



### M.Sc. in Clinical Endocrinology 2 Years (4 Semesters)

**Overview:** The M.Sc. in Clinical Endocrinology is a postgraduate program designed to provide students with a thorough understanding of the endocrine system, its diseases, and the clinical management of endocrine disorders. Endocrinology is the branch of medicine and biology that focuses on hormones, glands, and metabolic processes. This program covers the fundamental aspects of endocrinology, including hormone synthesis and regulation, disease pathogenesis, diagnostic techniques, and treatment options for various endocrine disorders like diabetes, thyroid diseases, adrenal disorders, and reproductive endocrine issues.

Students will gain insights into both the basic science behind hormone function and the clinical approaches used to diagnose and treat endocrine-related conditions. The program often includes a blend of theoretical coursework, practical training, and research projects, allowing students to build expertise in clinical endocrinology and prepare for careers in both clinical and research settings.

**Affiliated Institution:** School of Medical Sciences and Technology, Malla Reddy Vishwavidyapeeth (Deemed to be University)\*\* The minimum eligibility for M.Sc. in Clinical Endocrinology is a pass in B.Sc. with at least 50% marks in qualifying exam.

#### Key Highlights:

- **Comprehensive Understanding of Endocrine Disorders:** Students will learn about various endocrine diseases, their molecular, biochemical, and clinical underpinnings.
- **Clinical Endocrinology:** The program includes in-depth training in diagnosing and treating clinical endocrine conditions such as diabetes mellitus, thyroid diseases, obesity, metabolic syndrome, and reproductive disorders.
- **Hormonal and Metabolic Regulation:** Focus on the regulation of hormones and their role in the human body's homeostasis, metabolism, and growth.
- **Advanced Diagnostic Techniques:** Exposure to diagnostic tools and techniques in endocrinology, including hormonal assays, imaging techniques, and genetic testing for endocrine conditions.
- **Emerging Therapies and Clinical Trials:** Learn about the latest advancements in the treatment of endocrine disorders, including new drug therapies, gene therapy, and personalized medicine.
- **Hands-on Clinical Training:** Practical experience in clinical settings, offering exposure to real-world cases in endocrinology clinics, hospitals, or research centers.
- **Interdisciplinary Approach:** The course integrates knowledge from various disciplines, including molecular biology, biochemistry, physiology, pharmacology, and clinical medicine.

#### Course Curriculum:

The curriculum of an M.Sc. in Clinical Endocrinology typically spans two years, with the first year focused on building a strong foundation in endocrinology, and the second year emphasizing advanced clinical applications and research. Below is a general outline of the program:



## Year 1:

### Core Modules:

- **Endocrinology Basics:** Introduction to the endocrine system, including glands (thyroid, pituitary, adrenal, gonads, pancreas), hormones, and their physiological effects on the body.
- **Hormonal Regulation:** Study of hormone production, secretion, regulation, and feedback mechanisms in the human body.
- **Biochemistry of Endocrinology:** Understanding the biochemical pathways involved in hormone synthesis, metabolism, and signaling.
- **Pathophysiology of Endocrine Diseases:** An overview of the molecular, cellular, and systemic changes associated with common endocrine disorders such as diabetes, thyroid disorders, and metabolic syndrome.
- **Metabolic Disorders:** Detailed study of metabolic diseases, focusing on diabetes mellitus, obesity, and metabolic syndrome, and their endocrine causes and consequences.
- **Reproductive Endocrinology:** Examination of the hormonal regulation of reproductive processes, including fertility, pregnancy, and disorders like polycystic ovary syndrome (PCOS).
- **Thyroid Disorders:** In-depth exploration of thyroid pathologies like hyperthyroidism, hypothyroidism, and thyroid cancer.
- **Pituitary and Adrenal Disorders:** Study of diseases affecting the pituitary and adrenal glands, such as Cushing's syndrome, Addison's disease, and pituitary tumors.
- **Pharmacology in Endocrinology:** Overview of drugs used in treating endocrine disorders, including insulin, thyroid hormones, corticosteroids, and newer biologics.

### Practical Training:

- Laboratory-based training in biochemical assays for hormone measurement.
- Hands-on experience with diagnostic imaging techniques for endocrine diseases.
- Practical sessions on interpreting hormone test results, including thyroid function tests and glucose tolerance tests.

## Year 2:

### Advanced Modules:

- **Advanced Endocrine Disorders:** Focus on more complex conditions like rare genetic endocrine disorders, cancer endocrinology, and the role of hormones in aging.
- **Endocrine Oncology:** Study of the role of hormones in cancer development, including breast cancer, prostate cancer, and endocrine tumors.
- **Diabetes and Metabolic Syndrome:** Advanced study of diabetes pathophysiology, complications, and the management of Type 1 and Type 2 diabetes, including newer therapeutic approaches and technologies.
- **Endocrinology in Pregnancy:** Study of pregnancy-related endocrine changes, including gestational diabetes, thyroid dysfunction, and adrenal disorders.



- **Genetic and Molecular Endocrinology:** Understanding genetic mutations and molecular pathways involved in endocrine diseases, including genetic testing and counseling.
- **Emerging Therapies in Endocrinology:** Focus on cutting-edge treatments such as targeted therapies, gene therapy, and hormone replacement therapies.
- **Ethics and Legal Issues in Endocrinology:** Discussion of ethical issues related to endocrinology, including genetic testing, hormone therapy, and patient consent.

### Clinical Training:

- Clinical placements in endocrinology departments of hospitals, allowing students to interact with patients, participate in diagnosis and treatment planning, and attend case discussions.
- Exposure to various endocrinology clinics, focusing on diseases such as diabetes, thyroid disorders, and reproductive health.
- Opportunities to observe and assist in surgeries or interventions related to endocrine conditions, such as thyroidectomy or adrenal gland surgeries.

### Research Project/Dissertation:

- Students are required to complete a research project or dissertation on a topic within clinical endocrinology, often focusing on a specific disease, treatment modality, or clinical trial.
- The research could involve laboratory experiments, patient data analysis, or clinical trials assessing new treatments in endocrine diseases.

### Career and Academic Opportunities:

#### Career Opportunities:

Graduates of the M.Sc. in Clinical Endocrinology can pursue a variety of careers in healthcare, research, and industry. Potential career paths include:

- **Clinical Endocrinologist:** Working in hospitals or clinics to diagnose and treat patients with endocrine disorders, including diabetes, thyroid diseases, and metabolic conditions.
- **Endocrine Research Scientist:** Conducting research to better understand endocrine diseases, develop new treatments, and improve patient care in the field of endocrinology.
- **Diabetes Specialist Nurse:** Specializing in the management of diabetes patients, providing education, support, and care.
- **Pharmaceutical/Biotech Industry Professional:** Working in pharmaceutical companies to develop new drugs, medical devices, or diagnostic tools for endocrine disorders.
- **Genetic Counselor in Endocrinology:** Providing genetic counseling to patients with inherited endocrine disorders or those seeking genetic testing.
- **Clinical Trial Manager:** Overseeing clinical trials focused on endocrine-related therapies, ensuring regulatory compliance and patient safety.





- **Medical Educator:** Teaching future healthcare professionals about endocrinology and metabolic diseases at universities, medical schools, or in clinical settings.

### Academic Opportunities:

Graduates can pursue further academic qualifications, including:

- **Ph.D. in Endocrinology or Related Fields:** For those wishing to delve deeper into research, focusing on specific endocrine disorders, therapeutic interventions, or genetic studies.
- **Postdoctoral Research:** Engaging in advanced research in academic or clinical settings, often focusing on novel therapies or the molecular mechanisms of endocrine diseases.
- **Medical Degrees (MD):** Some students may pursue a medical degree to specialize further in endocrinology or become practicing physicians in the field.

### Research Prospects:

- **Diabetes and Metabolic Syndrome Research:** Investigating new therapeutic strategies, understanding disease mechanisms, and improving management protocols for diabetes and obesity.
- **Cancer Endocrinology:** Researching how hormones influence cancer development and exploring potential treatments targeting the endocrine system.
- **Reproductive Endocrinology:** Studying hormonal imbalances that affect fertility, pregnancy, and menstrual cycles, and exploring new reproductive technologies.
- **Gene Therapy in Endocrine Diseases:** Exploring gene-based approaches to treat hereditary endocrine disorders, such as congenital adrenal hyperplasia or Turner syndrome.
- **Pharmacogenomics in Endocrinology:** Research into personalized medicine based on genetic information, particularly in the treatment of endocrine disorders like diabetes and thyroid disease.

### Professional Opportunities:

- **Certified Endocrinology Specialist:** After completing the M.Sc., students may become certified specialists in endocrinology through professional boards in their respective countries (e.g., the American Board of Internal Medicine in the USA).
- **Clinical Research Associate (CRA):** Managing clinical trials related to endocrine disease treatments and ensuring they meet regulatory and ethical standards.
- **Regulatory Affairs Specialist:** Overseeing the approval and regulation of endocrine drugs and treatments, ensuring compliance with healthcare standards.
- **Healthcare Consultant:** Providing expertise to hospitals, pharmaceutical companies, or healthcare organizations on best practices for managing endocrine disorders.

### Higher Education and Research Prospects:



- **Ph.D. in Endocrinology:** Graduates can pursue advanced research opportunities in endocrinology, focusing on specialized topics such as molecular endocrinology or new therapies for endocrine disorders.
- **Postdoctoral Research Fellowships:** Graduates can engage in postdoctoral research in endocrinology labs, contributing to the development of new diagnostic tools, treatments, or interventions for endocrine diseases.

### Conclusion:

The **M.Sc. in Clinical Endocrinology** is an excellent program for those interested in understanding and treating endocrine disorders. It provides students with a strong foundation in both the basic science and clinical aspects of endocrinology, preparing them for a variety of career paths in healthcare, research, and industry.

With the growing prevalence of metabolic and endocrine-related diseases, such as diabetes and thyroid disorders, the demand for skilled endocrinologists and researchers is high. Graduates of this program will be well-equipped to meet the challenges of diagnosing, treating, and researching endocrine diseases, making it a rewarding and impactful career choice.

### Labs

#### 1. Hormone Analysis & Endocrine Function Lab

- **Immunoassays for Hormone Detection:**
  - ✓ Enzyme-Linked Immunosorbent Assay (ELISA)
  - ✓ Radioimmunoassay (RIA) for thyroid, adrenal, and reproductive hormones
  - ✓ Chemiluminescent immunoassays (CLIA)
- **Mass Spectrometry for Hormone Quantification:**
  - ✓ Liquid Chromatography-Mass Spectrometry (LC-MS/MS)
  - ✓ Gas Chromatography-Mass Spectrometry (GC-MS)
- **Salivary & Urinary Hormone Testing**

#### 2. Molecular Endocrinology & Genetics Lab

- **Gene Expression Analysis:**
  - ✓ RT-PCR, qPCR for hormone receptor gene expression (e.g., thyroid hormone receptors, insulin receptors)
  - ✓ Western blot for protein-level hormone receptor studies
- **Genetic Testing for Endocrine Disorders:**
  - ✓ Whole Exome Sequencing (WES) for monogenic endocrine diseases
  - ✓ SNP genotyping for diabetes & thyroid disorders
- **Epigenetics & Endocrine Disorders:**
  - ✓ DNA methylation studies in diabetes & metabolic syndrome
  - ✓ Histone modification analysis in endocrine cancer

#### 3. Metabolic & Diabetes Research Lab

- **Glucose & Insulin Studies:**



- ✓ Glucose tolerance test (GTT) & insulin sensitivity assays
- ✓ C-peptide analysis for beta-cell function assessment
- ✓ Continuous glucose monitoring (CGM) system studies
- **Lipidomics & Metabolic Profiling:**
  - ✓ Cholesterol, triglyceride, and lipoprotein profiling
  - ✓ LC-MS for metabolic biomarkers in obesity & diabetes
- **Mitochondrial Function & Metabolism Studies**

#### 4. Endocrine Pathology & Tumor Biomarker Lab

- **Histopathology & Immunohistochemistry (IHC):**
  - ✓ Tumor markers for thyroid, adrenal, and pituitary tumors
  - ✓ Ki-67 staining for endocrine tumor proliferation studies
- **Circulating Biomarkers for Endocrine Cancers:**
  - ✓ Thyroglobulin (TG) & calcitonin for thyroid cancer
  - ✓ Chromogranin A for neuroendocrine tumors

#### 5. Reproductive Endocrinology & Fertility Lab

- **Semen Analysis & Andrology Studies:**
  - ✓ Sperm motility, viability, and DNA fragmentation analysis
- **Ovarian Function & Female Hormone Studies:**
  - ✓ Anti-Müllerian Hormone (AMH) assay for ovarian reserve
  - ✓ In vitro folliculogenesis & hormonal profiling
- **Polycystic Ovary Syndrome (PCOS) Research:**
  - ✓ Insulin resistance studies
  - ✓ Hyperandrogenism biomarker analysis

#### 6. Neuroendocrinology Lab

- **Hypothalamic-Pituitary Axis Studies:**
  - ✓ Cortisol, ACTH, and growth hormone secretion analysis
  - ✓ Dexamethasone suppression & ACTH stimulation tests
- **Circadian Rhythm & Endocrine Control Studies:**
  - ✓ Melatonin assay for sleep-wake cycle disorders
  - ✓ Chronobiology of hormone secretion (e.g., GH, cortisol)

#### 7. Endocrine Toxicology & Environmental Hormone Disruption Lab

- **Xenoestrogen & Endocrine Disruptor Studies:**
  - ✓ BPA, phthalates, and heavy metal effects on hormone signalling
- **Cell-based Assays for Endocrine Toxicity:**
  - ✓ In vitro bioassays for endocrine disruptor screening

#### 8. Translational & Clinical Endocrinology Lab

- **Personalized Medicine & Endocrine Disease Treatment:**
  - ✓ Pharmacogenomics of hormone replacement therapies
  - ✓ AI-based prediction models for endocrine disorders
- **Clinical Trials in Endocrinology:**
  - ✓ Novel drugs for diabetes, thyroid disorders, and osteoporosis



## PROGRAM OUTCOMES (POs)

PO	Program Outcomes
PO-1	Understand endocrine physiology and hormonal disorders.
PO-2	Diagnose and manage endocrine-related diseases.
PO-3	Apply laboratory techniques for hormone analysis.
PO-4	Conduct research on endocrine dysfunctions and therapies.
PO-5	Implement public health initiatives for endocrine health.
PO-6	Collaborate with medical professionals for holistic patient care.

### COURSE STRUCTURE – M.Sc. Clinical Endocrinology

#### SEMESTER – I

Sl. No.	Broad Category	Course Code	Name of the Subject/Practical	Contact hours/week			Credits
				L	T	P	
1.	Major (Core)	MSCE 101	Principles of Endocrinology, Human Physiology and Hormone Function	2	1	0	3
2.		MSCE102	Endocrine Disorders & their Clinical Management	2	1	0	3
3.		MSCE103	Thyroid and Adrenal Gland Disorders	2	0	2	3
4.		MSCE104	Pancreatic Endocrinology and Metabolic Disorders	2	1	0	3
5.	Minor Select any two minor courses, each worth 3 credits, for a maximum of 6 credits per semester	MSCE105	1. Lifestyle Interventions and Precision Medicine in Endocrinology	2	0	2	6
			2. Reproductive Endocrinology and Infertility 3. Obesity, Diabetes, and Metabolic Syndrome 4. Autoimmune and Genetic Endocrine Disorders	2	0	2	





			5. Patient Counseling for Hormonal Disorders 6. Research Methodology & Biostatistics				
6.	Skill Enhancement Courses	MSCE106	1. Hormonal Assays and Laboratory Diagnostics in Endocrinology	0	0	2	2
			2. Endocrine Imaging Techniques (Ultrasound, MRI, PET-CT)	0	0	2	
<b>Total</b>				12	3	10	<b>20</b>
<b>Total Contact Hours</b>				<b>25</b>			

**Course Outcome for M.Sc. Clinical Endocrinology MAJOR**

Course Name	Course Outcomes
<b>Principles of Endocrinology, Human Physiology, and Hormone Function</b>	- Understand the structure, function, and regulation of endocrine glands.- Explain hormone biosynthesis, secretion, and mechanisms of action.- Analyze hormone-receptor interactions and signal transduction pathways.- Evaluate the role of endocrine hormones in growth, metabolism, reproduction, and homeostasis.- Apply knowledge of endocrinology to clinical and research settings.
<b>Endocrine Disorders &amp; Their Clinical Management</b>	- Understand the pathophysiology of major endocrine disorders.- Explain diagnostic approaches, including hormonal assays and imaging techniques.- Analyze treatment strategies such as hormone replacement therapy and pharmacological interventions.- Evaluate the impact of endocrine disorders on overall health and quality of life.- Apply clinical guidelines in managing conditions like diabetes, hypothyroidism, and adrenal insufficiency.
<b>Thyroid and Adrenal Gland Disorders</b>	- Understand the physiology and hormonal regulation of the thyroid and adrenal glands.- Explain the pathogenesis of thyroid disorders (hypothyroidism, hyperthyroidism, goiter, thyroid cancer).- Analyze adrenal gland disorders such as Addison's disease, Cushing's syndrome, and pheochromocytoma.- Evaluate diagnostic techniques and treatment options for thyroid and adrenal dysfunctions.- Apply clinical and laboratory methods for early detection and management of thyroid and adrenal diseases.
<b>Pancreatic Endocrinology and Metabolic Disorders</b>	- Understand the endocrine functions of the pancreas and its role in glucose homeostasis.- Explain the pathophysiology of metabolic disorders, including diabetes mellitus and insulin resistance.- Analyze the role of pancreatic hormones (insulin, glucagon, somatostatin) in metabolic regulation.- Evaluate therapeutic approaches for diabetes and metabolic syndrome, including pharmacological and lifestyle interventions.- Apply





Course Name	Course Outcomes
	knowledge of pancreatic endocrinology in disease prevention, diagnosis, and treatment.

**Course Outcome for M.Sc. Clinical Endocrinology MINOR**

Course Name	Course Outcomes
<b>Lifestyle Interventions and Precision Medicine in Endocrinology</b>	- Understand the role of lifestyle modifications in preventing and managing endocrine disorders.- Explain the impact of diet, exercise, and stress management on hormonal balance.- Analyze the principles of precision medicine in endocrine disease treatment.- Evaluate genetic, metabolic, and environmental factors influencing endocrine health.- Apply personalized intervention strategies for conditions like obesity, diabetes, and thyroid disorders.
<b>Reproductive Endocrinology and Infertility</b>	- Understand the hormonal regulation of male and female reproductive systems.- Explain the causes and diagnostic approaches for infertility.- Analyze endocrine disorders affecting reproduction, including PCOS, hypogonadism, and menopause.- Evaluate assisted reproductive technologies (ART) and hormone therapies.- Apply evidence-based practices in reproductive endocrinology and fertility management.
<b>Obesity, Diabetes, and Metabolic Syndrome</b>	- Understand the pathophysiology of obesity, diabetes mellitus, and metabolic syndrome.- Explain the role of insulin resistance, inflammation, and hormonal imbalances in metabolic disorders.- Analyze diagnostic criteria, biomarkers, and risk factors for metabolic diseases.- Evaluate treatment approaches, including lifestyle changes, pharmacotherapy, and bariatric surgery.- Apply clinical guidelines in managing obesity, diabetes, and metabolic syndrome.
<b>Autoimmune and Genetic Endocrine Disorders</b>	- Understand the immunological and genetic basis of endocrine diseases.- Explain conditions such as Type 1 diabetes, Hashimoto's thyroiditis, Addison's disease, and multiple endocrine neoplasia (MEN).- Analyze diagnostic tools, including genetic testing and autoimmune markers.- Evaluate novel treatment strategies, including immunomodulatory therapies and gene-based approaches.- Apply knowledge of autoimmune and genetic disorders in patient management and research.
<b>Patient Counseling for Hormonal Disorders</b>	- Understand the psychological and social impact of endocrine disorders on patients.- Explain effective communication strategies for counseling patients with hormonal imbalances.- Analyze the role of patient education in improving treatment adherence and lifestyle modifications.- Evaluate ethical and cultural considerations in endocrine healthcare counseling.- Apply counseling techniques for chronic conditions like diabetes, thyroid disorders, and reproductive endocrine issues.



Course Name	Course Outcomes
<b>Research Methodology &amp; Biostatistics</b>	- Understand the principles of scientific research design and hypothesis testing.- Explain data collection methods, sampling techniques, and statistical study designs.- Analyze statistical methods used in endocrine and metabolic research.- Evaluate data interpretation, statistical significance, and error analysis.- Apply biostatistical software (SPSS, R, Python) for data analysis and visualization.

## M.Sc. in Clinical Endocrinology – Course Structure & Syllabus

**Course Duration: 2 Years (4 Semesters)**

**Total Credits: 80–100**

**Total Teaching & Training Hours: ~3,600**

### Total Teaching Hours Distribution

1. **Theory Classes:** ~1,200–1,500 hours
2. **Practical & Laboratory Training:** ~800–1,000 hours
3. **Clinical Internship & Hands-on Training:** ~800–1,000 hours
4. **Research Project & Dissertation:** ~300–500 hours

### Assessment Methods

Assessment Component	Weightage (%)	Details
<b>Continuous Internal Assessment (CIA)</b>	<b>40%</b>	Includes internal exams, assignments, presentations, case studies, and practical performance
<b>End-Semester Examination (ESE)</b>	<b>60%</b>	Divided into theory (40%) and practical (20%)
<b>Mid-Semester Exams</b>	<b>20%</b> (Part of CIA)	Two internal tests per semester
<b>Assignments &amp; Case Studies</b>	<b>5%</b> (Part of CIA)	Research-based assignments, literature reviews, clinical case reports
<b>Seminars &amp; Presentations</b>	<b>5%</b> (Part of CIA)	Oral/poster presentations on diabetes management



Assessment Component	Weightage (%)	Details
<b>Practical Performance &amp; Clinical Evaluation</b>	<b>5%</b> (Part of CIA)	Skill-based assessments in labs/hospitals
<b>Attendance &amp; Participation</b>	<b>5%</b> (Part of CIA)	Regularity in theory & practical sessions
<b>Theory Examination (Final)</b>	<b>40%</b> (Part of ESE)	Structured written paper covering subject knowledge
<b>Practical Examination (Final)</b>	<b>20%</b> (Part of ESE)	Includes viva, skill demonstration, case handling
<b>Dissertation/Research Project</b>	<b>Mandatory</b>	Evaluated in the final year by internal & external examiners
<b>Clinical Internship/Training</b>	<b>Pass/Fail</b>	Logbook-based evaluation with hospital mentor review

## Marking System & Grading

Marks (%)	Grade	Grade Point (GPA/CGPA Equivalent)	Classification
<b>90 - 100</b>	O (Outstanding)	10	First Class with Distinction
<b>80 - 89</b>	A+ (Excellent)	9	First Class with Distinction
<b>70 - 79</b>	A (Very Good)	8	First Class
<b>60 - 69</b>	B+ (Good)	7	First Class
<b>50 - 59</b>	B (Satisfactory)	6	Second Class
<b>&lt;50 (Fail)</b>	F (Fail)	0	Fail (Re-exam Required)

### Pass Criteria:

- **Minimum 50% marks in each subject** (Theory & Practical separately).
- **Aggregate of 55% required for progression** to the next semester.
- **No more than two backlogs** allowed for promotion to the final year.

## Exam Pattern for Theory & Practical

### A. Theory Examination Pattern

**Total Marks: 100 (Converted to 40% for End-Semester Assessment)**

**Duration: 3 Hours**



Section	Question Type	No. of Questions	Marks per Question	Total Marks
Section A	Short Answer Type (SAQ)	10 (Attempt all)	2	20
Section B	Long Answer Type (LAQ)	5 (Attempt any 4)	10	40
Section C	Case-Based/Clinical Scenario	3 (Attempt any 2)	15	30
Section D	MCQs/Objective Type	10 (Compulsory)	1	10
<b>Total</b>				<b>100</b>

**Weightage:**

- Endocrine Physiology & Hormonal Regulation – 40%
- Clinical Disorders of the Endocrine System – 30%
- Research & Case Studies in Endocrinology – 20%
- Public Health & Preventive Endocrinology – 10%

**Passing Criteria:** Minimum **50% (50/100 marks)**

**B. Practical Examination Pattern**

**Total Marks:** 100 (Converted to 20% for End-Semester Assessment)

**Duration:** 4–6 Hours

Component	Marks Distribution
Clinical Case Presentation & Endocrine Disorder Assessment	30
OSCE (Objective Structured Clinical Examination) – Skill Demonstration	25
Hormonal Assays & Endocrine Function Tests	20
Lab-Based Examination (Blood Glucose, Thyroid Function Tests, Cortisol Assays)	15
Record Work (Logbook & Assignments)	10
<b>Total</b>	<b>100</b>

**OSCE (Skill-based Assessment) includes stations on:**

- Hormonal Assay Interpretation (TSH, HbA1c, Cortisol, Insulin)
- Dynamic Endocrine Function Tests (Dexamethasone Suppression Test, Glucose Tolerance Test)





- Patient Counseling for Endocrine Disorders (Diabetes, Thyroid Disorders, PCOS)
- Interpretation of Imaging & Lab Reports for Endocrine Pathologies

**Passing Criteria:** Minimum 50% (50/100 marks) in practicals.

## Recommended Books & E-Resources

### Textbooks

- "**Williams Textbook of Endocrinology**" – Shlomo Melmed
- "**Greenspan's Basic & Clinical Endocrinology**" – David G. Gardner
- "**Endocrinology: Adult & Pediatric**" – J. Larry Jameson
- "**Oxford Handbook of Endocrinology & Diabetes**" – Helen Turner

### E-Resources & Journals

- **The Journal of Clinical Endocrinology & Metabolism**
- **European Society of Endocrinology (ESE)** – [www.eese-hormones.org](http://www.eese-hormones.org)
- **American Association of Clinical Endocrinology (AACE)** – [www.aace.com](http://www.aace.com)
- **Endocrine Society** – [www.endocrine.org](http://www.endocrine.org)

## Career Opportunities after M.Sc. in Clinical Endocrinology

- **Clinical Endocrinologist** (with further specialization)
- **Diabetes & Metabolic Disease Specialist**
- **Endocrine Lab Specialist** in Hospitals & Diagnostic Centers
- **Researcher** in Hormonal Disorders & Therapeutics
- **Regulatory & Pharma Expert** in Endocrine Drug Development