM/DNB Med Onco, M.Ch/DNB in Surg Onco | 1 yr |

# Fellowship In Geriatric Medicine

## Course Overview

The **Fellowship in Geriatric Medicine** is a **one-year** intensive program designed to train healthcare professionals in the comprehensive management of elderly patients. The course focuses on age-related diseases, multimorbidity, geriatric syndromes, palliative care, and rehabilitation to improve the quality of life in older adults. It includes clinical rotations, interdisciplinary care, and research training.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS with MD/DNB in General Medicine / Family Medicine / Geriatrics / Internal Medicine |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Project |

## Course Objectives

- Develop expertise in **comprehensive geriatric assessment and management**.
- Diagnose and manage **age-related diseases, frailty, and polypharmacy**.
- Gain proficiency in **palliative and end-of-life care**.
- Understand **neurodegenerative disorders**, including dementia and Parkinson's disease.
- Learn **rehabilitation and functional recovery techniques** for elderly patients.
- Implement **preventive geriatrics** to promote healthy aging.
- Conduct **research in geriatric medicine** and apply evidence-based practices.

**Curriculum with Semester-wise Syllabus & Modules**

**Semester 1: Fundamentals & Core Geriatric Care**

| Module | Topics Covered |
|---|---|
| **Principles of Geriatric Medicine** | Biology of aging, physiology, and age-related changes |
| **Comprehensive Geriatric Assessment (CGA)** | Physical, cognitive, psychological, and social assessment |
| **Frailty & Sarcopenia** | Diagnosis, prevention, and management |
| **Polypharmacy & Rational Drug Use** | Safe prescribing for elderly patients |
| **Neurodegenerative Disorders** | Alzheimer's, Parkinson's, and other dementias |
| **Cardiovascular & Metabolic Disorders** | Hypertension, diabetes, stroke, and heart failure |
| **Palliative & End-of-Life Care** | Pain management, symptom control, ethical considerations |
| **Clinical Rotations – Geriatric Ward & OPD** | Hands-on patient care experience |

**Semester 2: Advanced Geriatric Care & Rehabilitation**

| Module | Topics Covered |
|---|---|
| **Falls, Osteoporosis & Mobility Disorders** | Prevention and management of falls, fractures, and gait disorders |
| **Geriatric Psychiatry** | Depression, anxiety, and psychiatric conditions in older adults |
| **Rehabilitation & Functional Recovery** | Physiotherapy, occupational therapy, and speech therapy |
| **Geriatric Nutrition & Malnutrition** | Nutritional assessment and intervention |

| Module | Topics Covered |
|---|---|
| **Respiratory & Infectious Diseases** | Pneumonia, COPD, tuberculosis in elderly patients |
| **Preventive Geriatrics & Health Promotion** | Vaccination, cancer screening, lifestyle interventions |
| **Ethical & Legal Aspects of Geriatric Medicine** | Informed consent, elder abuse, advance directives |
| **Research Project & Case Studies** | Literature review, patient studies, dissertation submission |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Knowledge of Aging & Geriatrics | Understand aging physiology, multimorbidity, and geriatric assessment. |
| 2 | Expertise in Disease Management | Diagnose and treat age-related diseases, including dementia and cardiovascular disorders. |
| 3 | Functional & Rehabilitation Strategies | Implement rehabilitation for mobility disorders, frailty, and sarcopenia. |
| 4 | Palliative & End-of-Life Care | Deliver compassionate and ethical care for terminally ill elderly patients. |
| 5 | Polypharmacy & Rational Drug Use | Optimize medication management to prevent adverse effects. |
| 6 | Research & Evidence-Based Practice | Conduct clinical research to improve geriatric healthcare outcomes. |
| 7 | Ethical & Social Responsibility | Advocate for patient rights, elder care policies, and legal frameworks. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Understanding of Geriatric Physiology | Apply knowledge of aging-related changes in patient management. |
| 2 | Expertise in Frailty & Multimorbidity | Recognize, assess, and treat complex health conditions in older adults. |
| 3 | Proficiency in Cognitive & Psychiatric Care | Diagnose and manage dementia, depression, and psychiatric illnesses. |
| 4 | Skills in Palliative & Supportive Care | Provide end-of-life care, pain management, and hospice care. |
| 5 | Leadership in Preventive Geriatrics | Promote health strategies to reduce age-related complications. |
| 6 | Research & Clinical Application | Analyze case studies and contribute to geriatric medical advancements. |

**Fellowship in Geriatric Medicine – Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Training & Procedures | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| Theory Examination (MCQs, Long & Short Answer) | 30% |
| Clinical & Practical Exam (Case-Based Discussion, OSCE) | 30% |
| Clinical Logbook & Case Reports | 20% |
| Research Presentation & Dissertation | 20% |

**Exam Pattern**

**Theory Examination**

- **Section A:** MCQs – 30 Marks
- **Section B:** Short Answer Questions – 30 Marks
- **Section C:** Long Answer Questions – 40 Marks

**Practical Examination**

| Component | Details | Marks |
|---|---|---|
| Comprehensive Geriatric Assessment | Conducting a full assessment including cognitive, functional, and frailty evaluations | 50 |
| Polypharmacy Management | Reviewing and optimizing medication regimens for elderly patients | 50 |
| End-of-Life & Palliative Care Planning | Discussing ethical dilemmas and managing symptoms in terminal illnesses | 30 |
| OSCE (Objective Structured Clinical Examination) | Clinical scenarios related to geriatric emergencies, falls, and multimorbidity | 40 |

**Viva Voce (Oral Examination)**

| Component | Details | Marks |
|---|---|---|
| Case Presentations | Discussion of clinical cases, treatment decisions, and outcomes in geriatrics | 50 |
| Recent Advances in Geriatric Medicine | Presentation on innovations in elderly care and multidisciplinary management | 20 |

| Component | Details | Marks |
|---|---|---|
| Ethical & Legal Considerations | Discussing ethical challenges, patient rights, and end-of-life care decisions | 30 |

**Research/Dissertation Submission**

| Component | Marks |
|---|---|
| Originality & Scientific Merit | 30 |
| Methodology & Data Analysis | 30 |
| Presentation & Discussion | 20 |
| **Conclusion & Clinical Relevance** | **20** |

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| Theory | 200 | 50% (100/200) |
| Practical Exam | 200 | 50% (100/200) |
| Viva Voce | 100 | 50% (50/100) |
| Dissertation | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Recommended Books & E-Resources**

**Textbooks:**

- **Brocklehurst's Textbook of Geriatric Medicine and Gerontology** – Howard M. Fillit
- **Hazzard's Geriatric Medicine and Gerontology** – Jeffrey B. Halter
- **Oxford Textbook of Geriatric Medicine** – Jean-Pierre Michel, et al.
- **Principles and Practice of Geriatric Psychiatry** – Mohammed Abou-Saleh
- **Geriatric Physical Therapy** – Andrew A. Guccione

**Journals & E-Resources:**

- **Journal of the American Geriatrics Society (JAGS)** – https://agsjournals.onlinelibrary.wiley.com/
- **Age and Ageing (Oxford Journals)** – https://academic.oup.com/ageing
- **International Journal of Geriatric Psychiatry** – https://onlinelibrary.wiley.com/journal/10991166
- **OrthoBullets – Geriatric Medicine** – https://www.orthobullets.com
- **World Health Organization (WHO) – Aging & Health** – https://www.who.int/health-topics/ageing

# Fellowship In Family Medicine

## Course Overview

The **Fellowship in Family Medicine** is a **one-year** specialized clinical training program designed to equip physicians with comprehensive skills in primary care, preventive medicine, chronic disease management, and holistic patient care. The program emphasizes evidence-based practice, patient-centered approaches, and interdisciplinary collaboration, preparing physicians to manage a wide range of medical conditions across all age groups.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS with Internship Completion |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **comprehensive primary care** across all age groups.
- Learn **preventive medicine** strategies and health promotion techniques.
- Gain proficiency in managing **acute and chronic diseases** in outpatient and inpatient settings.
- Understand **evidence-based medicine** and its application in clinical decision-making.
- Enhance skills in **pediatric, adult, and geriatric care**, including mental health management.
- Learn to coordinate **multidisciplinary care teams** for holistic patient care.
- Conduct **clinical research** and apply scientific knowledge in family medicine practice.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical rotations, and research.

**Semester 1: Foundations of Family Medicine**

| Module | Topics Covered |
|---|---|
| **Principles of Family Medicine & Primary Care** | Patient-centered approach, continuity of care |
| **Health Promotion & Preventive Medicine** | Vaccination, lifestyle counseling, screening programs |
| **Common Acute & Chronic Diseases** | Hypertension, diabetes, asthma, arthritis |
| **Pediatric Care in Family Medicine** | Growth monitoring, immunization, common childhood illnesses |
| **Geriatric & Elderly Care** | Functional assessment, polypharmacy, dementia management |
| **Women's Health & Maternal Care** | Antenatal & postnatal care, contraception, menopause management |
| **Emergency & Trauma Management in Primary Care** | CPR, wound care, first-line management of emergencies |
| **Clinical Rotations – OPD, Emergency, Pediatric & Geriatric Clinics** | Supervised patient care in various settings |

**Semester 2: Advanced Clinical Practice & Research**

| Module | Topics Covered |
|---|---|
| **Chronic Disease Management** | COPD, kidney disease, metabolic disorders |
| **Mental Health in Primary Care** | Depression, anxiety, psychiatric emergencies |

| Module | Topics Covered |
|---|---|
| **Dermatology & Minor Surgical Procedures** | Skin conditions, wound care, biopsies |
| **Musculoskeletal & Sports Medicine** | Joint injections, rehabilitation strategies |
| **Occupational & Environmental Health** | Workplace hazards, ergonomics, public health interventions |
| **Palliative & End-of-Life Care** | Pain management, advanced directives, hospice care |
| **Clinical Research & Case Studies** | Evidence-based practice, systematic reviews, patient-centered studies |
| **Community-Based Family Practice Training** | Rural and urban healthcare settings, home visits |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Patient Care | Provide holistic care for patients of all age groups. |
| 2 | Chronic Disease & Preventive Medicine | Diagnose and manage common acute and chronic conditions. |
| 3 | Emergency & Urgent Care Skills | Handle primary care emergencies and trauma cases. |
| 4 | Pediatric & Geriatric Expertise | Address unique healthcare needs of children and elderly patients. |
| 5 | Mental Health & Holistic Well-being | Integrate mental health services into primary care. |
| 6 | Multidisciplinary & Team-Based Care | Collaborate with specialists, nurses, and allied health professionals. |
| 7 | Research & Evidence-Based | Conduct and apply clinical research to improve |

| Sr. No. | Program Outcome | Description |
|---|---|---|
| | Practice | patient care. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Principles of Family Medicine | Understand the fundamentals of primary care and patient continuity. |
| 2 | Preventive & Public Health Strategies | Implement screening, vaccination, and health education programs. |
| 3 | Management of Chronic Diseases | Provide long-term care for hypertension, diabetes, and COPD. |
| 4 | Pediatric & Maternal Health Care | Deliver primary care for children and women at different life stages. |
| 5 | Emergency & Trauma Management | Treat acute illnesses and minor injuries in primary care settings. |
| 6 | Community & Occupational Health | Address public health concerns and workplace-related illnesses. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- Case Presentation & Viva (30 Marks)
- OSCE (Objective Structured Clinical Examination) – 30 Marks
- Hands-on Primary Care Skills – 40 Marks

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Textbook of Family Medicine** – Robert E. Rakel, David Rakel
- **Current Diagnosis & Treatment in Family Medicine** – Jeannette South-Paul, Samuel Matheny
- **Primary Care Medicine: Office Evaluation and Management of the Adult Patient** – Allan H. Goroll
- **Essential Evidence-Based Medicine** – Dan Mayer
- **WHO Primary Health Care Guidelines**

**Journals & E-Resources:**

- **Journal of Family Medicine & Primary Care (JFMPC)** – https://www.jfmpc.com/
- **British Journal of General Practice (BJGP)** – https://bjgp.org/
- **American Academy of Family Physicians (AAFP)** – https://www.aafp.org/

# Fellowship In Diabetology

## Course Overview

The **Fellowship in Diabetology** is a **one-year** specialized clinical training program designed to develop expertise in the diagnosis, management, and prevention of diabetes and its complications. The program focuses on evidence-based diabetes care, metabolic syndrome, diabetic foot care, lifestyle management, and emerging treatment strategies, equipping physicians with the knowledge and skills necessary for comprehensive diabetes management.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS with Internship Completion / MD/DNB in General Medicine / Family Medicine / Endocrinology |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **diabetes pathophysiology, classification, and epidemiology**.
- Master **diagnostic and clinical decision-making** for diabetes and its complications.
- Learn to manage **Type 1, Type 2, and Gestational Diabetes Mellitus (GDM)** effectively.
- Gain proficiency in **insulin therapy, oral hypoglycemics, and emerging treatment modalities**.
- Understand **diabetes complications**, including neuropathy, nephropathy, and retinopathy.
- Implement **lifestyle modifications, nutrition counseling, and exercise interventions**.
- Conduct **clinical research and apply evidence-based practices** in diabetology.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals & Core Diabetology**

| Module | Topics Covered |
|---|---|
| **Pathophysiology & Classification of Diabetes** | Type 1, Type 2, MODY, LADA, Gestational Diabetes |
| **Diabetes Epidemiology & Risk Factors** | Genetic & environmental factors, metabolic syndrome |
| **Diagnosis & Monitoring of Diabetes** | Fasting blood glucose, HbA1c, OGTT, CGM (Continuous Glucose Monitoring) |
| **Pharmacological Management** | Insulin therapy, oral hypoglycemics, SGLT2 inhibitors, GLP-1 agonists |
| **Diabetes & Cardiovascular Disease** | Atherosclerosis, hypertension, dyslipidemia management |
| **Diabetic Foot Care & Neuropathy** | Foot ulcer prevention, neuropathy screening, podiatry care |
| **Nutrition & Lifestyle in Diabetes Management** | Meal planning, calorie counting, dietary interventions |
| **Clinical Rotations – OPD, Diabetes Clinics, Foot Care Clinics** | Supervised patient care |

**Semester 2: Advanced Diabetology & Research**

| Module | Topics Covered |
|---|---|
| **Diabetes & Pregnancy (GDM)** | Diagnosis, management, fetal monitoring |
| **Obesity & Metabolic Syndrome** | Bariatric interventions, lifestyle modification |

| Module | Topics Covered |
|---|---|
| **Diabetes & Endocrine Disorders** | Thyroid dysfunction, adrenal involvement in diabetes |
| **Emerging Therapies in Diabetes** | Stem cell therapy, artificial pancreas, closed-loop insulin delivery |
| **Complications of Diabetes** | Retinopathy, nephropathy, diabetic ketoacidosis (DKA), hyperosmolar coma |
| **Geriatric Diabetes Care** | Managing multimorbidity in elderly patients |
| **Clinical Research & Case Studies** | Evidence-based management, systematic reviews |
| **Community-Based Diabetes Screening & Education Programs** | Public health initiatives |

**Program Outcomes (POs)**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Diabetes Management | Develop skills to diagnose, classify, and manage different types of diabetes, including Type 1, Type 2, and gestational diabetes. |
| 2 | Proficiency in Diabetes-Related Complications | Gain knowledge in managing diabetes complications, including diabetic neuropathy, nephropathy, retinopathy, and cardiovascular risks. |
| 3 | Multidisciplinary Approach to Diabetes Care | Work collaboratively with endocrinologists, dietitians, and educators to provide comprehensive diabetes care. |
| 4 | Research & Evidence-Based Practice | Apply research methodologies to explore new treatment options and improve patient outcomes in diabetology. |
| 5 | Preventive & Lifestyle Medicine | Implement lifestyle modification strategies, including diet, exercise, and behavioral therapy, to prevent diabetes and its complications. |

**Course Outcomes (COs)**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Understanding Diabetes Pathophysiology | Learn the underlying mechanisms of diabetes and its metabolic effects. |
| 2 | Glycemic Control & Insulin Therapy | Master the use of oral hypoglycemic agents, insulin therapy, and continuous glucose monitoring. |
| 3 | Management of Diabetic Emergencies | Handle acute complications such as diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic state (HHS). |
| 4 | Patient Education & Lifestyle Modification | Guide patients on diet, exercise, and self-monitoring techniques to improve diabetes control. |
| 5 | Advances in Diabetes Research & Technology | Understand emerging trends, including artificial pancreas, digital health solutions, and novel drug therapies. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |

| Assessment Type | Weightage |
|---|---|
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

**Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Diabetes Management Simulation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Joslin's Diabetes Mellitus** – C. Ronald Kahn, Gordon C. Weir
- **International Textbook of Diabetes Mellitus** – Ralph A. DeFronzo
- **Atlas of Diabetes** – Jay S. Skyler
- **Handbook of Diabetes** – Richard Holt
- **Diabetes Care & Management** – American Diabetes Association

**Journals & E-Resources:**

- **Diabetes Care – American Diabetes Association (ADA)** – https://diabetesjournals.org/care
- **Journal of Diabetes & Metabolic Disorders** – https://jdm.sums.ac.ir/
- **Diabetes Research and Clinical Practice – Elsevier** – https://www.journals.elsevier.com/diabetes-research-and-clinical-practice
- **Up-to-date – Diabetes Management** – https://www.uptodate.com
- **World Diabetes Foundation Resources** – https://www.worlddiabetesfoundation.org/

# Fellowship in Obesity & Metabolism

## Course Overview

The **Fellowship in Obesity & Metabolism** is a **one-year** advanced clinical training program designed to provide in-depth knowledge and expertise in the prevention, diagnosis, and management of obesity and metabolic disorders. The program covers endocrinology, nutritional therapy, pharmacological and surgical interventions, and metabolic syndrome management. It integrates evidence-based approaches for obesity treatment and emphasizes patient-centered care.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS with Internship Completion / MD/DNB in General Medicine, Endocrinology, Family Medicine, or related fields |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand the **pathophysiology of obesity and metabolic disorders**.
- Learn **clinical evaluation techniques** for obesity, metabolic syndrome, and associated diseases.
- Master **nutritional, lifestyle, and behavioral interventions** for weight management.
- Gain expertise in **pharmacotherapy and surgical options** for obesity treatment.
- Develop skills in **managing metabolic disorders** such as insulin resistance, NAFLD, and dyslipidemia.
- Conduct **clinical research on obesity, metabolism, and weight-loss interventions**.
- Implement **public health strategies** for obesity prevention and lifestyle modifications.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Obesity & Metabolic Disorders**

| Module | Topics Covered |
|---|---|
| **Introduction to Obesity & Metabolism** | Classification, epidemiology, genetic & environmental factors |
| **Pathophysiology of Obesity** | Hormonal regulation, appetite control, gut microbiome influence |
| **Assessment & Diagnosis of Obesity** | BMI, body fat analysis, metabolic panel, indirect calorimetry |
| **Lifestyle & Behavioral Interventions** | Diet therapy, calorie restriction, cognitive-behavioral therapy (CBT) |
| **Endocrinology of Obesity** | Role of leptin, ghrelin, insulin, thyroid hormones in weight regulation |
| **Metabolic Syndrome & Insulin Resistance** | Diabetes, dyslipidemia, hypertension, non-alcoholic fatty liver disease (NAFLD) |
| **Pharmacological Management of Obesity** | GLP-1 agonists, lipase inhibitors, appetite suppressants |
| **Clinical Rotations – Obesity Clinics, Metabolic Disorder Units** | Hands-on patient evaluation |

**Semester 2: Advanced Obesity Management & Research**

| Module | Topics Covered |
|---|---|
| **Obesity & Cardiovascular Disease** | Hypertension, atherosclerosis, cardiac risk reduction |
| **Pediatric & Adolescent Obesity** | Growth monitoring, early interventions, childhood obesity prevention |
| **Obesity & Reproductive Health** | PCOS, infertility, pregnancy-related obesity risks |
| **Surgical Interventions for Obesity** | Bariatric surgery (Roux-en-Y, sleeve gastrectomy, gastric banding) |

| Module | Topics Covered |
|---|---|
| **Gut Hormones & Metabolic Adaptation** | GLP-1, PYY, gut-brain axis regulation in obesity |
| **Physical Activity & Exercise Science** | Strength training, aerobic exercise, metabolic rate enhancement |
| **Community & Public Health Approaches** | Obesity prevention programs, workplace interventions |
| **Clinical Research & Case Studies** | Evidence-based practice, systematic reviews |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Knowledge of Obesity | Understand mechanisms and classification of obesity. |
| 2 | Metabolic & Endocrine Disorder Management | Diagnose and treat obesity-related metabolic diseases. |
| 3 | Lifestyle & Behavioral Modification Skills | Implement non-pharmacological interventions for weight management. |
| 4 | Pharmacological & Surgical Interventions | Optimize medical and surgical treatments for obesity. |
| 5 | Pediatric & Geriatric Obesity Care | Address obesity management across different age groups. |
| 6 | Research & Evidence-Based Practice | Conduct and apply clinical research in obesity and metabolism. |
| 7 | Public Health & Preventive Strategies | Develop community-based obesity prevention initiatives. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Understanding of Obesity Pathophysiology | Explain metabolic adaptations and hormonal regulation. |
| 2 | Clinical Diagnosis & Assessment | Use advanced diagnostic techniques to assess obesity and metabolism. |
| 3 | Pharmacotherapy & Nutritional Interventions | Manage obesity with drugs and diet modifications. |
| 4 | Surgical Management & Postoperative Care | Understand bariatric surgery and long-term follow-up care. |
| 5 | Multidisciplinary Treatment Approaches | Work with dietitians, endocrinologists, and psychologists for patient care. |
| 6 | Research & Public Health Interventions | Develop evidence-based strategies for obesity prevention and management. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Obesity & Metabolic Disorder Management Simulation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Bray's Obesity: Clinical Management** – George A. Bray
- **Handbook of Obesity** – Wadden, Bray
- **Obesity: Evaluation and Treatment Essentials** – Michael G. Steelman
- **Metabolic Syndrome and Obesity** – Christopher D. Byrne
- **Endocrinology of Obesity** – W. Timothy Garvey

**Journals & E-Resources:**

- **Obesity Journal – The Obesity Society** – https://onlinelibrary.wiley.com/journal/1930739x
- **Metabolism: Clinical and Experimental** – https://www.metabolismjournal.com/
- **The American Journal of Clinical Nutrition** – https://academic.oup.com/ajcn
- **UpToDate – Obesity Management** – https://www.uptodate.com
- **World Obesity Federation** – https://www.worldobesity.org/

# Fellowship in Medical Nutrition & Dietetics

## Course Overview

The **Fellowship in Medical Nutrition & Dietetics** is a **one-year** specialized training program focused on the role of clinical nutrition in disease prevention and management. It equips healthcare professionals with expertise in therapeutic diets, nutritional interventions, metabolic disorders, and public health nutrition strategies.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / B.Sc. Nutrition & Dietetics / B.Sc. Food Science / B.Sc. Nursing / B.Pharm / Other healthcare-related degrees |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand **the role of nutrition in disease prevention and management**.
- Learn **dietary assessment techniques** and patient-specific meal planning.
- Gain expertise in **clinical nutrition therapy for various diseases** such as diabetes, cardiovascular diseases, and kidney disorders.
- Develop skills in **critical care nutrition, enteral and parenteral feeding**.
- Apply **nutritional counseling and behavior modification strategies**.
- Conduct **research on emerging trends in dietetics and nutrition science**.
- Implement **public health and community nutrition programs**.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Medical Nutrition**

| Module | Topics Covered |
|---|---|
| **Principles of Medical Nutrition** | Macronutrients, micronutrients, dietary guidelines |
| **Nutritional Biochemistry & Metabolism** | Digestion, absorption, energy metabolism |
| **Clinical Nutrition & Dietetics** | Role of diet in disease management |
| **Nutrition in Chronic Diseases** | Diabetes, hypertension, obesity, metabolic syndrome |
| **Pediatric & Maternal Nutrition** | Growth monitoring, lactation, weaning foods |
| **Nutritional Assessment & Diet Planning** | Dietary recall, BMI, nutritional screening tools |
| **Food Science & Food Safety** | Food preservation, fortification, contamination control |
| **Clinical Rotations – Diet Consultation, Nutrition Clinics** | Hands-on patient assessment |

**Semester 2: Advanced Clinical & Research in Nutrition**

| Module | Topics Covered |
|---|---|
| **Critical Care & Enteral Nutrition** | Parenteral nutrition, ICU feeding, tube feeding |
| **Sports Nutrition & Performance Dietetics** | Macronutrient timing, hydration, supplementation |
| **Renal & Gastrointestinal Nutrition** | CKD diets, gluten intolerance, IBD nutrition |

| Module | Topics Covered |
|---|---|
| **Oncology & Palliative Nutrition** | Cancer cachexia, immune-enhancing diets |
| **Obesity & Weight Management** | Behavior modification, bariatric nutrition |
| **Nutrigenomics & Personalized Nutrition** | Genetic influence on diet and metabolism |
| **Community & Public Health Nutrition** | Nutritional programs, malnutrition interventions |
| **Research & Case Studies** | Clinical trials, evidence-based practice |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Knowledge of Medical Nutrition | Apply advanced nutrition concepts in clinical settings. |
| 2 | Disease-Specific Diet Management | Develop tailored diet plans for specific diseases. |
| 3 | Critical Care & ICU Nutrition | Manage nutritional needs in critically ill patients. |
| 4 | Pediatric & Geriatric Nutrition | Address age-specific nutritional requirements. |
| 5 | Sports & Performance Nutrition | Design meal plans for athletes and active individuals. |
| 6 | Research & Public Health Interventions | Conduct nutritional research and promote community health. |
| 7 | Patient Counseling & Behavioral Change | Educate and guide patients toward sustainable dietary habits. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Nutritional Biochemistry & Metabolism | Understand macronutrient metabolism and absorption. |
| 2 | Diet Therapy for Chronic Diseases | Plan and implement nutrition therapy for diseases. |
| 3 | Enteral & Parenteral Nutrition | Develop expertise in feeding methods for ICU patients. |
| 4 | Weight Management & Lifestyle Modification | Address obesity and metabolic disorders through diet. |
| 5 | Nutrigenomics & Personalized Diets | Explore genetic influence on dietary needs. |
| 6 | Research & Evidence-Based Practice | Analyze case studies and contribute to clinical research. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Diet Planning & Nutritional Assessment – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Krause's Food & Nutrition Therapy** – L. Kathleen Mahan
- **Clinical Nutrition & Dietetics** – Nix Staci
- **Nutrition in Clinical Practice** – Marion Nestle
- **Modern Nutrition in Health & Disease** – Maurice Shils
- **Handbook of Nutrition & Dietetics** – Rowan Stewart

**Journals & E-Resources:**

- **Journal of Human Nutrition & Dietetics** – https://onlinelibrary.wiley.com/journal/1365277x
- **American Journal of Clinical Nutrition** – https://academic.oup.com/ajcn
- **British Journal of Nutrition** – https://www.cambridge.org/core/journals/british-journal-of-nutrition
- **World Health Organization (WHO) Nutrition Guidelines** – https://www.who.int/nutrition/en/
- **Academy of Nutrition & Dietetics** – https://www.eatright.org/

# Fellowship in Sleep Medicine

## Course Overview

The **Fellowship in Sleep Medicine** is a **one-year** advanced training program designed to equip healthcare professionals with expertise in diagnosing and managing sleep disorders. The program focuses on sleep physiology, sleep-related breathing disorders, insomnia, parasomnias, and circadian rhythm disturbances. It includes hands-on training in sleep studies (polysomnography), cognitive-behavioral therapy for insomnia (CBT-I), and multidisciplinary approaches to sleep disorders.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD/DNB in Internal Medicine, Pulmonology, Neurology, Psychiatry, ENT, or related fields |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand **sleep physiology, sleep architecture, and circadian rhythms**.
- Develop expertise in **diagnosing and managing sleep disorders** such as insomnia, sleep apnea, and restless leg syndrome.
- Learn **sleep study interpretation**, including **polysomnography, home sleep testing, and actigraphy**.
- Gain proficiency in **pharmacological and non-pharmacological interventions** for sleep disorders.
- Master **cognitive-behavioral therapy for insomnia (CBT-I)** and behavioral sleep medicine approaches.
- Conduct **clinical research on sleep disorders and emerging treatment modalities**.
- Implement **public health strategies for sleep hygiene and awareness**.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Sleep Medicine**

| Module | Topics Covered |
|---|---|
| **Sleep Physiology & Neurobiology** | Sleep cycles, circadian rhythms, neurotransmitters in sleep |
| **Classification of Sleep Disorders** | ICSD-3 classification, DSM-5 criteria |
| **Diagnosis & Assessment of Sleep Disorders** | Sleep history taking, sleep questionnaires (Epworth, Berlin) |
| **Polysomnography & Home Sleep Testing** | PSG interpretation, AHI scoring, EEG, EOG, EMG analysis |
| **Insomnia & Cognitive-Behavioral Therapy (CBT-I)** | Behavioral interventions, sleep hygiene techniques |
| **Obstructive Sleep Apnea (OSA) & CPAP Therapy** | Pathophysiology, screening tools, CPAP/BiPAP management |
| **Restless Leg Syndrome & Narcolepsy** | Dopaminergic dysfunction, genetic factors, MSLT interpretation |
| **Clinical Rotations – Sleep Labs, Pulmonology & Neurology Clinics** | Hands-on training in sleep disorder management |

**Semester 2: Advanced Sleep Medicine & Research**

| Module | Topics Covered |
|---|---|
| **Parasomnias & REM Behavior Disorder** | Night terrors, sleepwalking, REM atonia dysfunction |
| **Sleep & Neurological Disorders** | Sleep in Parkinson’s, epilepsy-related sleep disorders |
| **Circadian Rhythm Sleep Disorders** | Delayed sleep phase syndrome, jet lag, shift work |

| Module | Topics Covered |
|---|---|
| | disorder |
| **Pediatric Sleep Disorders** | Sleep disordered breathing, behavioral insomnia in children |
| **Sleep & Psychiatry** | Depression, anxiety, PTSD, bipolar disorder & sleep disturbances |
| **Advanced Sleep Study Techniques** | Actigraphy, multiple sleep latency test (MSLT), MWT |
| **Sleep & Cardiovascular Health** | Hypertension, stroke, metabolic syndrome in sleep disorders |
| **Clinical Research & Case Studies** | Evidence-based practice, sleep trials, systematic reviews |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Knowledge of Sleep Medicine | Apply sleep physiology and diagnostic tools in clinical settings. |
| 2 | Expertise in Sleep Study Interpretation | Analyze polysomnography, MSLT, actigraphy results. |
| 3 | Pharmacological & Non-Pharmacological Sleep Management | Optimize medication & behavioral interventions. |
| 4 | Multidisciplinary Approach to Sleep Disorders | Collaborate with pulmonologists, neurologists, psychiatrists. |
| 5 | Pediatric & Geriatric Sleep Medicine | Manage sleep disturbances across different age groups. |
| 6 | Research & Evidence-Based Practice | Conduct and apply research in sleep disorders. |
| 7 | Public Health & Sleep Awareness | Develop community programs promoting |

| Sr. No. | Program Outcome | Description |
|---|---|---|
| | | sleep health. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Understanding of Sleep Physiology | Explain sleep architecture, circadian rhythms, and neurotransmitters. |
| 2 | Clinical Diagnosis of Sleep Disorders | Use validated sleep questionnaires and PSG findings. |
| 3 | Management of Sleep-Related Breathing Disorders | Implement CPAP/BiPAP therapy, weight loss interventions. |
| 4 | Treatment of Insomnia & Circadian Disorders | Apply CBT-I, melatonin therapy, lifestyle adjustments. |
| 5 | Sleep & Psychiatric Comorbidities | Address sleep disturbances in mental health disorders. |
| 6 | Research & Evidence-Based Practice | Analyze case studies and contribute to sleep medicine research. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |

| Component | Credits |
|---|---|
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Sleep Study Interpretation & Treatment Planning – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Principles & Practice of Sleep Medicine** – Meir H. Kryger
- **Atlas of Clinical Sleep Medicine** – Meir H. Kryger
- **The Sleep Medicine Handbook** – Alon Y. Avidan
- **Sleep Disorders: Diagnosis & Treatment** – Paul R. Carney
- **Cognitive Behavioral Treatment of Insomnia** – Michael Perlis

**Journals & E-Resources:**

- **Journal of Clinical Sleep Medicine** – https://jcsm.aasm.org
- **Sleep Medicine Journal – Elsevier** – https://www.journals.elsevier.com/sleep-medicine
- **American Academy of Sleep Medicine (AASM)** – https://aasm.org
- **National Sleep Foundation** – https://www.sleepfoundation.org
- **Up-to-date – Sleep Medicine** – https://www.uptodate.com

# Fellowship in Sports Medicine

## Course Overview

The **Fellowship in Sports Medicine** is a **one-year** advanced training program designed to equip healthcare professionals with expertise in the prevention, diagnosis, treatment, and rehabilitation of sports-related injuries. The program covers musculoskeletal assessment, sports rehabilitation, performance enhancement, exercise physiology, and injury prevention strategies. It integrates hands-on training in sports injury management and exercise prescription for athletes.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD/DNB in Orthopedics, Physical Medicine & Rehabilitation, General Medicine, or related fields |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand **the biomechanics of sports injuries and musculoskeletal assessment techniques**.
- Develop expertise in **diagnosing and managing acute and chronic sports injuries**.
- Gain skills in **sports rehabilitation, physiotherapy, and injury prevention**.
- Learn **exercise prescription, performance enhancement, and nutrition for athletes**.
- Master **minimally invasive procedures for sports injuries**, including PRP therapy and arthroscopy.
- Conduct **clinical research in sports medicine and rehabilitation techniques**.
- Implement **public health and community programs for injury prevention and athlete wellness**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Sports Medicine**

| Module | Topics Covered |
|---|---|
| **Introduction to Sports Medicine** | Scope, history, and importance in athlete health |
| **Exercise Physiology & Biomechanics** | Muscle function, joint movement, kinematics, kinetics |
| **Musculoskeletal Injuries in Sports** | Strains, sprains, fractures, overuse injuries |
| **Assessment of Sports Injuries** | Clinical examination, imaging, diagnostic techniques |
| **Sports Pharmacology & Anti-Doping Regulations** | WADA guidelines, performance-enhancing drugs |
| **Rehabilitation & Physiotherapy** | Manual therapy, electrotherapy, therapeutic exercises |
| **Sports Nutrition & Hydration** | Macronutrient balance, hydration strategies, supplements |
| **Clinical Rotations – Orthopedic & Sports Injury Clinics** | Hands-on training in injury management |

**Semester 2: Advanced Sports Medicine & Research**

| Module | Topics Covered |
|---|---|
| **Minimally Invasive Techniques for Sports Injuries** | PRP therapy, ultrasound-guided injections, arthroscopy |
| **Concussion & Head Injuries in Sports** | Pathophysiology, return-to-play protocols |
| **Strength & Conditioning for Athletes** | Strength training, endurance development, injury prevention |
| **Cardiac Screening in Athletes** | Sudden cardiac arrest, ECG, stress testing |

| Module | Topics Covered |
|---|---|
| **Pediatric & Geriatric Sports Medicine** | Growth-related issues, osteoarthritis in active aging |
| **Sports Psychology & Mental Conditioning** | Anxiety management, performance motivation |
| **Public Health & Injury Prevention Programs** | Community-based interventions, school athlete wellness |
| **Clinical Research & Case Studies** | Evidence-based practice, sports injury trials |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Knowledge of Sports Medicine | Apply sports science principles in clinical settings. |
| 2 | Expertise in Musculoskeletal Injury Management | Diagnose and treat sports injuries effectively. |
| 3 | Rehabilitation & Physiotherapy Techniques | Implement rehabilitation protocols for athletes. |
| 4 | Exercise Prescription & Performance Enhancement | Develop individualized training programs. |
| 5 | Sports Nutrition & Hydration Strategies | Optimize diet plans for peak performance. |
| 6 | Research & Evidence-Based Practice | Conduct and apply research in sports medicine. |
| 7 | Public Health & Injury Prevention | Develop community programs for injury prevention. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Understanding of Exercise Physiology | Explain biomechanics and metabolic adaptations. |
| 2 | Clinical Diagnosis of Sports Injuries | Use imaging and clinical tools for diagnosis. |
| 3 | Pharmacological & Non-Pharmacological Management | Apply appropriate medications and physical therapy. |
| 4 | Concussion & Head Trauma Management | Implement return-to-play protocols. |
| 5 | Sports Nutrition & Endurance Optimization | Plan nutrition and hydration strategies. |
| 6 | Research & Evidence-Based Practice | Analyze case studies and contribute to sports medicine research. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Sports Injury Management & Treatment Planning – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Brukner& Khan's Clinical Sports Medicine** – Peter Brukner
- **Sports Injury Prevention & Rehabilitation** – David Joyce
- **The IOC Manual of Sports Injuries** – Roald Bahr
- **Exercise Physiology: Nutrition, Energy, and Human Performance** – William D. McArdle
- **The Sports Medicine Bible** – Lyle J. Micheli

**Journals & E-Resources:**

- **British Journal of Sports Medicine** – https://bjsm.bmj.com
- **The American Journal of Sports Medicine** – https://journals.sagepub.com/home/ajs
- **National Strength & Conditioning Association (NSCA)** – https://www.nsca.com
- **International Olympic Committee (IOC) Sports Science** – https://www.olympic.org/sports-science
- **UpToDate – Sports Medicine** – https://www.uptodate.com

# Fellowship in Laboratory Medicine

## Course Overview

The **Fellowship in Laboratory Medicine** is a **one-year** specialized program designed to train healthcare professionals in advanced laboratory diagnostics, clinical pathology, molecular diagnostics, quality assurance, and laboratory management. The course covers hematology, microbiology, biochemistry, immunology, and emerging diagnostic technologies.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD Pathology / MD Biochemistry / MD Microbiology / M.Sc. Medical Lab Technology / M.Sc. Biochemistry / M.Sc. Microbiology |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand **the principles of clinical laboratory testing and quality control**.
- Gain expertise in **hematology, clinical biochemistry, microbiology, and molecular diagnostics**.
- Learn **emerging techniques in laboratory medicine, including genetic and immunological testing**.
- Develop skills in **lab automation, quality assurance, and regulatory compliance**.
- Master the interpretation of **biochemical, hematological, and microbiological test results**.
- Conduct **clinical research in diagnostic laboratory sciences**.
- Implement **standardized protocols for laboratory management and accreditation**.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Laboratory Medicine**

| Module | Topics Covered |
|---|---|
| **Clinical Biochemistry** | Enzymology, metabolic disorders, toxicology, endocrinology assays |
| **Hematology & Coagulation Studies** | Complete blood count (CBC), coagulation profiles, anemia studies |
| **Medical Microbiology** | Bacteriology, virology, parasitology, antimicrobial sensitivity testing |
| **Immunology & Serology** | Autoimmune disorders, immunoassay techniques, allergy diagnostics |
| **Molecular Diagnostics & Genetic Testing** | PCR, Next-Generation Sequencing (NGS), RT-PCR applications |
| **Quality Assurance & Accreditation** | NABL, CAP, CLIA, ISO standards, proficiency testing |
| **Clinical Rotations – Pathology & Microbiology Labs** | Hands-on training in sample processing and diagnostics |

**Semester 2: Advanced Laboratory Medicine & Research**

| Module | Topics Covered |
|---|---|
| **Point-of-Care Testing (POCT) & Rapid Diagnostics** | Glucose monitoring, troponin testing, CRP |
| **Histopathology & Cytopathology** | Biopsy techniques, FNAC, immunohistochemistry |
| **Advanced Molecular Diagnostics** | Gene expression analysis, pharmacogenomics, |

| Module | Topics Covered |
|---|---|
| | forensic testing |
| **Automation & Artificial Intelligence in Lab Medicine** | Automated analyzers, AI-driven diagnosis |
| **Clinical Research & Case Studies** | Evidence-based diagnostics, lab-based investigations |
| **Lab Information Systems & Data Management** | LIS integration, digital pathology, telepathology |
| **Public Health & Infectious Disease Surveillance** | Epidemiological monitoring, outbreak management |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Comprehensive Knowledge of Laboratory Medicine | Understand laboratory-based diagnostics and clinical correlations. |
| 2 | Expertise in Clinical Pathology | Perform and interpret hematology, biochemistry, and microbiology tests. |
| 3 | Molecular & Genetic Testing | Apply modern molecular diagnostic techniques. |
| 4 | Quality Assurance & Laboratory Accreditation | Ensure standardization in laboratory operations. |
| 5 | Laboratory Automation & AI Integration | Implement automation and AI in diagnostics. |
| 6 | Research & Evidence-Based Practice | Conduct clinical research in laboratory sciences. |
| 7 | Public Health & Surveillance | Contribute to infectious disease monitoring and epidemiology. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Clinical Biochemistry & Toxicology | Analyze biochemical markers for disease detection. |
| 2 | Hematology & Coagulation Testing | Perform and interpret blood and clotting studies. |
| 3 | Microbiological Testing & Infectious Disease Diagnostics | Identify pathogens and antibiotic resistance patterns. |
| 4 | Molecular & Genetic Testing | Utilize advanced molecular biology techniques. |
| 5 | Laboratory Quality Management & Accreditation | Implement quality control measures in diagnostic labs. |
| 6 | Research & Case Studies | Conduct and interpret lab-based clinical research. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Lab-Based Diagnostics & Quality Control – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Tietz Textbook of Clinical Chemistry & Molecular Diagnostics** – Carl Burtis
- **Henry's Clinical Diagnosis & Management by Laboratory Methods** – Richard McPherson
- **Medical Laboratory Science Review** – Robert Harr
- **Clinical Laboratory Diagnostics** – Lothar Thomas
- **Principles & Practice of Laboratory Medicine** – Lawrence Kaplan

**Journals & E-Resources:**

- **Clinical Chemistry Journal** – https://academic.oup.com/clinchem
- **Journal of Clinical Pathology** – https://jcp.bmj.com
- **American Society for Clinical Pathology (ASCP)** – https://www.ascp.org
- **World Health Organization (WHO) Laboratory Guidelines** – https://www.who.int/lab-guidelines
- **International Federation of Clinical Chemistry (IFCC)** – https://www.ifcc.org

# Fellowship in Blood Banking

## Course Overview

The **Fellowship in Blood Banking** is a **one-year** advanced training program designed to provide in-depth knowledge of transfusion medicine, blood component separation, immunohematology, donor screening, and regulatory guidelines. The course includes hands-on training in blood collection, processing, storage, and transfusion protocols, ensuring safe and effective blood transfusion practices.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD Pathology / MD Transfusion Medicine / MD Immunohematology / M.Sc. Medical Lab Technology |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Gain expertise in **blood banking procedures, including donor screening and component separation**.
- Understand **blood transfusion reactions, hemovigilance, and immunohematology**.
- Learn **advanced techniques in blood typing, crossmatching, and antibody screening**.
- Master **plasma fractionation, apheresis, and stem cell banking**.
- Understand the **regulatory framework of transfusion medicine, including WHO and AABB guidelines**.
- Develop skills in **blood bank management, quality control, and accreditation**.
- Conduct **research in transfusion medicine and blood safety**.

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Blood Banking & Transfusion Medicine**

| Module | Topics Covered |
|---|---|
| **Blood Donation & Donor Screening** | Donor eligibility, deferral criteria, counseling |
| **Blood Collection & Processing** | Phlebotomy techniques, anticoagulants, storage conditions |
| **Blood Component Separation** | Packed RBCs, fresh frozen plasma (FFP), platelets, cryoprecipitate |
| **Immunohematology & Blood Grouping** | ABO & Rh typing, crossmatching, antibody screening |
| **Blood Transfusion Reactions &Hemovigilance** | Adverse transfusion reactions, management, reporting |
| **Quality Control in Blood Banking** | Calibration, validation, internal & external QC |
| **Clinical Rotations – Blood Bank & Transfusion Services** | Hands-on training in donor screening, crossmatching, and transfusion |

**Semester 2: Advanced Blood Banking & Transfusion Practices**

| Module | Topics Covered |
|---|---|
| **Apheresis & Plasma Exchange** | Therapeutic plasma exchange, platelet & leukocyte apheresis |
| **Stem Cell Banking & Cellular Therapies** | Hematopoietic stem cell transplantation, cord blood banking |
| **Transfusion in Special Conditions** | Neonatal, intrauterine, massive transfusion protocol |
| **Molecular Blood Typing & Genotyping** | DNA-based typing techniques, HLA matching |
| **Blood Bank Information Systems (BBIS)** | Digital blood bank management, donor-recipient tracking |

| Module | Topics Covered |
|---|---|
| **Regulatory & Legal Aspects of Blood Banking** | FDA, AABB, NABH, WHO guidelines |
| **Research in Transfusion Medicine & Case Studies** | Evidence-based practice, emerging transfusion trends |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Blood Transfusion Services | Ensure safe and effective transfusion practices. |
| 2 | Advanced Immunohematology | Master blood typing, crossmatching, and antibody identification. |
| 3 | Plasma & Cellular Therapy Applications | Understand apheresis, plasma exchange, and stem cell transplantation. |
| 4 | Hemovigilance& Transfusion Reactions | Monitor and manage adverse transfusion reactions. |
| 5 | Blood Bank Quality Control & Accreditation | Implement quality control and compliance with global standards. |
| 6 | Research & Innovation in Transfusion Medicine | Conduct clinical research and case-based studies. |
| 7 | Public Health & Blood Donation Campaigns | Organize and manage blood donation drives. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Donor Selection & Screening | Identify suitable donors and implement screening protocols. |
| 2 | Blood Collection & Processing | Perform blood collection, component separation, and storage. |
| 3 | Immunohematology & Compatibility Testing | Ensure transfusion safety through proper blood typing and crossmatching. |
| 4 | Blood Transfusion Reaction Management | Diagnose and manage adverse transfusion reactions. |
| 5 | Apheresis & Plasma Therapy | Utilize therapeutic apheresis and plasma exchange techniques. |
| 6 | Transfusion Medicine Research | Conduct studies on blood transfusion efficacy and innovations. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Lab-Based Blood Bank Procedures – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Modern Blood Banking & Transfusion Practices** – Denise Harmening
- **AABB Technical Manual** – American Association of Blood Banks
- **Practical Transfusion Medicine** – Michael Murphy
- **Clinical Guide to Transfusion Medicine** – Mark Yazer
- **Immunohematology: Principles & Practice** – Eva D. Quinley

**Journals & E-Resources:**

- **Transfusion Journal (AABB)** – https://onlinelibrary.wiley.com/journal/15372995
- **Journal of Blood Transfusion** – https://www.hindawi.com/journals/jbt
- **World Health Organization (WHO) Blood Safety Guidelines** – https://www.who.int/bloodsafety
- **National Blood Transfusion Council (India)** – https://nbtc.naco.gov.in
- **International Society of Blood Transfusion (ISBT)** – https://www.isbtweb.org

# Fellowship in Infectious Diseases

## Course Overview

The **Fellowship in Infectious Diseases** is a **one-year** specialized program designed to provide in-depth training in the epidemiology, diagnosis, treatment, and prevention of infectious diseases. The curriculum covers bacterial, viral, fungal, and parasitic infections, antimicrobial stewardship, emerging infectious diseases, and public health strategies for infection control. The program integrates **clinical practice, laboratory training, and research** to equip fellows with expertise in managing infectious diseases in both hospital and community settings.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, Microbiology, Pulmonology, Tropical Medicine, Community Medicine) / M.Sc. Microbiology / M.Sc. Medical Lab Technology |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **diagnosing and managing bacterial, viral, fungal, and parasitic infections**.
- Understand **epidemiology and outbreak control of infectious diseases**.
- Learn **infection prevention and control strategies in healthcare settings**.
- Gain knowledge of **antimicrobial resistance and stewardship programs**.
- Master **laboratory diagnostics in infectious diseases, including molecular and serological testing**.
- Conduct **clinical research on emerging infectious diseases**.
- Implement **public health strategies for infection control and vaccination programs**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Infectious Diseases**

| Module | Topics Covered |
|---|---|
| **General Principles of Infectious Diseases** | Microbial pathogenesis, host immunity, transmission |
| **Bacterial Infections** | Tuberculosis, pneumonia, sepsis, meningitis, STIs |
| **Viral Infections** | HIV/AIDS, hepatitis, influenza, COVID-19, arboviruses |
| **Fungal & Parasitic Infections** | Candidiasis, cryptococcosis, malaria, leishmaniasis |
| **Nosocomial Infections & Infection Control** | Hospital-acquired infections, hand hygiene, sterilization |
| **Antimicrobial Stewardship** | Rational use of antibiotics, antifungal, antiviral therapies |
| **Clinical Rotations – Infectious Disease Ward & ICU** | Hands-on patient management, case discussions |

**Semester 2: Advanced Infectious Disease Management & Research**

| Module | Topics Covered |
|---|---|
| **Emerging & Re-Emerging Infectious Diseases** | Zoonotic infections, bioterrorism agents, pandemics |
| **Infection Control in Immunocompromised Patients** | HIV/AIDS, transplant recipients, oncology patients |
| **Vaccination & Public Health Strategies** | Vaccine schedules, herd immunity, global immunization programs |
| **Tropical & Travel Medicine** | Dengue, chikungunya, leptospirosis, travel advisories |
| **Laboratory Diagnostics in Infectious** | PCR, ELISA, blood cultures, antimicrobial |

| Module | Topics Covered |
|---|---|
| **Diseases** | sensitivity testing |
| **Epidemiology & Outbreak Investigation** | Surveillance, epidemic modeling, disease mapping |
| **Clinical Research & Case Studies** | Evidence-based management, clinical trials in infectious diseases |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Infectious Disease Diagnosis | Develop diagnostic accuracy in bacterial, viral, fungal, and parasitic infections. |
| 2 | Advanced Antimicrobial Management | Implement antimicrobial stewardship programs effectively. |
| 3 | Epidemiology & Public Health | Contribute to infectious disease surveillance and outbreak response. |
| 4 | Infection Control & Hospital Management | Develop protocols for hospital infection prevention and control. |
| 5 | Clinical Research in Infectious Diseases | Conduct research on emerging infectious diseases and novel treatments. |
| 6 | Public Health Interventions & Vaccination Programs | Plan and execute large-scale infection prevention strategies. |
| 7 | Laboratory Techniques in Infectious Diseases | Gain hands-on experience with molecular diagnostics and serology. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Diagnosis & Management of Bacterial Infections | Identify and treat common and drug-resistant bacterial infections. |
| 2 | Treatment of Viral Infections | Apply antiviral therapies in HIV, hepatitis, and respiratory viruses. |
| 3 | Antimicrobial Resistance & Stewardship | Implement rational antibiotic use and resistance monitoring. |
| 4 | Infection Prevention & Hospital Hygiene | Develop hospital infection control protocols. |
| 5 | Epidemiology & Outbreak Investigation | Respond effectively to infectious disease outbreaks. |
| 6 | Research & Evidence-Based Practice | Conduct clinical studies in infectious disease treatment. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Infectious Disease Management & Antimicrobial Stewardship – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases** – John E. Bennett
- **Clinical Infectious Diseases: A Practical Approach** – Richard K. Root
- **Infectious Diseases: A Clinical Short Course** – Frederick S. Southwick
- **Tropical Infectious Diseases: Principles, Pathogens & Practice** – Richard L. Guerrant
- **Antimicrobial Therapy Guide** – Sanford Guide

**Journals & E-Resources:**

- **Journal of Infectious Diseases (JID)** – https://academic.oup.com/jid
- **Clinical Infectious Diseases (CID)** – https://academic.oup.com/cid
- **WHO Guidelines for Infectious Disease Control** – https://www.who.int/infectious-diseases
- **Centers for Disease Control and Prevention (CDC)** – https://www.cdc.gov
- **International Society for Infectious Diseases (ISID)** – https://www.isid.org

# Fellowship in Allergy & Immunology

## Course Overview

The **Fellowship in Allergy & Immunology** is a **one-year** specialized training program designed to provide healthcare professionals with expertise in the diagnosis, management, and treatment of allergic and immunological disorders. The program covers **asthma, anaphylaxis, food allergies, drug hypersensitivity, autoimmune diseases, and immunodeficiency disorders**. It integrates **clinical training, laboratory diagnostics, and research** to equip fellows with cutting-edge knowledge in allergy and immunotherapy.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, Pulmonology, Dermatology, Pediatrics, Microbiology) / M.Sc. Immunology / M.Sc. Medical Microbiology |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Gain expertise in **allergic and immune system disorders**.
- Learn the **pathophysiology of hypersensitivity reactions and immune dysfunction**.
- Develop skills in **allergy testing, immunotherapy, and desensitization protocols**.
- Understand **autoimmune diseases, immunodeficiency syndromes, and inflammatory conditions**.
- Master the use of **biologic therapies and monoclonal antibodies in immunological conditions**.
- Conduct **clinical research on allergy and immune-based disorders**.
- Implement **preventive and therapeutic strategies in allergic disease management**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Allergy & Immunology**

| Module | Topics Covered |
|---|---|
| **Immunology & Hypersensitivity Mechanisms** | Innate & adaptive immunity, immunoglobulins, cytokines |
| **Allergic Rhinitis & Sinusitis** | Pathogenesis, diagnosis, pharmacological & non-pharmacological management |
| **Asthma & Chronic Respiratory Allergies** | Pulmonary function testing (PFT), inhaler therapy, biologics |
| **Food Allergies & Anaphylaxis** | IgE-mediated reactions, emergency management, epinephrine use |
| **Drug Hypersensitivity & Adverse Reactions** | Drug desensitization, cross-reactivity, beta-lactam allergy |
| **Allergy Testing & Immunotherapy** | Skin prick tests, patch tests, serum IgE assays |
| **Clinical Rotations – Allergy & Immunology Clinic** | Hands-on patient evaluation, case discussions |

**Semester 2: Advanced Immunology & Research**

| Module | Topics Covered |
|---|---|
| **Autoimmune Diseases & Connective Tissue Disorders** | Lupus, rheumatoid arthritis, Sjögren's syndrome |
| **Immunodeficiency Disorders** | Primary & secondary immunodeficiencies, HIV, congenital syndromes |
| **Biologic Therapies &Immunomodulators** | Anti-IgE, IL-5 inhibitors, TNF inhibitors |
| **Immunotherapy & Desensitization Strategies** | Sublingual, subcutaneous immunotherapy, venom desensitization |
| **Infection & Immunosuppression** | Immune response in chronic infections, post- |

| Module | Topics Covered |
|---|---|
| | transplant immunology |
| **Epidemiology & Public Health in Allergy & Immunology** | Vaccination strategies, immune tolerance induction |
| **Clinical Research & Case Studies** | Evidence-based treatment, clinical trials in immunotherapy |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Allergy Diagnosis & Treatment | Diagnose and manage common allergic conditions effectively. |
| 2 | Expertise in Autoimmune & Immunodeficiency Disorders | Recognize and treat immune system dysfunctions. |
| 3 | Advanced Skills in Allergy Testing & Immunotherapy | Perform allergy skin testing, immunotherapy, and desensitization. |
| 4 | Biologic & Monoclonal Antibody Therapies | Utilize cutting-edge biologic drugs for allergy and immune disorders. |
| 5 | Research & Innovation in Immunology | Conduct studies on immune mechanisms and novel treatments. |
| 6 | Public Health & Preventive Immunology | Implement large-scale allergy prevention and vaccination programs. |
| 7 | Hands-on Clinical Training in Immunology | Develop skills in lab-based and patient-based immunology. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Clinical Evaluation of Allergic Disorders | Diagnose and manage allergic rhinitis, asthma, and urticaria. |
| 2 | Laboratory Diagnosis of Immunological Disorders | Perform ELISA, flow cytometry, and immunoglobulin assays. |
| 3 | Autoimmune Disease Management | Treat lupus, rheumatoid arthritis, and inflammatory syndromes. |
| 4 | Immunotherapy & Desensitization Techniques | Implement effective desensitization and allergy treatment strategies. |
| 5 | Infection Control in Immunosuppressed Patients | Prevent infections in patients with immunodeficiencies. |
| 6 | Research & Evidence-Based Immunology | Conduct trials in allergy and immunomodulatory therapies. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Allergy Testing & Immunotherapy Administration – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Middleton's Allergy: Principles and Practice** – A. Wesley Burks
- **Clinical Immunology: Principles and Practice** – Robert R. Rich
- **Patterson's Allergic Diseases** – Leslie C. Grammer
- **Atlas of Allergic Diseases** – Bobby Lanier
- **Basic Immunology: Functions and Disorders of the Immune System** – Abul K. Abbas

**Journals & E-Resources:**

- **Journal of Allergy and Clinical Immunology (JACI)** – https://www.jacionline.org
- **Clinical & Experimental Allergy Journal** – https://onlinelibrary.wiley.com/journal/13652222
- **World Allergy Organization (WAO)** – https://www.worldallergy.org
- **American Academy of Allergy, Asthma & Immunology (AAAAI)** – https://www.aaaai.org
- **European Academy of Allergy & Clinical Immunology (EAACI)** – https://www.eaaci.org

# Fellowship in Ultrasonography

## Course Overview

The **Fellowship in Ultrasonography** is a **one-year** advanced training program designed for medical professionals seeking expertise in diagnostic and interventional ultrasound techniques. The program focuses on **abdominal, obstetric, gynecological, musculoskeletal, vascular, and interventional ultrasound procedures**. It provides hands-on clinical training, theoretical knowledge, and research exposure to develop proficiency in **image interpretation, Doppler studies, and ultrasound-guided interventions**.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD / MS (Radiology, Obstetrics & Gynecology, Internal Medicine, Emergency Medicine) / M.Sc. Medical Imaging Technology |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Master the **principles of ultrasonography and image acquisition techniques**.
- Develop expertise in **diagnosing abdominal, pelvic, vascular, and musculoskeletal conditions using ultrasound**.
- Gain proficiency in **Doppler ultrasound for vascular imaging and fetal monitoring**.
- Learn **ultrasound-guided interventions such as biopsies, aspirations, and therapeutic procedures**.
- Understand **the safety, physics, and bioeffects of ultrasound**.
- Conduct **research in ultrasound imaging and its applications in clinical practice**.
- Implement **quality control and ethical guidelines in ultrasonography**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Diagnostic Ultrasonography**

| Module | Topics Covered |
|---|---|
| **Basics of Ultrasonography** | Ultrasound physics, instrumentation, artifacts |
| **Abdominal Ultrasound** | Liver, gallbladder, kidneys, pancreas, spleen |
| **Obstetric & Gynecological Ultrasound** | Fetal growth assessment, fetal anomalies, ovarian pathologies |
| **Vascular Doppler Studies** | Carotid, arterial, venous Doppler, deep vein thrombosis (DVT) evaluation |
| **Musculoskeletal Ultrasound** | Joint effusion, ligament injuries, soft tissue masses |
| **Ultrasound Safety &Bioeffects** | ALARA principle, patient safety protocols |
| **Clinical Rotations – Ultrasound Labs & Radiology Department** | Hands-on scanning, real-time diagnosis |

**Semester 2: Advanced Ultrasonography & Interventional Techniques**

| Module | Topics Covered |
|---|---|
| **Echocardiography** | Basic cardiac ultrasound, ejection fraction, valvular assessment |
| **Small Parts Ultrasonography** | Thyroid, breast, testicular ultrasound |
| **Interventional Ultrasound Procedures** | FNAC, biopsies, fluid aspiration, nerve blocks |
| **Emergency & Trauma Ultrasound (FAST Protocol)** | Point-of-care ultrasound (POCUS), focused assessment with sonography for trauma (FAST) |
| **Fetal Doppler & High-Risk Pregnancy Imaging** | Placental function, umbilical artery Doppler |

| Module | Topics Covered |
|---|---|
| **3D & 4D Ultrasound Technology** | Advanced imaging techniques in obstetrics and fetal medicine |
| **Clinical Research & Case Studies** | Ultrasound in novel clinical applications |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Diagnostic Ultrasound | Proficiency in ultrasound imaging and interpretation. |
| 2 | Doppler Imaging & Hemodynamics | Skill in vascular and fetal Doppler studies. |
| 3 | Interventional Ultrasonography | Perform ultrasound-guided biopsies, aspirations, and injections. |
| 4 | Musculoskeletal & Small Parts Ultrasound | Diagnose soft tissue, joint, and glandular disorders. |
| 5 | Emergency & Critical Care Ultrasound | Apply ultrasound in trauma and emergency settings. |
| 6 | Research & Innovation in Sonography | Conduct studies on new ultrasound techniques. |
| 7 | Quality Assurance & Ethics in Ultrasound | Implement safety protocols and quality control in imaging. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Ultrasonography | Understand ultrasound physics and instrumentation. |
| 2 | Abdominal & Pelvic Imaging | Diagnose liver, kidney, pancreas, and reproductive organ pathologies. |
| 3 | Obstetric & Fetal Imaging | Assess fetal development and high-risk pregnancies. |
| 4 | Doppler & Vascular Imaging | Analyze blood flow in arteries and veins. |
| 5 | Interventional & Emergency Ultrasound | Perform ultrasound-guided procedures and trauma imaging. |
| 6 | Research & Evidence-Based Practice | Conduct and apply research in diagnostic ultrasound. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Ultrasound Scanning & Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Textbook of Diagnostic Ultrasonography** – Sandra L. Hagen-Ansert
- **Ultrasound in Obstetrics & Gynecology** – Peter W. Callen
- **The Physics and Technology of Diagnostic Ultrasound** – Robert Gill
- **Fundamentals of Musculoskeletal Ultrasound** – Jon A. Jacobson
- **Emergency Ultrasound** – Michael Blaivas

**Journals & E-Resources:**

- **Journal of Ultrasound in Medicine (JUM)** – https://www.jultrasoundmed.org
- **Radiographics: Ultrasound Special Issue** – https://pubs.rsna.org/journal/radiographics
- **World Federation for Ultrasound in Medicine and Biology (WFUMB)** – https://www.wfumb.org
- **American Institute of Ultrasound in Medicine (AIUM)** – https://www.aium.org
- **European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB)** – https://efsumb.org

# Fellowship in Clinical Cardiology

## Course Overview

The **Fellowship in Clinical Cardiology** is a **one-year** advanced training program designed for medical professionals to gain expertise in the **diagnosis, management, and treatment of cardiovascular diseases**. The curriculum includes **non-invasive and invasive cardiology, ECG interpretation, echocardiography, stress testing, cardiac emergencies, and preventive cardiology**. It integrates **clinical training, hands-on procedural experience, and research** to equip fellows with **evidence-based knowledge in cardiology practice**.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (General Medicine, Internal Medicine, Emergency Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Gain expertise in **diagnosing and managing ischemic heart diseases, arrhythmias, heart failure, and valvular disorders**.
- Develop skills in **ECG interpretation, echocardiography, and stress testing**.
- Learn **advanced techniques in non-invasive and interventional cardiology**.
- Understand **cardiac pharmacology and therapeutic strategies**.
- Manage **hypertension, dyslipidemia, and cardiovascular risk factors**.
- Handle **cardiac emergencies, including myocardial infarction and cardiac arrest**.
- Conduct **research in cardiology and develop clinical guidelines**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Clinical Cardiology**

| Module | Topics Covered |
|---|---|
| **Basic Cardiac Anatomy & Physiology** | Cardiac cycle, conduction system, hemodynamics |
| **ECG & Arrhythmias** | ECG interpretation, tachycardia, bradycardia, heart blocks |
| **Hypertension & Cardiovascular Risk Management** | Diagnosis, lifestyle modifications, pharmacotherapy |
| **Ischemic Heart Disease** | Angina, myocardial infarction, STEMI/NSTEMI management |
| **Heart Failure & Cardiomyopathies** | Diagnosis, staging, pharmacological & device therapy |
| **Cardiac Pharmacology** | Antiarrhythmic drugs, anticoagulants, lipid-lowering agents |
| **Clinical Rotations – Cardiology OPD & CCU** | Hands-on patient evaluation, case discussions |

**Semester 2: Advanced Cardiology & Research**

| Module | Topics Covered |
|---|---|
| **Echocardiography & Imaging Modalities** | 2D Echo, Doppler, cardiac MRI, CT angiography |
| **Valvular Heart Diseases** | Aortic stenosis, mitral regurgitation, surgical interventions |
| **Congenital Heart Diseases in Adults** | Cyanotic &acyanotic congenital conditions |
| **Interventional Cardiology Basics** | Coronary angiography, angioplasty, pacemakers |
| **Cardiac Emergencies & ACLS Protocols** | Management of cardiac arrest, acute MI, cardiogenic shock |

| Module | Topics Covered |
|---|---|
| **Preventive & Rehabilitation Cardiology** | Lifestyle interventions, cardiac rehabilitation programs |
| **Clinical Research & Case Studies** | Evidence-based cardiology, clinical trials |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Cardiovascular Diagnostics | Expertise in ECG, echocardiography, and stress testing. |
| 2 | Proficiency in Managing Cardiac Emergencies | Handle acute myocardial infarction, cardiac arrest, and heart failure crises. |
| 3 | Expertise in Hypertension & Dyslipidemia Management | Optimize pharmacological and non-pharmacological treatments. |
| 4 | Understanding of Interventional Cardiology | Learn angiography, pacemaker insertion, and catheter-based interventions. |
| 5 | Research & Innovation in Cardiology | Conduct clinical studies in cardiology advancements. |
| 6 | Preventive & Lifestyle Cardiology | Implement lifestyle and risk-factor modification strategies. |
| 7 | Hands-on Training in Clinical Cardiology | Develop real-world clinical skills in cardiology practice. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Cardiac Electrophysiology | Understand cardiac conduction and arrhythmia mechanisms. |
| 2 | Diagnosis & Management of Ischemic Heart Diseases | Treat angina, myocardial infarction, and revascularization strategies. |
| 3 | Heart Failure Management | Apply pharmacologic and non-pharmacologic therapies in heart failure. |
| 4 | Advanced Imaging & Cardiac Interventions | Learn echocardiography and basic interventional techniques. |
| 5 | Management of Valvular& Congenital Heart Diseases | Diagnose and treat valvular and congenital heart disorders. |
| 6 | Research & Evidence-Based Practice in Cardiology | Conduct clinical research in cardiovascular medicine. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Cardiac Diagnostics & ECG Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine** – Douglas L. Mann
- **Hurst's The Heart** – Valentin Fuster
- **The ECG Made Easy** – John R. Hampton
- **Feigenbaum's Echocardiography** – William F. Armstrong
- **Cardiac Pharmacology & Therapeutics** – Lionel H. Opie

**Journals & E-Resources:**

- **Journal of the American College of Cardiology (JACC)** – https://www.jacc.org
- **Circulation: Journal of the American Heart Association** – https://www.ahajournals.org/journal/circ
- **European Society of Cardiology (ESC)** – https://www.escardio.org
- **American Heart Association (AHA) Guidelines** – https://www.heart.org
- **Cardiosource by ACC** – https://www.acc.org

# Fellowship in Clinical Neurology

## Course Overview

The **Fellowship in Clinical Neurology** is a **one-year** advanced training program designed for healthcare professionals to develop expertise in the **diagnosis, management, and treatment of neurological disorders**. The program covers **stroke management, epilepsy, neurodegenerative diseases, neuromuscular disorders, neuroimaging, and electrophysiological studies**. It provides **clinical exposure, hands-on training, and research opportunities** to equip fellows with the latest advancements in neurology.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, Emergency Medicine, Psychiatry) / DNB (Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Gain expertise in **neurological examination and diagnosis**.
- Develop skills in **stroke assessment, prevention, and rehabilitation**.
- Master **EEG, EMG, and nerve conduction studies**.
- Learn the **management of epilepsy, movement disorders, and multiple sclerosis**.
- Understand **neurocritical care and emergency neurological interventions**.
- Gain exposure to **neuroimaging techniques such as MRI & CT scans**.
- Conduct **clinical research in neurological disorders and treatment protocols**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Clinical Neurology**

| Module | Topics Covered |
|---|---|
| **Neuroanatomy & Neurophysiology** | Brain and spinal cord anatomy, neurotransmitters, motor and sensory pathways |
| **Stroke & Cerebrovascular Diseases** | Ischemic & hemorrhagic stroke, transient ischemic attacks (TIA), rehabilitation |
| **Epilepsy & Seizure Disorders** | Types, EEG interpretation, antiepileptic drugs, surgical options |
| **Headache & Facial Pain Syndromes** | Migraine, tension-type headache, trigeminal neuralgia |
| **Demyelinating & Autoimmune Disorders** | Multiple sclerosis, Guillain-Barré syndrome, myasthenia gravis |
| **Neuroimaging & Diagnostic Techniques** | MRI, CT, PET scans in neurological disorders |
| **Clinical Rotations – Neurology OPD & Stroke Unit** | Case discussions, hands-on diagnosis |

**Semester 2: Advanced Neurology & Research**

| Module | Topics Covered |
|---|---|
| **Movement Disorders & Parkinson's Disease** | Diagnosis, deep brain stimulation, botulinum toxin therapy |
| **Neurodegenerative Diseases** | Alzheimer's, Huntington's disease, ALS, dementia |
| **Neuromuscular & Peripheral Nerve Disorders** | Neuropathy, myopathy, motor neuron disease |
| **Neurocritical Care & Emergencies** | Status epilepticus, coma, traumatic brain injury |
| **Pain Management in Neurology** | Chronic pain, neuropathic pain, neurostimulation |
| **Sleep Disorders & Neuropsychiatric** | Insomnia, narcolepsy, psychiatric comorbidities in |

| Module | Topics Covered |
|---|---|
| **Conditions** | neurology |
| **Clinical Research & Case Studies** | Translational research in neurological sciences |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Neurological Examination & Diagnosis | Expertise in clinical evaluation of neurological disorders. |
| 2 | Stroke & Neurovascular Disease Management | Diagnose and manage acute stroke, TIA, and post-stroke rehabilitation. |
| 3 | Expertise in EEG & Neurophysiological Testing | Interpret EEG, EMG, and nerve conduction studies. |
| 4 | Management of Epilepsy & Seizure Disorders | Apply pharmacological and surgical treatment strategies. |
| 5 | Research & Innovation in Neurology | Conduct clinical research in neurodegenerative and autoimmune diseases. |
| 6 | Emergency Neurology & Neurocritical Care | Handle neurological emergencies and critical care cases. |
| 7 | Hands-on Training in Neuroimaging & Interventional Techniques | Develop expertise in CT, MRI, PET scans, and neurostimulation techniques. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Neurophysiology | Understand brain and spinal cord functions. |
| 2 | Diagnosis & Management of Stroke | Apply thrombolysis, rehabilitation, and secondary prevention strategies. |
| 3 | EEG & EMG Interpretation | Analyze neurophysiological studies for diagnostic accuracy. |
| 4 | Treatment of Neurodegenerative Disorders | Implement pharmacologic and rehabilitative therapies. |
| 5 | Pain & Sleep Disorder Management | Apply therapies for neuropathic pain and sleep-related neurological conditions. |
| 6 | Research & Evidence-Based Practice in Neurology | Conduct clinical trials and publish research findings. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Neuroimaging & EEG Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Adams and Victor's Principles of Neurology** – Allan H. Ropper
- **Bradley's Neurology in Clinical Practice** – Robert B. Daroff
- **Merritt's Neurology** – Elan D. Louis
- **Atlas of EEG in Critical Care** – Lawrence Hirsch
- **Neurology Secrets** – Joseph S. Kass

**Journals & E-Resources:**

- **Journal of Neurology, Neurosurgery & Psychiatry (JNNP)** – https://jnnp.bmj.com
- **Neurology (American Academy of Neurology)** – https://www.neurology.org
- **European Journal of Neurology** – https://onlinelibrary.wiley.com/journal/14681331
- **Brain: A Journal of Neurology** – https://academic.oup.com/brain
- **Neuroscience Research** – https://www.sciencedirect.com/journal/neuroscience-research

# Fellowship in Clinical Nephrology

## Course Overview

The **Fellowship in Clinical Nephrology** is a **one-year** advanced training program designed for medical professionals specializing in **kidney diseases, hypertension, dialysis, and renal transplantation**. The program provides in-depth knowledge of **acute and chronic kidney diseases (CKD), glomerular disorders, electrolyte imbalances, nephrotoxins, hemodialysis, peritoneal dialysis, and post-transplant care**. Clinical rotations, hands-on dialysis training, and research opportunities ensure a comprehensive learning experience.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, General Medicine) / DNB (Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **diagnosing and managing acute kidney injury (AKI) and chronic kidney disease (CKD)**.
- Gain proficiency in **electrolyte and acid-base balance disorders**.
- Master **dialysis techniques (hemodialysis, peritoneal dialysis, CRRT)**.
- Learn **post-kidney transplant management and immunosuppressive therapy**.
- Understand **hypertension-related kidney complications and nephroprotective strategies**.
- Perform **renal biopsy interpretation and histopathological correlation**.
- Conduct **clinical research in nephrology**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Nephrology**

| Module | Topics Covered |
|---|---|
| **Renal Physiology & Pathophysiology** | Glomerular filtration, tubular function, renal hemodynamics |
| **Acute Kidney Injury (AKI)** | Causes, staging, biomarkers, management |
| **Chronic Kidney Disease (CKD) & Progression** | Risk factors, staging, nephroprotective therapy |
| **Electrolyte & Acid-Base Imbalances** | Sodium, potassium, calcium, acid-base homeostasis |
| **Hypertension & Renal Disorders** | Primary vs. secondary hypertension, nephropathy |
| **Glomerular & Tubular Disorders** | Nephrotic & nephritic syndromes, genetic disorders |
| **Clinical Rotations – Nephrology OPD & Dialysis Units** | Hands-on dialysis and patient management |

**Semester 2: Advanced Nephrology & Research**

| Module | Topics Covered |
|---|---|
| **Dialysis & Renal Replacement Therapy** | Hemodialysis, peritoneal dialysis, CRRT |
| **Renal Transplantation & Immunosuppression** | Pre- & post-transplant care, rejection management |
| **Diabetic Nephropathy & Metabolic Kidney Disorders** | Risk factors, treatment, renal protective strategies |
| **Renal Imaging & Biopsy Interpretation** | CT, MRI, Doppler studies, histopathology |
| **Nephrotoxic Drugs & Renal Pharmacology** | Drug-induced kidney injury, dose adjustments |

| Module | Topics Covered |
|---|---|
| **Pediatric Nephrology & Rare Kidney Diseases** | Congenital & genetic kidney diseases |
| **Clinical Research & Case Studies** | Translational research in nephrology |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Renal Disease Diagnosis | Proficiency in evaluating kidney disorders and electrolyte imbalances. |
| 2 | Expertise in Dialysis & CRRT | Hands-on experience in hemodialysis, peritoneal dialysis, and CRRT. |
| 3 | Hypertension & Kidney Disease Management | Optimize blood pressure control in CKD and AKI. |
| 4 | Proficiency in Kidney Transplant Care | Pre- and post-transplant management, immunosuppressive therapy. |
| 5 | Research & Innovation in Nephrology | Conduct studies in renal disease progression and treatment. |
| 6 | Acute & Chronic Kidney Disease Management | Implement therapies to slow CKD progression. |
| 7 | Hands-on Training in Renal Biopsy & Imaging | Develop expertise in biopsy techniques and imaging modalities. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Renal Pathophysiology | Understand kidney structure and function in disease states. |
| 2 | Diagnosis & Management of CKD & AKI | Apply guidelines for staging and treating kidney diseases. |
| 3 | Dialysis Techniques & Complications | Manage dialysis patients and prevent complications. |
| 4 | Kidney Transplantation & Immunosuppression | Optimize transplant outcomes and manage rejection. |
| 5 | Nephrotoxic Drug Monitoring | Adjust medication dosages for renal impairment. |
| 6 | Research & Evidence-Based Practice in Nephrology | Conduct clinical studies in kidney disorders. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

**Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Dialysis & Renal Biopsy Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Brenner & Rector's The Kidney** – Maarten W. Taal
- **Comprehensive Clinical Nephrology** – Richard J. Johnson
- **Handbook of Dialysis** – John T. Daugirdas
- **Nephrology Secrets** – David A. Sousa
- **Principles and Practice of Dialysis** – William L. Henrich

**Journals & E-Resources:**

- **American Journal of Kidney Diseases (AJKD)** – https://www.ajkd.org
- **Journal of the American Society of Nephrology (JASN)** – https://jasn.asnjournals.org
- **Kidney International** – https://www.kidney-international.org
- **National Kidney Foundation (NKF) Guidelines** – https://www.kidney.org
- **Nephrology Dialysis Transplantation (NDT)** – https://academic.oup.com/ndt

# Fellowship in Medical Gastroenterology

## Course Overview

The **Fellowship in Medical Gastroenterology** is a **one-year** advanced training program focused on the **diagnosis, management, and treatment of gastrointestinal (GI) diseases**. The program provides expertise in **hepatology, inflammatory bowel disease (IBD), pancreatic disorders, endoscopic procedures, GI cancers, and nutritional aspects of digestive health**. Fellows gain hands-on training in **endoscopy, colonoscopy, ERCP, and advanced imaging techniques**.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, General Medicine) / DNB (Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **evaluating and managing gastrointestinal disorders**.
- Gain proficiency in **upper and lower GI endoscopy, biopsy techniques, and capsule endoscopy**.
- Understand **hepatology and liver diseases, including cirrhosis, hepatitis, and liver transplantation**.
- Learn to diagnose and treat **IBD, celiac disease, and irritable bowel syndrome (IBS)**.
- Master **pancreatic and biliary disorders, including acute & chronic pancreatitis**.
- Perform **diagnostic and therapeutic procedures such as ERCP, endoscopic ultrasound (EUS), and polypectomy**.
- Conduct **clinical research in gastroenterology**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Gastroenterology**

| Module | Topics Covered |
|---|---|
| **GI Anatomy & Physiology** | Digestive system structure, motility, absorption |
| **Acid-Peptic Disorders** | GERD, peptic ulcer disease, Zollinger-Ellison syndrome |
| **Hepatology & Liver Diseases** | Hepatitis, liver cirrhosis, fatty liver disease |
| **Gastrointestinal Infections** | H. pylori, viral & bacterial gastroenteritis, parasitic infections |
| **Inflammatory Bowel Disease (IBD)** | Ulcerative colitis, Crohn's disease, immunotherapy |
| **Pancreatic & Biliary Diseases** | Acute & chronic pancreatitis, gallstones, cholestasis |
| **Clinical Rotations – GI OPD & Endoscopy Labs** | Case-based learning, hands-on endoscopy |

**Semester 2: Advanced Gastroenterology & Research**

| Module | Topics Covered |
|---|---|
| **GI Cancers & Screening** | Esophageal, gastric, colorectal, liver, and pancreatic cancers |
| **Endoscopic &Colonoscopic Techniques** | Biopsy, polypectomy, hemostasis, variceal banding |
| **Functional & Motility Disorders** | Achalasia, gastroparesis, small intestinal bacterial overgrowth (SIBO) |
| **Malabsorption & Nutritional Disorders** | Celiac disease, short bowel syndrome, enteral & parenteral nutrition |
| **Liver Transplantation & Post-Transplant Care** | Indications, rejection management, immunosuppressive therapy |
| **Neuro-Gastroenterology & Gut-Brain Axis** | Stress-related gut disorders, functional GI diseases |

| Module | Topics Covered |
|---|---|
| **Clinical Research & Case Studies** | Evidence-based gastroenterology research |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in GI Disease Diagnosis | Expertise in evaluating digestive diseases and related conditions. |
| 2 | Endoscopic &Colonoscopic Proficiency | Hands-on experience in upper & lower GI endoscopy, biopsy techniques. |
| 3 | Hepatology & Liver Disease Management | Diagnose and treat hepatitis, cirrhosis, and liver failure. |
| 4 | Management of IBD & Functional GI Disorders | Apply therapies for Crohn’s disease, IBS, and other chronic conditions. |
| 5 | Research & Innovation in Gastroenterology | Conduct clinical studies in digestive diseases. |
| 6 | Acute & Chronic Pancreatic Disease Management | Manage pancreatitis, pancreatic insufficiency, and neoplasms. |
| 7 | Hands-on Training in ERCP & EUS | Develop expertise in advanced GI diagnostic procedures. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Digestive Physiology | Understand GI motility, digestion, and absorption. |
| 2 | Diagnosis & Management of Peptic Ulcers | Apply pharmacologic and endoscopic therapies for ulcer diseases. |
| 3 | Liver Disease & Transplantation Care | Optimize treatments for liver diseases and post-transplant management. |
| 4 | Advanced Endoscopy & Colonoscopy | Learn interventional procedures in GI endoscopy. |
| 5 | Functional & Motility Disorders | Manage gastroparesis, achalasia, and motility-related syndromes. |
| 6 | Research & Evidence-Based Practice in Gastroenterology | Conduct clinical trials and gastroenterology studies. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Endoscopic &Colonoscopic Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Sleisenger and Fordtran's Gastrointestinal and Liver Disease** – Mark Feldman
- **Yamada's Textbook of Gastroenterology** – Tadataka Yamada
- **Atlas of Clinical Gastrointestinal Endoscopy** – Charles Mel Wilcox
- **Harrison's Gastroenterology and Hepatology** – Dan Longo
- **Principles of Clinical Gastroenterology** – Tadataka Yamada

**Journals & E-Resources:**

- **American Journal of Gastroenterology (AJG)** – https://journals.lww.com/ajg
- **Gastroenterology Journal** – https://www.gastrojournal.org
- **Journal of Hepatology** – https://www.journal-of-hepatology.eu
- **World Journal of Gastroenterology** – https://www.wjgnet.com
- **American Association for the Study of Liver Diseases (AASLD)** – https://www.aasld.org

# Fellowship in Clinical Endocrinology

## Course Overview

The **Fellowship in Clinical Endocrinology** is a **one-year** advanced training program designed to provide comprehensive knowledge in the **diagnosis, management, and treatment of endocrine disorders**. This program covers **diabetes, thyroid diseases, adrenal and pituitary disorders, metabolic bone diseases, and reproductive endocrinology**. The fellowship provides **hands-on training in hormonal assays, endocrine imaging, diabetes technology, and metabolic disorders management**.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, General Medicine) / DNB (Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Gain expertise in **hormonal regulation and endocrine gland functions**.
- Develop skills in **diagnosing and treating diabetes mellitus and its complications**.
- Master the management of **thyroid disorders, adrenal insufficiency, and pituitary tumors**.
- Learn **endocrine imaging techniques and dynamic hormonal testing**.
- Understand **reproductive endocrinology, polycystic ovary syndrome (PCOS), and infertility**.
- Develop proficiency in **osteoporosis and calcium metabolism disorders**.
- Conduct **clinical research in endocrinology**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Endocrinology**

| Module | Topics Covered |
|---|---|
| **Endocrine Physiology & Hormonal Regulation** | Pituitary, adrenal, thyroid, pancreatic hormones |
| **Diabetes Mellitus & Metabolic Syndrome** | Type 1 & Type 2 diabetes, insulin therapy, continuous glucose monitoring (CGM) |
| **Thyroid Disorders** | Hypothyroidism, hyperthyroidism, thyroid nodules, thyroid cancer |
| **Adrenal & Pituitary Disorders** | Cushing's syndrome, Addison's disease, acromegaly, prolactinoma |
| **Calcium & Bone Metabolism Disorders** | Osteoporosis, hyperparathyroidism, vitamin D deficiency |
| **Endocrine Hypertension & Electrolyte Disorders** | Primary aldosteronism, pheochromocytoma, diabetes insipidus |
| **Clinical Rotations – Endocrine OPD & Diabetes Clinics** | Case discussions, patient management |

**Semester 2: Advanced Endocrinology & Research**

| Module | Topics Covered |
|---|---|
| **Reproductive Endocrinology & Infertility** | PCOS, hypogonadism, hormonal contraception |
| **Pediatric Endocrinology** | Growth disorders, congenital adrenal hyperplasia, precocious puberty |
| **Obesity & Metabolic Disorders** | Lipid metabolism, bariatric endocrinology, metabolic syndrome |
| **Endocrine Neoplasms & MEN Syndromes** | Multiple endocrine neoplasia, neuroendocrine tumors |

| Module | Topics Covered |
|---|---|
| **Hormonal Testing & Endocrine Imaging** | MRI, CT, ultrasound, functional hormone assays |
| **Endocrine Emergencies** | Thyroid storm, adrenal crisis, hypercalcemic crisis |
| **Clinical Research & Case Studies** | Translational research in endocrinology |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Hormonal Disorders | Expertise in diagnosing and treating endocrine dysfunctions. |
| 2 | Diabetes Management & Technological Integration | Use of CGM, insulin pumps, and AI-based diabetes care. |
| 3 | Thyroid & Adrenal Disorders Proficiency | Implement evidence-based treatment for thyroid and adrenal diseases. |
| 4 | Expertise in Endocrine Imaging & Lab Testing | Conduct and interpret endocrine function tests and imaging. |
| 5 | Research & Innovation in Endocrinology | Conduct clinical studies on metabolic and hormonal disorders. |
| 6 | Management of Osteoporosis & Calcium Metabolism | Develop strategies for bone health and fracture prevention. |
| 7 | Hands-on Training in Endocrine Emergencies | Rapid intervention in endocrine crisis situations. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Endocrine Physiology | Understand the function of endocrine glands and hormonal pathways. |
| 2 | Diagnosis & Treatment of Diabetes | Apply lifestyle, pharmacological, and technological interventions. |
| 3 | Advanced Thyroid & Adrenal Disease Management | Treat hyperthyroidism, hypothyroidism, adrenal insufficiency. |
| 4 | Reproductive & Pediatric Endocrinology | Manage PCOS, infertility, and growth disorders. |
| 5 | Endocrine Oncology & MEN Syndromes | Identify and treat endocrine tumors and genetic syndromes. |
| 6 | Research & Evidence-Based Practice in Endocrinology | Conduct trials and publish findings on metabolic disorders. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Endocrine Imaging & Hormonal Assays Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Williams Textbook of Endocrinology** – ShlomoMelmed
- **Endocrinology: Adult & Pediatric** – J. Larry Jameson
- **Practical Endocrinology & Diabetes in Children** – Malcolm D.C. Donaldson
- **Greenspan's Basic & Clinical Endocrinology** – David G. Gardner
- **Handbook of Clinical Endocrinology** – John A.H. Wass

**Journals & E-Resources:**

- **The Journal of Clinical Endocrinology & Metabolism (JCEM)** – https://academic.oup.com/jcem
- **Endocrine Reviews** – https://academic.oup.com/edrv
- **Diabetes Care (ADA Journal)** – https://diabetesjournals.org/care
- **European Journal of Endocrinology** – https://eje.bioscientifica.com
- **Endocrinology (Endocrine Society Journal)** – https://academic.oup.com/endo

# Fellowship in Clinical Rheumatology

## Course Overview

The **Fellowship in Clinical Rheumatology** is a **one-year** advanced training program that provides in-depth knowledge of **autoimmune and inflammatory joint diseases, connective tissue disorders, vasculitis, and musculoskeletal medicine**. The program includes **clinical training, hands-on experience in musculoskeletal ultrasound, immunological testing, and rheumatologic procedures** such as joint aspiration and intra-articular injections.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, General Medicine) / DNB (Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **diagnosing and managing autoimmune and inflammatory rheumatic diseases**.
- Gain proficiency in **musculoskeletal examination, joint aspiration, and intra-articular injections**.
- Understand **the immunopathogenesis of rheumatoid arthritis, lupus, scleroderma, and vasculitis**.
- Learn to **interpret immunological tests and radiological findings in rheumatic diseases**.
- Master the use of **biologic agents and disease-modifying antirheumatic drugs (DMARDs)**.
- Understand **metabolic bone diseases such as osteoporosis and osteomalacia**.
- Conduct **clinical research in rheumatology and musculoskeletal medicine**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Rheumatology**

| Module | Topics Covered |
|---|---|
| **Musculoskeletal Anatomy & Physiology** | Joint structure, synovial fluid, inflammatory pathways |
| **Autoimmune Diseases & Immunopathology** | Role of cytokines, autoantibodies, genetic predisposition |
| **Rheumatoid Arthritis & Seronegative Spondyloarthropathies** | Ankylosing spondylitis, psoriatic arthritis |
| **Lupus & Connective Tissue Disorders** | Systemic lupus erythematosus (SLE), Sjögren's syndrome, scleroderma |
| **Osteoarthritis & Metabolic Bone Diseases** | Osteoporosis, osteomalacia, vitamin D deficiency |
| **Vasculitis & Inflammatory Myopathies** | Giant cell arteritis, polymyositis, dermatomyositis |
| **Clinical Rotations – Rheumatology OPD & Infusion Therapy Units** | Case discussions, biologic therapy exposure |

**Semester 2: Advanced Rheumatology & Research**

| Module | Topics Covered |
|---|---|
| **Diagnostic Imaging in Rheumatology** | X-ray, MRI, ultrasound, CT scan interpretation |
| **Musculoskeletal Ultrasound & Procedures** | Joint aspiration, synovial fluid analysis, intra-articular injections |
| **Biologic Agents & Targeted Therapies** | TNF inhibitors, IL-6 blockers, JAK inhibitors |
| **Pediatric Rheumatology** | Juvenile idiopathic arthritis, Kawasaki disease |
| **Fibromyalgia & Chronic Pain Syndromes** | Diagnosis, management strategies, rehabilitation |

| Module | Topics Covered |
|---|---|
| **Research & Evidence-Based Rheumatology** | Clinical trials, systematic reviews, case studies |
| **Clinical Research & Case Studies** | Translational research in autoimmune rheumatic diseases |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Rheumatic Disease Diagnosis | Mastery in evaluating autoimmune and inflammatory disorders. |
| 2 | Skills in Musculoskeletal Examination & Ultrasound | Proficiency in clinical assessment and imaging interpretation. |
| 3 | Advanced Rheumatologic Therapeutics | Experience in biologic therapies and immunosuppressive agents. |
| 4 | Management of Connective Tissue &Vasculitic Disorders | Competence in diagnosing and treating complex rheumatic conditions. |
| 5 | Research & Innovation in Rheumatology | Conduct clinical studies in autoimmune diseases. |
| 6 | Hands-on Training in Joint Procedures | Develop expertise in aspiration and intra-articular injections. |
| 7 | Management of Osteoarthritis & Chronic Pain | Implement rehabilitation and pain management strategies. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Autoimmune Pathology | Understand immune-mediated joint and connective tissue diseases. |
| 2 | Diagnosis & Treatment of Rheumatoid Arthritis | Apply DMARDs, biologics, and rehabilitation strategies. |
| 3 | Advanced Imaging in Rheumatology | Interpret X-ray, MRI, and ultrasound findings. |
| 4 | Pediatric & Geriatric Rheumatology | Manage autoimmune conditions across different age groups. |
| 5 | Vasculitis &Spondyloarthropathies | Differentiate between inflammatory joint disorders. |
| 6 | Research & Evidence-Based Practice in Rheumatology | Conduct clinical trials and case-control studies. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.
- **Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Joint Aspiration & Musculoskeletal Ultrasound Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Kelley's Textbook of Rheumatology** – Gary S. Firestein
- **Oxford Textbook of Rheumatology** – Richard A. Watts
- **Rheumatology Secrets** – Sterling G. West
- **The Lupus Book** – Daniel J. Wallace
- **Musculoskeletal Ultrasound in Rheumatology** – Minna J. Kohler

**Journals & E-Resources:**

- **Annals of the Rheumatic Diseases (ARD)** – https://ard.bmj.com
- **Arthritis & Rheumatology (ACR Journal)** – https://onlinelibrary.wiley.com/journal/23265205
- **The Journal of Rheumatology** – https://www.jrheum.org
- **Autoimmunity Reviews** – https://www.journals.elsevier.com/autoimmunity-reviews
- **American College of Rheumatology Guidelines** – https://www.rheumatology.org

# Fellowship in Liver & Biliary Diseases

## Course Overview

The **Fellowship in Liver & Biliary Diseases** is a **one-year** specialized training program designed to provide in-depth knowledge in the **diagnosis, management, and treatment of liver and biliary disorders**. The fellowship covers **hepatology, liver transplantation, viral hepatitis, cirrhosis, portal hypertension, hepatobiliary cancers, and advanced imaging & interventional techniques**. Fellows gain hands-on training in **liver biopsy, endoscopic procedures, and hepatobiliary imaging**.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, General Medicine) / DNB (Medicine) / DM (Gastroenterology) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Develop expertise in **diagnosing and managing liver and biliary disorders**.
- Gain proficiency in **liver function tests, liver biopsy, and hepatobiliary imaging**.
- Understand the **pathophysiology and management of viral hepatitis (HBV, HCV, HDV, HEV)**.
- Learn to manage **cirrhosis, portal hypertension, and complications like hepatic encephalopathy**.
- Master **liver transplantation, indications, donor selection, and post-transplant care**.
- Understand **biliary tract diseases, cholestatic liver disorders, and gallbladder pathologies**.
- Conduct **clinical research in hepatology and liver diseases**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Hepatology & Biliary Diseases**

| Module | Topics Covered |
|---|---|
| **Liver Anatomy & Physiology** | Hepatic circulation, bile secretion, liver regeneration |
| **Liver Function Tests & Diagnostic Modalities** | LFTs, transient elastography, MRCP, liver biopsy |
| **Viral Hepatitis** | Hepatitis A, B, C, D, and E; antiviral therapies |
| **Cirrhosis & Its Complications** | Ascites, hepatic encephalopathy, spontaneous bacterial peritonitis (SBP) |
| **Portal Hypertension &Variceal Bleeding** | Endoscopic band ligation, transjugular intrahepatic portosystemic shunt (TIPS) |
| **Metabolic & Genetic Liver Diseases** | Wilson's disease, hemochromatosis, NAFLD/NASH |
| **Clinical Rotations – Hepatology OPD & Transplant Clinics** | Case-based learning, hepatobiliary imaging |

**Semester 2: Advanced Hepatology & Research**

| Module | Topics Covered |
|---|---|
| **Liver Transplantation & Post-Transplant Care** | Immunosuppression, graft rejection, liver transplant ICU management |
| **Autoimmune &Cholestatic Liver Diseases** | Autoimmune hepatitis, primary biliary cholangitis, primary sclerosing cholangitis |
| **Hepatobiliary Malignancies & Liver Tumors** | Hepatocellular carcinoma, cholangiocarcinoma, liver metastases |
| **Alcoholic Liver Disease & Toxic Hepatitis** | Alcoholic cirrhosis, acute liver failure, drug-induced liver injury (DILI) |
| **Biliary Tract Disorders** | Gallstones, cholecystitis, biliary strictures, cholangitis |

| Module | Topics Covered |
|---|---|
| **Interventional Hepatology** | ERCP, percutaneous transhepatic cholangiography (PTC), liver elastography |
| **Clinical Research & Case Studies** | Evidence-based hepatology research |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Hepatic Disease Diagnosis | Expertise in evaluating and managing liver diseases. |
| 2 | Hands-on Training in Hepatobiliary Imaging | Interpretation of MRI, MRCP, and FibroScan. |
| 3 | Advanced Liver Transplantation Management | Understanding pre & post-transplant care and immunosuppression. |
| 4 | Expertise in Endoscopic & Interventional Hepatology | Proficiency in ERCP, liver biopsy, and TIPS. |
| 5 | Research & Innovation in Hepatology | Conduct clinical studies in liver and biliary diseases. |
| 6 | Management of Cirrhosis & Portal Hypertension | Treating complications like variceal bleeding and hepatic encephalopathy. |
| 7 | Autoimmune & Genetic Liver Disease Management | Expertise in rare liver disorders and metabolic syndromes. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Liver Physiology & Pathophysiology | Understanding liver metabolism and function tests. |
| 2 | Diagnosis & Management of Viral Hepatitis | Application of antiviral therapies and hepatitis screening. |
| 3 | Advanced Techniques in Hepatic Imaging | MRI, MRCP, FibroScan for liver assessment. |
| 4 | Interventional Hepatology Procedures | Training in ERCP, liver biopsy, and portal hypertension management. |
| 5 | Hepatic Oncology & Liver Transplantation | Treating hepatocellular carcinoma and transplantation care. |
| 6 | Research & Evidence-Based Hepatology | Conducting trials and publishing hepatology research. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.
- **Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Liver Biopsy & Endoscopic Interpretation – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Zakim and Boyer's Hepatology** – ArunSanyal
- **Sleisenger and Fordtran's Gastrointestinal and Liver Disease** – Mark Feldman
- **Hepatology: A Textbook of Liver Disease** – J.L. Boyer
- **Liver Transplantation: Update & Clinical Insights** – Juan Carlos Garcia-Pagan
- **Sherlock's Diseases of the Liver and Biliary System** – James S. Dooley

**Journals & E-Resources:**

- **Hepatology (AASLD Journal)** – https://aasldpubs.onlinelibrary.wiley.com/journal/15273350
- **Journal of Hepatology (EASL Journal)** – https://www.journal-of-hepatology.eu
- **Liver International** – https://onlinelibrary.wiley.com/journal/14783231
- **Clinical Gastroenterology & Hepatology** – https://www.cghjournal.org

# Fellowship in Diabetic Neurology (Autonomic Neuropathy)

## Course Overview

The **Fellowship in Diabetic Neurology (Autonomic Neuropathy)** is a **one-year specialized training program** focused on understanding, diagnosing, and managing **diabetic neuropathy, particularly autonomic dysfunction**. The program covers **the pathophysiology of diabetic neuropathy, diagnostic techniques (nerve conduction studies, autonomic function tests), and therapeutic interventions (pharmacological and lifestyle-based approaches)**. Fellows receive **hands-on training in neurophysiology labs, clinical case studies, and research methodologies**.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (General Medicine, Neurology, Endocrinology) / DNB (Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand **the pathophysiology and classification of diabetic neuropathy**.
- Master **diagnostic techniques** including nerve conduction studies (NCS), autonomic function tests, and small-fiber neuropathy testing.
- Learn **therapeutic interventions**, including pharmacologic management, physical therapy, and neuromodulation.
- Identify and manage **complications of diabetic autonomic neuropathy**, including **cardiovascular, gastrointestinal, and urogenital dysfunction**.
- Conduct **clinical research and case studies** on diabetic neuropathy.
- Gain **hands-on experience** with advanced diagnostic modalities such as **quantitative sensory testing (QST) and heart rate variability (HRV) analysis**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Diabetic Neuropathy**

| Module | Topics Covered |
|---|---|
| **Neuroanatomy & Physiology of Peripheral Nerves** | Nerve conduction, autonomic nervous system (ANS) pathways |
| **Pathophysiology of Diabetic Neuropathy** | Hyperglycemia-induced nerve damage, oxidative stress, microvascular complications |
| **Types of Diabetic Neuropathy** | Peripheral, autonomic, proximal, and focal neuropathies |
| **Diagnostic Techniques in Neuropathy** | Nerve conduction studies (NCS), electromyography (EMG), skin biopsy |
| **Autonomic Function Tests** | Heart rate variability (HRV), tilt-table testing, quantitative sudomotor axon reflex test (QSART) |
| **Clinical Rotations – Neurology & Endocrinology OPD** | Case-based learning in diabetic neuropathy clinics |

**Semester 2: Advanced Neuropathy Management & Research**

| Module | Topics Covered |
|---|---|
| **Cardiovascular Autonomic Neuropathy (CAN)** | Postural hypotension, silent myocardial ischemia, HRV analysis |
| **Gastrointestinal & Genitourinary Autonomic Neuropathy** | Gastroparesis, diabetic diarrhea, erectile dysfunction |
| **Pain Management in Diabetic Neuropathy** | Pharmacologic therapies (anticonvulsants, antidepressants, opioids), nerve blocks |
| **Rehabilitation & Lifestyle Interventions** | Physiotherapy, dietary management, yoga & exercise |
| **Neuromodulation& Emerging Therapies** | Transcutaneous electrical nerve stimulation (TENS), spinal cord stimulation |

| Module | Topics Covered |
|---|---|
| **Research & Evidence-Based Neuropathy Care** | Clinical trials, case studies, systematic reviews |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Diagnosing Diabetic Neuropathy | Mastery in autonomic function tests, nerve conduction studies, and clinical examination. |
| 2 | Hands-on Training in Electrophysiology & Imaging | NCS, EMG, HRV analysis, QSART. |
| 3 | Advanced Management of Autonomic Dysfunction | Mastery in pharmacologic and non-pharmacologic treatment strategies. |
| 4 | Research & Clinical Studies in Diabetic Neurology | Ability to conduct clinical trials and case-control studies. |
| 5 | Hands-on Training in Neuromodulation | Exposure to advanced treatment modalities like spinal cord stimulation. |
| 6 | Management of Diabetic Complications | Special focus on cardiovascular, gastrointestinal, and genitourinary neuropathies. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Peripheral Nerve Disorders | Understanding nerve conduction and autonomic regulation. |
| 2 | Diagnosis & Treatment of Diabetic Neuropathy | Expertise in neurodiagnostic tools and therapies. |
| 3 | Advanced Techniques in Autonomic Testing | HRV analysis, tilt-table testing, QSART interpretation. |
| 4 | Pain & Symptom Management in Neuropathy | Comprehensive knowledge of pharmacological and alternative pain relief approaches. |
| 5 | Rehabilitation Strategies | Implementation of exercise, physical therapy, and lifestyle modifications. |
| 6 | Research & Evidence-Based Neuropathy Care | Conducting and publishing research on diabetic neuropathy. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Nerve Conduction Study & Autonomic Function Testing – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Peripheral Neuropathy: When the Numbness, Weakness, and Pain Won't Stop** – Norman Latov
- **Bradley's Neurology in Clinical Practice** – Joseph Jankovic
- **Diabetic Neuropathy: Advances in Pathogenesis and Treatment** – Roy Freeman
- **Clinical Autonomic Disorders** – Phillip A. Low
- **Atlas of Autonomic Neuroscience** – David Robertson

**Journals & E-Resources***:*

- **Diabetes Care (ADA Journal)** – https://diabetesjournals.org/care
- **Journal of Neurology, Neurosurgery & Psychiatry** – https://jnnp.bmj.com
- **Clinical Autonomic Research** – https://www.springer.com/journal/10286
- **Neurology (AAN Journal)** – https://n.neurology.org
- **American Academy of Neurology Guidelines** – https://www.aan.com

# Fellowship in Diabetic Nephrology

## Course Overview

The **Fellowship in Diabetic Nephrology** is a **one-year specialized program** that provides in-depth training in the **diagnosis, management, and treatment of diabetic kidney disease (DKD)**. The course covers **diabetic nephropathy, acute and chronic kidney injury, dialysis management, renal transplantation, and advanced nephrological interventions**. The program integrates **clinical training, laboratory work, and research opportunities** in diabetic nephrology.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Internal Medicine, Nephrology, Endocrinology) / DNB (Medicine, Nephrology) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- Understand **the pathophysiology, progression, and complications of diabetic kidney disease (DKD)**.
- Gain proficiency in **diagnostic techniques** such as kidney function tests, urine microalbumin, eGFR estimation, and renal biopsy interpretation.
- Learn **treatment protocols**, including **glycemic control, antihypertensive therapy, and nephroprotective strategies**.
- Develop expertise in **dialysis management** (hemodialysis, peritoneal dialysis) and **renal transplantation in diabetic patients**.
- Understand **the role of metabolic control, lifestyle interventions, and dietary management** in diabetic nephropathy.
- Gain hands-on experience in **vascular access management, fluid & electrolyte balance, and acute kidney injury (AKI) management**.
- Conduct **clinical research in diabetic nephropathy, dialysis outcomes, and transplant nephrology**.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Diabetic Nephrology**

| Module | Topics Covered |
|---|---|
| **Renal Physiology & Pathophysiology** | Kidney function, glomerular filtration rate (GFR), renal hemodynamics |
| **Diabetic Nephropathy: Epidemiology & Risk Factors** | Genetic predisposition, hyperglycemia, hypertension, dyslipidemia |
| **Diagnostic Tools in Diabetic Kidney Disease (DKD)** | Serum creatinine, eGFR, urine microalbumin, renal imaging |
| **Pathology of Diabetic Nephropathy** | Glomerulosclerosis, tubulointerstitial damage, vascular changes |
| **Hypertension & Cardiovascular Risk in Diabetic Nephropathy** | RAAS inhibitors, calcium channel blockers, sodium-glucose cotransporter-2 (SGLT2) inhibitors |
| **Clinical Rotations – Nephrology OPD & Dialysis Units** | Case-based learning in nephrology clinics |

**Semester 2: Advanced Nephrology & Research**

| Module | Topics Covered |
|---|---|
| **Dialysis in Diabetic Patients** | Hemodialysis, peritoneal dialysis, vascular access |
| **Renal Transplantation in Diabetics** | Selection criteria, immunosuppression, rejection management |
| **Acute Kidney Injury (AKI) & Fluid-Electrolyte Management** | Pre-renal, intrinsic, post-renal AKI, metabolic acidosis |
| **Dietary & Nutritional Management in** | Protein restriction, electrolyte balance, low- |

| Module | Topics Covered |
|---|---|
| **Diabetic Nephropathy** | potassium diets |
| **Nephroprotective Strategies & Pharmacotherapy** | SGLT2 inhibitors, GLP-1 agonists, ACE inhibitors, ARBs |
| **Clinical Research & Case Studies in Diabetic Nephrology** | Evidence-based treatment and clinical trials |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Diagnosis & Management of DKD | Mastery in nephrological assessments, kidney function tests, and biopsy interpretation. |
| 2 | Hands-on Training in Dialysis & Transplant Nephrology | Hemodialysis, peritoneal dialysis, and post-transplant care. |
| 3 | Advanced Therapeutic Strategies | Use of nephroprotective agents and metabolic control strategies. |
| 4 | Research & Clinical Studies in Diabetic Nephrology | Conducting observational studies and trials in DKD. |
| 5 | Management of DKD Complications | Expertise in cardiovascular risk, hypertension, and electrolyte disorders. |
| 6 | Patient Counseling & Lifestyle Interventions | Implementation of dietary modifications and glycemic control strategies. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Renal Function & Pathophysiology | Understanding renal physiology and DKD progression. |
| 2 | Diagnostic Modalities in Diabetic Nephropathy | Mastery in renal function tests and imaging techniques. |
| 3 | Management of End-Stage Renal Disease (ESRD) | Dialysis techniques, transplantation, and CKD progression control. |
| 4 | Hypertension & Cardiovascular Risk in Diabetic Nephropathy | Management of hypertension and cardiovascular complications. |
| 5 | Role of Nutrition in Nephropathy Management | Dietary interventions for renal protection and metabolic control. |
| 6 | Research & Evidence-Based Practice | Conducting nephrology-focused clinical research. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Dialysis & Renal Function Testing – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Brenner & Rector's The Kidney** – Maarten W. Taal
- **Comprehensive Clinical Nephrology** – Richard J. Johnson
- **Diabetic Kidney Disease: Advances in Pathophysiology & Treatment** – A. K. Sharma
- **Clinical Nephrology** – David A. Kershaw
- **Oxford Handbook of Dialysis** – Jeremy Levy

**Journals & E-Resources:**

- **American Journal of Kidney Diseases** – https://www.ajkd.org
- **Clinical Journal of the American Society of Nephrology (CJASN)** – https://cjasn.asnjournals.org
- **Kidney International** – https://www.kidney-international.org
- **Nephrology Dialysis Transplantation (NDT)** – https://academic.oup.com/ndt
- **National Kidney Foundation Guidelines** – https://www.kidney.org

# Fellowship in Diabetic Foot Management

**Course Overview**

The **Fellowship in Diabetic Foot Management** is a **one-year specialized training program** focused on **early diagnosis, prevention, and treatment of diabetic foot complications**. This program covers **pathophysiology, advanced wound care techniques, infection control, vascular interventions, and reconstructive foot surgeries**. It integrates **clinical training, hands-on workshops, and research opportunities** to equip fellows with **expertise in diabetic foot care**.

**Prerequisites**

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (General Medicine, Endocrinology) / MS (General Surgery, Orthopedics) / DNB (Medicine, Surgery) / Podiatrists |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

**Course Objectives**

- **Understand the pathophysiology of diabetic foot ulcers and peripheral neuropathy**.
- **Develop expertise in diagnostic techniques** such as **vascular Doppler studies, ABI (Ankle-Brachial Index), and foot pressure mapping**.
- **Learn advanced wound care management**, including **negative pressure wound therapy (NPWT), offloading techniques, and hyperbaric oxygen therapy (HBOT)**.
- **Master surgical and non-surgical treatment** of diabetic foot infections and ulcers.
- **Understand the role of vascular interventions**, including **angioplasty and bypass surgeries**, in managing diabetic foot complications.
- **Gain expertise in limb salvage techniques, reconstructive foot surgeries, and prosthetic rehabilitation**.
- **Conduct clinical research on diabetic foot complications and management strategies**.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Diabetic Foot Management**

| Module | Topics Covered |
|---|---|
| **Anatomy & Pathophysiology of the Diabetic Foot** | Peripheral neuropathy, microangiopathy, macroangiopathy |
| **Diabetic Foot Risk Assessment & Classification** | Wagner's classification, University of Texas Staging System |
| **Diagnostic Techniques in Diabetic Foot Care** | ABI, toe pressure measurement, transcutaneous oxygen pressure |
| **Infection Control & Antibiotic Stewardship** | Management of diabetic foot infections, biofilm control |
| **Offloading Techniques in Foot Ulcers** | Total contact casting, custom orthotics, footwear modifications |
| **Clinical Rotations – Diabetic Foot Clinics** | Hands-on training in assessment and wound care |

**Semester 2: Advanced Foot Care & Surgical Management**

| Module | Topics Covered |
|---|---|
| **Advanced Wound Healing & Dressing Techniques** | NPWT, bioengineered skin substitutes, growth factor therapy |
| **Surgical Management of Diabetic Foot** | Debridement, amputations, reconstructive surgeries |
| **Vascular Interventions in Diabetic Foot** | Angioplasty, bypass surgery, endovascular interventions |
| **Hyperbaric Oxygen Therapy (HBOT) in Diabetic Foot Care** | Mechanism, indications, and clinical applications |
| **Prosthetics & Rehabilitation in Diabetic Foot Amputees** | Gait training, customized prosthetics, rehabilitation programs |

| Module | Topics Covered |
|---|---|
| **Clinical Research & Case Studies in Diabetic Foot** | Data collection, research methodologies, publication preparation |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Diabetic Foot Ulcer Management | Mastery in assessment, diagnosis, and treatment protocols. |
| 2 | Hands-on Training in Wound Healing Techniques | NPWT, offloading, hyperbaric oxygen therapy, and bioengineered skin. |
| 3 | Advanced Vascular Interventions | Angioplasty, bypass surgery, and vascular reconstruction techniques. |
| 4 | Surgical & Limb Salvage Procedures | Debridement, amputations, and reconstructive foot surgery. |
| 5 | Research & Clinical Trials in Diabetic Foot Care | Conducting and publishing research on foot ulcer management. |
| 6 | Prosthetic & Rehabilitation Strategies | Designing rehabilitation programs for amputees. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Diabetic Foot Anatomy & Pathology | Understanding the impact of diabetes on foot health. |
| 2 | Diagnostic Tools & Imaging Techniques | Doppler ultrasound, ABI, and foot pressure assessment. |
| 3 | Management of Diabetic Foot Infections | Antibiotic therapy, infection control, and |

| Sr. No. | Course Outcome | Description |
|---|---|---|
| | | surgical debridement. |
| 4 | Wound Healing & Tissue Regeneration | Bioengineered skin substitutes, growth factor therapy. |
| 5 | Limb Salvage & Reconstructive Foot Surgery | Techniques for preserving limb functionality. |
| 6 | Rehabilitation & Preventive Strategies | Designing prosthetics and rehabilitation plans. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

**Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Wound Debridement & Surgical Management – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Diabetic Foot: A Clinical Atlas** – SharadPendsey
- **Management of Diabetic Foot Complications** – AristidisVeves
- **Diabetic Foot: A Global Perspective** – David Armstrong
- **Surgical Treatment of the Diabetic Foot** – Thomas Zgonis
- **Comprehensive Wound Management for the Diabetic Foot** – BijanNajafi

**Journals & E-Resources**:

- **International Journal of Lower Extremity Wounds** – https://journals.sagepub.com/home/ilx
- **Journal of Diabetes and Its Complications** – https://www.jdcjournal.com
- **American Diabetes Association: Foot Care Guidelines** – https://www.diabetes.org
- **Wound Repair and Regeneration** – https://onlinelibrary.wiley.com/journal/1524475x
- **Diabetic Foot Journal** – https://www.diabeticfootjournal.com

# Fellowship In Diabetic Retinal Sciences

## Course Overview

The **Fellowship in Diabetic Retinal Sciences** is a **one-year specialized program** designed for medical professionals to develop expertise in the **diagnosis, treatment, and management of diabetic retinopathy (DR) and other diabetes-related eye diseases**. The program integrates **clinical training, surgical skills, imaging techniques, and research opportunities** to enhance patient care and treatment outcomes.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MS (Ophthalmology) / DNB (Ophthalmology) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- **Understand the pathophysiology, progression, and complications of diabetic retinopathy (DR)**.
- **Gain proficiency in advanced diagnostic tools**, including **fundus fluorescein angiography (FFA), optical coherence tomography (OCT), and electroretinography (ERG)**.
- **Develop expertise in medical and surgical management** of DR, including **intravitreal injections, laser photocoagulation, and vitrectomy**.
- **Learn about systemic diabetes control and its impact on ocular health**.
- **Understand retinal vascular complications in diabetes**, including **macular edema, neovascularization, and retinal detachment**.
- **Acquire skills in preventive screening, early detection, and patient counseling**.
- **Engage in research and evidence-based practice in diabetic retinal diseases**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Diabetic Retinal Diseases**

| Module | Topics Covered |
|---|---|
| **Anatomy & Physiology of the Retina** | Retinal vasculature, blood-retina barrier, metabolic processes |
| **Pathophysiology of Diabetic Retinopathy** | Hyperglycemia-induced microvascular damage, ischemia, VEGF-mediated angiogenesis |
| **Classification & Staging of DR** | Non-proliferative DR (NPDR), proliferative DR (PDR), diabetic macular edema (DME) |
| **Diagnostic Imaging in DR** | Fundus photography, OCT, FFA, ultrasonography |
| **Systemic Diabetes Management & Retinal Health** | Glycemic control, hypertension, dyslipidemia |
| **Clinical Rotations – Diabetic Eye Clinics** | Hands-on training in retinal screening and diagnosis |

**Semester 2: Advanced Interventions & Research in Diabetic Retinal Sciences**

| Module | Topics Covered |
|---|---|
| **Medical Management of DR** | Anti-VEGF therapy, intravitreal steroids, systemic drugs |
| **Laser & Surgical Management** | Focal/grid laser photocoagulation, pan-retinal photocoagulation (PRP), vitrectomy |
| **Complications & Management of Advanced DR** | Tractional retinal detachment, neovascular glaucoma |
| **Retinal Vascular Disorders in Diabetes** | Diabetic macular ischemia, retinal vein occlusion |
| **Preventive Screening & Patient Counseling** | Risk factor control, early intervention strategies |
| **Clinical Research & Case Studies** | Data collection, research methodologies, publication |

| Module | Topics Covered |
|---|---|
| **in DR** | preparation |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Diagnosing & Managing DR | Mastery in retinal imaging, staging, and treatment protocols. |
| 2 | Hands-on Training in Advanced Retinal Procedures | Laser photocoagulation, intravitreal injections, and vitrectomy. |
| 3 | Comprehensive Understanding of Systemic Diabetes Control | Link between diabetes management and ocular complications. |
| 4 | Research & Clinical Trials in Diabetic Retinopathy | Conducting and publishing studies on DR treatment outcomes. |
| 5 | Preventive Strategies & Patient Education | Implementation of DR screening and early intervention programs. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Retinal Anatomy & Pathophysiology | Understanding diabetes-related retinal damage. |
| 2 | Diagnostic Imaging & Retinal Assessments | Mastery in OCT, FFA, and fundus examination. |
| 3 | Pharmacologic & Laser Interventions in DR | Anti-VEGF therapy, corticosteroids, and laser techniques. |

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 4 | Surgical Approaches in Advanced DR | Techniques for vitrectomy and managing retinal detachment. |
| 5 | Research & Evidence-Based Practice | Conducting studies on new treatment methods in DR. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

**Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Laser &Intravitreal Injection Procedures – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Retina** – Stephen J. Ryan
- **Diabetic Retinopathy: Evidence-Based Management** – Elia Duh
- **Medical Retina** – Frank G. Holz
- **Practical Retina: A Retinal Physician's Guide** – Peter Kaiser
- **Retinal Vascular Disease** – A. J. Augustin

**Journals & E-Resources:**

- **Investigative Ophthalmology & Visual Science (IOVS)** – https://iovs.arvojournals.org
- **American Academy of Ophthalmology (AAO) Guidelines** – https://www.aao.org
- **Diabetes Care (Retinopathy Section)** – https://diabetesjournals.org/care
- **British Journal of Ophthalmology** – https://bjo.bmj.com
- **International Journal of Retina & Vitreous** – https://jretinavitreous.biomedcentral.com

# Fellowship In Epilepsy

## Course Overview

The **Fellowship in Epilepsy** is a **one-year specialized program** designed to train medical professionals in the **diagnosis, treatment, and management of epilepsy and seizure disorders**. The program integrates **clinical neurology, neurophysiology, pharmacological and surgical interventions, and advanced EEG techniques** to enhance patient care and treatment strategies.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Neurology, Internal Medicine) / DM (Neurology) / DNB (Neurology) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- **Understand the pathophysiology and classification of epilepsy**, including focal and generalized seizures.
- **Develop expertise in neurophysiological diagnostic tools**, including **EEG (electroencephalography), video EEG monitoring, and neuroimaging**.
- **Master pharmacological treatment strategies**, including **antiepileptic drugs (AEDs), their mechanisms, side effects, and drug interactions**.
- **Gain experience in pre-surgical evaluation for drug-resistant epilepsy**, including **intracranial EEG and functional neuroimaging**.
- **Understand the role of epilepsy surgery, neurostimulation, and ketogenic diet therapy** in managing refractory epilepsy.
- **Recognize and manage epilepsy-related comorbidities**, such as **psychiatric disorders, cognitive impairments, and sudden unexpected death in epilepsy (SUDEP)**.
- **Engage in clinical research and contribute to advancements in epilepsy treatment and diagnosis**.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Epilepsy & Diagnostic Tools**

| Module | Topics Covered |
|---|---|
| **Neurophysiology & Pathophysiology of Epilepsy** | Mechanisms of seizure generation, neuronal excitability |
| **Classification of Epilepsy & Seizure Types** | ILAE classification, focal vs. generalized seizures |
| **EEG & Video EEG Monitoring** | Interpretation of EEG patterns, spike-wave discharges |
| **Neuroimaging in Epilepsy** | MRI, PET, SPECT, functional neuroimaging |
| **Pharmacological Management of Epilepsy** | AED mechanisms, side effects, drug resistance |
| **Clinical Rotations – Epilepsy Clinics** | Hands-on training in seizure assessment |

**Semester 2: Advanced Epilepsy Management & Research**

| Module | Topics Covered |
|---|---|
| **Refractory Epilepsy & Drug-Resistant Seizures** | Criteria for drug resistance, alternative therapies |
| **Surgical Management of Epilepsy** | Epilepsy surgery, laser ablation, Vagus Nerve Stimulation (VNS) |
| **Psychosocial Aspects of Epilepsy** | Cognitive impairment, depression, SUDEP risk assessment |
| **Dietary & Lifestyle Modifications in Epilepsy** | Ketogenic diet, lifestyle modifications |
| **Clinical Research & Case Studies in Epilepsy** | Data collection, research methodologies, publication preparation |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Epilepsy Diagnosis & Treatment | Mastery in EEG interpretation, neuroimaging, and pharmacological management. |
| 2 | Hands-on Training in Advanced Epilepsy Management | Surgical and dietary interventions, neuromodulation therapies. |
| 3 | Research & Clinical Trials in Epilepsy | Conducting and publishing research on seizure disorders. |
| 4 | Preventive Strategies & Patient Education | Counseling on lifestyle changes and seizure prevention. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Neurophysiology & Seizures | Understanding neuronal excitability and seizure generation. |
| 2 | Diagnostic Tools in Epilepsy | Mastery in EEG, MRI, and PET scans. |
| 3 | Pharmacologic & Surgical Interventions | AEDs, epilepsy surgery, and VNS therapy. |
| 4 | Psychological & Social Impacts of Epilepsy | Addressing mental health and quality of life in epilepsy patients. |
| 5 | Research & Evidence-Based Practice | Conducting studies on new treatment approaches. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **EEG Interpretation &Neuromodulation Techniques – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Epilepsy: A Comprehensive Textbook** – Jerome Engel Jr.
- **Seizures and Epilepsy: Questions and Answers** – Steven C. Schachter
- **Epilepsy and the Functional Anatomy of the Human Brain** – Wilder Penfield
- **Atlas of Electroencephalography in Epilepsy** – Hans Lüders
- **Epilepsy Surgery: Principles and Controversies** – A. Arzimanoglou

**Journals & E-Resources:**

- **Epilepsia** – https://onlinelibrary.wiley.com/journal/15281167
- **Journal of Clinical Neurophysiology** – https://journals.lww.com/clinicalneurophys
- **Epilepsy Research** – https://www.journals.elsevier.com/epilepsy-research
- **International League Against Epilepsy (ILAE) Guidelines** – https://www.ilae.org
- **American Epilepsy Society** – https://www.aesnet.org

# Fellowship In Andrology & Male Infertility

## Course Overview

The **Fellowship in Andrology & Male Infertility** is a **one-year specialized program** that provides comprehensive training in the **evaluation, diagnosis, and management of male reproductive disorders**. This program integrates **clinical and laboratory training in andrology, assisted reproductive techniques (ART), microsurgical interventions, and hormonal therapies** to enhance reproductive health and fertility outcomes.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Reproductive Medicine, Urology, Endocrinology, Obstetrics & Gynecology) / MS (Urology) / DNB (Urology, Reproductive Medicine) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- **Understand the physiology and endocrinology of male reproductive health**.
- **Develop expertise in semen analysis, sperm function tests, and andrology laboratory techniques**.
- **Master hormonal, medical, and surgical management of male infertility**.
- **Gain proficiency in assisted reproductive techniques (ART), including ICSI, sperm retrieval, and cryopreservation**.
- **Understand the genetic and environmental factors contributing to male infertility**.
- **Develop skills in microsurgical procedures**, such as **varicocelectomy, testicular sperm extraction (TESE), and vasectomy reversal**.
- **Engage in research and evidence-based practice to advance male infertility treatment**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Male Reproductive Health**

| Module | Topics Covered |
|---|---|
| **Male Reproductive Anatomy & Physiology** | Testicular function, spermatogenesis, hormonal control |
| **Semen Analysis & Sperm Function Tests** | WHO guidelines, sperm motility, viability, morphology assessment |
| **Hormonal Regulation &Endocrinopathies** | Testosterone, FSH, LH, prolactin, hypogonadism |
| **Causes & Classification of Male Infertility** | Obstructive vs. non-obstructive azoospermia, genetic factors |
| **Diagnostic Imaging in Andrology** | Scrotal ultrasound, Doppler studies, testicular biopsy |
| **Clinical Rotations – Andrology Clinics** | Hands-on training in semen analysis and patient evaluation |

**Semester 2: Advanced Interventions & Research in Male Infertility**

| Module | Topics Covered |
|---|---|
| **Medical & Hormonal Management of Male Infertility** | Clomiphene, hCG, testosterone replacement therapy |
| **Surgical Interventions in Andrology** | Varicocelectomy, TESE, microsurgical sperm retrieval |
| **Assisted Reproductive Techniques (ART) in Male Infertility** | ICSI, sperm cryopreservation, testicular tissue freezing |
| **Genetic & Epigenetic Factors in Male Infertility** | Y-chromosome microdeletions, Klinefelter syndrome |
| **Psychosocial Aspects of Male Infertility** | Counseling, sexual dysfunction, lifestyle modifications |
| **Clinical Research & Case Studies in** | Data collection, research methodologies, |

| Module | Topics Covered |
|---|---|
| **Andrology** | publication preparation |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Male Infertility Diagnosis & Treatment | Mastery in semen analysis, endocrinology, and ART techniques. |
| 2 | Hands-on Training in Andrology & ART Procedures | ICSI, TESE, sperm cryopreservation, and microsurgical interventions. |
| 3 | Research & Clinical Trials in Andrology | Conducting and publishing research on male infertility treatments. |
| 4 | Preventive Strategies & Patient Education | Counseling on lifestyle changes and reproductive health. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Male Reproductive Endocrinology | Understanding hormonal control of spermatogenesis. |
| 2 | Diagnostic Tools in Andrology | Semen analysis, sperm function tests, and genetic screening. |
| 3 | Pharmacologic & Surgical Interventions in Male Infertility | Hormonal therapies, varicocelectomy, and TESE. |
| 4 | Assisted Reproductive Techniques (ART) | Advanced techniques in sperm retrieval, ICSI, and cryopreservation. |

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 5 | Research & Evidence-Based Practice | Conducting studies on emerging treatments in male infertility. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| Theory Examination **(MCQs, Long & Short Answer)** | 30% |
| Clinical & Practical Exam **(Case-Based Discussion, OSCE)** | 30% |
| Clinical Logbook & Case Reports | 20% |
| Research Presentation & Dissertation | 20% |

**Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)

- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Semen Analysis & ART Techniques – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Infertility in the Male** – Larry Lipshultz
- **Clinical Andrology: EAU Guidelines** – Lars Björndahl
- **Male Reproductive Health** – Richard Sharpe
- **Assisted Reproductive Technology in Andrology** – Steven T. Nakajima
- **Microsurgery in Andrology** – Marc Goldstein

**Journals & E-Resources:**

- **Human Reproduction** – https://academic.oup.com/humrep
- **Fertility and Sterility** – https://www.fertstert.org
- **International Journal of Andrology** – https://onlinelibrary.wiley.com/journal/13652605
- **American Society for Reproductive Medicine (ASRM) Guidelines** – https://www.asrm.org
- **European Association of Urology (EAU) Guidelines on Male Infertility** – https://uroweb.org/guidelines

# Fellowship In Pain Management

## Course Overview

The **Fellowship in Pain Management** is a **one-year specialized program** designed to provide advanced training in the **assessment, diagnosis, and treatment of acute and chronic pain conditions**. This program integrates **multidisciplinary approaches, including pharmacological, interventional, rehabilitative, and psychological techniques**, to enhance patient care and pain relief strategies.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS / MD (Anesthesiology, Neurology, Physical Medicine & Rehabilitation, Internal Medicine, Orthopedics) / DNB (Pain Medicine, Neurology) |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical, Theoretical, Hands-on Training |
| **Assessment** | Theory, Practical Exams, Clinical Logbook, Research Presentation |

## Course Objectives

- **Understand the pathophysiology and mechanisms of acute and chronic pain**.
- **Gain expertise in multimodal pain management**, including **pharmacological, interventional, and psychological approaches**.
- **Master interventional pain procedures**, such as **nerve blocks, radiofrequency ablation, and spinal cord stimulation**.
- **Develop skills in musculoskeletal and neuropathic pain management**, including **low back pain, fibromyalgia, and complex regional pain syndrome (CRPS)**.
- **Understand opioid and non-opioid pharmacotherapy for pain management** and their safe use.
- **Learn about palliative pain care and rehabilitation strategies for cancer and terminally ill patients**.
- **Engage in clinical research and evidence-based practice in pain medicine**.

## Curriculum with Semester-wise Syllabus & Modules

The **one-year** program consists of **two semesters**, covering theoretical knowledge, clinical training, and research.

**Semester 1: Fundamentals of Pain Medicine**

| Module | Topics Covered |
|---|---|
| **Pain Physiology & Neuroanatomy** | Peripheral and central pain pathways, nociceptive mechanisms |
| **Classification of Pain Syndromes** | Acute vs. chronic pain, nociceptive vs. neuropathic pain |
| **Assessment & Diagnosis of Pain** | Pain scales, patient-reported outcomes, diagnostic imaging |
| **Pharmacological Pain Management** | Opioids, NSAIDs, adjuvant drugs, opioid-sparing techniques |
| **Non-Interventional Therapies** | Physical therapy, cognitive behavioral therapy, acupuncture |
| **Clinical Rotations – Pain Clinics** | Hands-on training in patient assessment and treatment planning |

**Semester 2: Advanced Interventions & Research in Pain Management**

| Module | Topics Covered |
|---|---|
| **Interventional Pain Procedures** | Epidural injections, facet joint blocks, nerve ablation |
| **Neuropathic Pain & CRPS Management** | Diabetic neuropathy, trigeminal neuralgia, phantom limb pain |
| **Spinal Cord Stimulation &Neuromodulation** | Indications, procedural techniques, patient selection |
| **Cancer Pain & Palliative Care** | Management of pain in terminal illnesses, opioid rotation |
| **Rehabilitation Strategies in Chronic Pain** | Multidisciplinary rehabilitation, functional restoration |
| **Clinical Research & Case Studies in Pain Medicine** | Data collection, research methodologies, publication preparation |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Expertise in Pain Assessment & Diagnosis | Proficiency in identifying different pain syndromes and causes. |
| 2 | Hands-on Training in Pain Management Techniques | Skill development in pharmacological, interventional, and rehabilitative pain relief strategies. |
| 3 | Research & Clinical Trials in Pain Medicine | Conducting and publishing research on pain interventions. |
| 4 | Multidisciplinary Approach to Pain Care | Collaboration with specialists for a holistic pain management strategy. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Fundamentals of Pain Physiology | Understanding nociceptive pathways and pain mechanisms. |
| 2 | Diagnostic & Therapeutic Approaches to Pain | Mastery in pain assessment and multimodal treatment. |
| 3 | Pharmacologic & Interventional Pain Management | NSAIDs, opioids, nerve blocks, radiofrequency ablation. |
| 4 | Psychological & Rehabilitative Pain Management | Cognitive-behavioral therapy, physical therapy, palliative pain care. |
| 5 | Research & Evidence-Based Practice | Conducting studies on emerging pain treatment methods. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Case Studies | 10 |
| Hands-on Clinical Training | 10 |
| Research & Dissertation | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Clinical & Practical Exam** (Case-Based Discussion, OSCE) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Presentation & Dissertation** | 20% |

**Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Pain Procedure Demonstration (Nerve Blocks, Epidurals) – 40 Marks**

**Research Project**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Bonica's Management of Pain** – Scott Fishman
- **Wall &Melzack's Textbook of Pain** – Stephen McMahon
- **Pain Medicine: A Comprehensive Review** – Rajiv R. Shah
- **Practical Management of Pain** – HonorioBenzon
- **Atlas of Interventional Pain Management** – Steven Waldman

**Journals & E-Resources:**

- **Pain (International Association for the Study of Pain - IASP)** – https://journals.lww.com/pain
- **Journal of Pain Research** – https://www.dovepress.com/journal-of-pain-research-journal
- **Clinical Journal of Pain** – https://journals.lww.com/clinicalpain
- **American Academy of Pain Medicine Guidelines** – https://painmed.org
- **British Pain Society Guidelines** – https://www.britishpainsociety.org

# Fellowship In Palliative Care

## Course Overview

The **Fellowship in Palliative Care** is a **one-year specialized program** designed for healthcare professionals interested in providing **comprehensive care to patients with serious, life-limiting illnesses**. This program offers an in-depth understanding of **palliative medicine**, focusing on the **physical, emotional, spiritual, and social aspects** of patient care. It emphasizes the **multidisciplinary approach**, integrating pain and symptom management, ethical considerations, and psychological support for both patients and their families.

## Prerequisites

| Criteria | Details |
|---|---|
| **Eligibility** | MBBS, MD (General Medicine, Internal Medicine, Anesthesiology, Pediatrics, Oncology, Geriatrics, etc.) / DNB |
| **Duration** | 1 Year (Full-Time) |
| **Mode of Study** | Clinical Training, Theoretical Classes, Research |
| **Assessment** | Written Exams, Practical Exams, Clinical Logbook, Research Dissertation |

## Course Objectives

- **Provide in-depth knowledge** of palliative care, including symptom management for terminally ill patients.
- **Develop expertise in managing pain** and other distressing symptoms like nausea, fatigue, breathlessness, and psychological distress.
- **Understand ethical issues** in end-of-life care, including decision-making and advanced care planning.
- **Enhance communication skills** for delivering difficult news and counseling patients and families.
- **Integrate holistic care** approaches, including psychological, social, and spiritual support for patients and families.
- **Gain hands-on experience** in palliative care settings such as inpatient palliative units, home care, and hospice care.
- **Develop the skills for multidisciplinary teamwork** involving physicians, nurses, social workers, and chaplains.

**Curriculum with Semester-wise Syllabus & Modules**

The **one-year** program consists of **two semesters**, with a balanced approach between theoretical learning, clinical exposure, and research.

**Semester 1: Introduction to Palliative Care**

| Module | Topics Covered |
|---|---|
| **Introduction to Palliative Care** | Definition, history, and principles of palliative care. |
| **Pain and Symptom Management** | Assessment and management of pain, nausea, dyspnea, and other symptoms. |
| **Ethics in Palliative Care** | End-of-life decision-making, autonomy, advanced care planning, and ethical dilemmas. |
| **Psychosocial Aspects of Palliative Care** | Psychological distress, depression, anxiety, family dynamics. |
| **Palliative Care in Special Populations** | Pediatric palliative care, geriatric care, cancer patients. |
| **Clinical Rotations – Palliative Care Units** | Hands-on exposure in hospice and palliative care settings. |

**Semester 2: Advanced Palliative Care & Research**

| Module | Topics Covered |
|---|---|
| **Advanced Pain Management** | Opioid use, adjuvants, nerve blocks, and interventional therapies. |
| **Communication in Palliative Care** | Breaking bad news, family meetings, shared decision-making. |
| **Spiritual Care & Cultural Sensitivity** | Addressing spiritual needs, cultural differences in care. |
| **End-of-Life Care & Hospice** | End-of-life care approaches, hospice care models, bereavement support. |
| **Multidisciplinary Team Approach** | Collaborative care with physicians, nurses, social |

| Module | Topics Covered |
|---|---|
| | workers, and chaplains. |
| **Clinical Research & Evidence-Based Practice** | Research in palliative care, publication of findings, and ongoing trials. |

**Program Outcomes**

| Sr. No. | Program Outcome | Description |
|---|---|---|
| 1 | Mastery in Symptom Management | Expertise in pain relief, breathlessness management, and symptom control. |
| 2 | Ethical Decision-Making in End-of-Life Care | Proficiency in managing ethical challenges in palliative care. |
| 3 | Holistic Patient Care | Integration of physical, emotional, spiritual, and social care. |
| 4 | Multidisciplinary Collaboration | Skills to work effectively in a team for comprehensive care. |

**Course Outcomes**

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 1 | Pain & Symptom Control | Mastery in using pharmacological and non-pharmacological treatments. |
| 2 | Communication Skills | Proficiency in breaking bad news, advanced care planning, and family support. |
| 3 | Ethical and Legal Aspects | Navigating ethical dilemmas, patient autonomy, and end-of-life decisions. |

| Sr. No. | Course Outcome | Description |
|---|---|---|
| 4 | Research in Palliative Care | Conducting research on symptom management and improving patient quality of life. |

**Credits & Assessment Methods**

**Total Credits: 40**

| Component | Credits |
|---|---|
| Theory & Lectures | 10 |
| Clinical Rotations & Hands-on Training | 10 |
| Research & Dissertation | 10 |
| Clinical Logbook & Case Studies | 10 |

**Assessment Pattern**

| Assessment Type | Weightage |
|---|---|
| **Theory Examination** (MCQs, Long & Short Answer) | 30% |
| **Practical Examination** (Clinical Skills, Case Discussions) | 30% |
| **Clinical Logbook & Case Reports** | 20% |
| **Research Dissertation & Presentation** | 20% |

- **Passing Criteria**: Minimum **50%** in each component to qualify.

**Exam Pattern**

**Theory Examination**

- **Section A** (MCQs – 30 Marks)
- **Section B** (Short Answer Questions – 30 Marks)
- **Section C** (Long Answer Questions – 40 Marks)

**Practical Examination**

- **Case Presentation & Viva (30 Marks)**
- **Clinical Skills & OSCE (Objective Structured Clinical Examination) – 30 Marks**
- **Patient Interaction & Counseling – 40 Marks**

**Research Dissertation**

- Dissertation Submission & Defense (20 Marks)

**Final Weightage & Passing Criteria**

| Exam Component | Total Marks | Minimum Passing Marks |
|---|---|---|
| **Theory (Paper 1 & 2)** | 200 | 50% (100/200) |
| **Practical Exam** | 200 | 50% (100/200) |
| **Viva Voce** | 100 | 50% (50/100) |
| **Dissertation** | 100 | 50% (50/100) |
| **Total (Overall)** | **600** | **50% Aggregate Required** |

**Additional Notes**

- **To pass the fellowship**, a minimum of **50% marks in each section** (Theory, Practical, Viva, and Dissertation) is required.
- **Distinction**: Candidates scoring **75% and above** will be awarded **"Distinction."**
- **Failure in Practical or Viva**: If a candidate fails in the practical or viva, they must **reappear for the failed component** in the next examination cycle.

**Recommended Books & E-Resources**

**Textbooks:**

- **Oxford Textbook of Palliative Medicine** – David Doyle, Geoffrey Hanks
- **Palliative Care: The Essentials** – Philip Larkin, Anne Macmillan
- **Clinical Pain Management: A Practical Guide** – Peter D. MacDonald
- **Palliative Care: A Patient-Centered Approach** – Deborah L. K. Zewdie, Sara N. Remedios
- **Textbook of Palliative Care** – Russell K. Portenoy, Shari L. Kessel

**Journals & E-Resources:**

- **Journal of Palliative Medicine** – https://journals.lww.com/palliative
- **Palliative Care & Hospice Journal** – https://www.hospicejournal.com
- **International Journal of Palliative Nursing** – https://www.magonlinelibrary.com
- **Palliative Care Research** – https://www.journals.elsevier.com/palliative-care-research