# Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE
## Deemed to be University

Maduravoyal, Chennai – 600 095, Tamilnadu, India
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**University with Graded Autonomy Status**


# SYLLABUS & CURRICULUM
# for
# M.D. RESPIRATORY MEDICINE

# 2020 onwards

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# M.D. RESPIRATORY MEDICINE

## GOALS

The goals of postgraduate training course would be to train a MBBS doctor who will:

1. Practice as a pulmonologist efficiently and effectively, backed by scientific knowledge and skill base.
2. Acquire clinical and practical skills
3. Exercise empathy and a caring attitude and maintain high ethical standards.
4. Continue to evince keen interest in continuing education in the speciality irrespective of whether he is in a teaching institution or is a practicing specialist.
5. Be a motivated 'teacher' - defined as a specialist keen to share his knowledge and skills with a colleague or a junior or any learner

## OBJECTIVES

The following objectives are laid out to achieve the goals of the course. By the end of the course, the student should have acquired knowledge (cognitive domain), professionalism (affective domain) and skills (psychomotor domain) as given below:

### A. Knowledge (Cognitive domain)

At the end of the MD course in Pulmonary Medicine, the students should be able to:

1. Demonstrate sound knowledge of common pulmonary diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis. A comprehensive knowledge of epidemiological aspects of pulmonary diseases should be acquired.
2. Demonstrate comprehensive knowledge of various modes of therapy used in treatment of pulmonary diseases.

3. Describe the mode of action of commonly used drugs, their doses, side-effects/ toxicity, indications and contra-indications and interactions.
4. Describe commonly used modes of management including medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management inclusive of National tuberculosis Control Program.
5. Manage common pulmonary emergencies and understand the basic of intensive care in patients with pulmonary diseases.
6. Practice the field of pulmonary medicine ethically and assiduously, show empathy and adopt a humane approach towards patients and their families.
7. Recognize the national priorities in pulmonary medicine and play an important role in the implementation of National Health Programs including tuberculosis.
8. Demonstrate competence in medical management.
9. Should inculcate good reading habits and develop ability to search medical literature and develop basic concept of medical research.

**B. Professionalism (Affective Domain)**

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.
4. Apply the highest level of ethics in research, publication, references and practice of pulmonary medicine.

**C. Skills (Psychomotor domain)**

At the end of the course, the student should acquire following clinical skills and be able to:

1. Interview the patient, elicit relevant and correct information and describe the history in chronological order.
2. Conduct clinical examination, elicit and interpret clinical findings and diagnose common pulmonary disorders and emergencies.
3. Perform simple, routine investigative and office procedures required for making the bedside diagnosis, especially sputum collection and examination for etiologic organisms especially Acid Fast Bacilli (AFB), interpretation of the chest x-rays and lung function tests.
4. Interpret and manage various blood gases abnormalities in various pulmonary diseases.
5. Develop management plans for various pulmonary diseases.
6. Assist in the performance of common procedures, like bronchoscopic examination, pleural aspiration and biopsy, pulmonary physiotherapy, endotracheal intubation and pneumo-thoracic drainage / aspiration etc.
7. Recognize emergency situations in intensive care, respond to these appropriately and perform basic critical care monitoring and therapeutic procedures.
8. Collect, compile, analyse, interpret, discuss and present research data.
9. Teach pulmonary medicine to undergraduate and postgraduate students.

To acquire the above skills, the student should be exposed and trained in the following tests and procedures:

1. **Diagnostic tests: Performance and interpretation**

- ✓ Sputum and other body fluids examination with ZN stain for AFB, culture methods for pathogenic bacteria, fungi and viruses
- ✓ Newer diagnostic techniques for tuberculosis including molecular techniques

- ✓ FNAC of lung masses (blind and image-guided)
- ✓ Arterial blood gas analysis and pulse oximetry
- ✓ Imaging: Interpretation of plain radiography, ultrasound examination,
- ✓ Computed tomogram, PET scan, MRI
- ✓ Sputum cytology
- ✓ Simple haematological tests
- ✓ Immunological and Serological tests
- ✓ Polysomnography (full-night and split-night studies) including CPAPtitration; evaluation of daytime sleepiness
- ✓ Cardiopulmonary exercise testing
- ✓ Pulmonary function tests and interpretation (Spirometry, lung volume, diffusions, body plethysmography, other lung function tests)
- ✓ Bronchoprovocation tests
- ✓ BCG vaccination
- ✓ Mantoux testing; interferon gamma release assays
- ✓ Bronchoscopy: fibreoptic/rigid, diagnostic and therapeutic
- ✓ ECG, 2D and Doppler echocardiography
- ✓ Venous Doppler ultrasound
- ✓ Skin tests for hypersensitivity
- ✓ Sputum induction and non-invasive monitoring of airway inflammation
- ✓ Medical thoracoscopy

**2. Therapeutic procedures**

- ✓ Fine needle aspiration and other guided procedures
- ✓ Tube thoracostomy
- ✓ Cardiopulmonary rehabilitation exercises
- ✓ Postural drainage
- ✓ Pleural biopsy, lymph node biopsy
- ✓ Administration of inhalation therapy

- ✓ Administration of oxygen therapy
- ✓ Administration of continuous positive airway pressure (CPAP)/Bilevel
- ✓ Positive Airway Pressure (BiPAP)
- ✓ Monitoring and emergency procedures in intensive care

**Course contents**

The student should acquire knowledge in the following:

**I. Basic Sciences**

**A. Anatomy and Histology of Respiratory System**

1. Development and Anatomy of Respiratory System
2. Applied embryology of lungs, mediastinum and diaphragm
3. Developmental anomalies

**B. Physiology and Biochemistry**

1. Assessment of pulmonary functions
2. Control of ventilation; pulmonary mechanics
3. Ventilation, pulmonary blood flow, gas exchange and transport
4. Non-respiratory metabolic functions of lung
5. Principles of electrocardiography
6. Inhalation kinetics and its implication in aerosol therapy, and sputum inductionetc.
7. Acid-base and electrolyte balance
8. Physiology of sleep and its disorders
9. Pulmonary innervation and reflexes
10. Pulmonary defense mechanisms
11. Principles of exercise physiology and testing
12. Physiological changes in pregnancy, high altitude, aging
13. Physiological basis of pulmonary symptoms

**C. Microbiology**

1. Mycobacterium tuberculosis and other mycobacteria
2. Bacteria causing pulmonary diseases
3. Atypical organisms and respiratory tract infections
4. Anaerobes in pleuropulmonary infections
5. Laboratory diagnosis of non-tubercular infections of respiratory tract
6. Laboratory diagnosis of TB including staining, culture and drug sensitivity testing
7. Virulence and pathogenecity of mycobacteria
8. Respiratory viruses: Viral diseases of the respiratory system and diagnosticmethods
9. Respiratory fungi: (i) Classification of fungal diseases of lung: candidiasis, Actinomycosis, Nacardiosis, Aspergillosis, Blastomycosis etc. (ii) Laboratory diagnostic procedures in pulmonary mycosis
10. Opportunistic infections in the immuno-ompromised individuals
11. HIV and AIDS. Virological aspects, immuno-pathogenesis, diagnosis
12. Parasitic lung diseases

**D. Pathology**

1. Acute and chronic inflammation: Pathogenetic mechanisms in pulmonary diseases
2. Pathology aspects of Tuberculosis
3. Pathology aspects of Pneumonias and bronchopulmonary suppuration
4. Chronic bronchitis and emphysema, asthma, other airway diseases
5. Occupational lung diseases including Pneumoconiosis
6. Interstitial lung diseases including sarcoidosis, connective tissue diseases,pulmonary vasculitis syndromes, pulmonary eosinphilias
7. Tumours of the lung, mediastinum and pleura

**E. Epidemiology**

1. Epidemiological terms and their definitions
2. Epidemiological methods
3. Epidemiology of tuberculosis, pneumoconiosis, asthma, lung cancer, COPD and other pulmonary diseases
4. National Tuberculosis Control Programme and NTEP; Epidemiological aspects of BCG
5. Epidemiological aspects of pollution-related pulmonary diseases
6. Research methodology, statistics and study designs

**F. Allergy and Immunology**

1. Various mechanisms of hypersensitivity reactions seen in pulmonary diseases
2. Diagnostic tests in allergic diseases of lung - in vitro and in vivo tests, bronchial provocation test
3. Immunology of tuberculosis, Sarcoidosis and other diseases with an immunological basis of pathogenesis

**G. Pharmacology**

1. Pharmacology of antimicrobial drugs
2. Pharmacology of antitubercular drugs
3. Pharmacology of antineoplastic and immunosuppressant drugs
4. Bronchodilator and anti-inflammatory drugs used in pulmonary diseases
5. Drugs used in viral, fungal and parasitic infections
6. Other drugs pharmacokinetics and drugs interaction of commonly used drugs in pulmonary diseases
7. Pharmacovigilance

## II. Clinical Pulmonary Medicine

Clinical pulmonary medicine covers the entire range of pulmonary diseases. All aspectsof pulmonary diseases including epidemiology, aetiopathogenesis, pathology, clinical features, investigations, differential diagnosis and management are to be covered.

### A. Infections

### 1. Tuberculosis

1. Aetiopathogenesis
2. Diagnostic methods
3. Differential diagnosis
4. Management of pulmonary tuberculosis; RNTCP, DOTS, and DOTS-Plus;
5. International Standards of TB Care
6. Complications in tuberculosis
7. Tuberculosis in children
8. Geriatric tuberculosis
9. Pleural and pericardial effusion and empyema
10. Mycobacteria other than tuberculosis
11. Extrapulmonary tuberculosis
12. HIV and TB; interactions of antitubercular drugs with antiretrovirals
13. Diabetes mellitus and tuberculosis
14. Management of MDR and XDR tuberculosis

### 2. Non-tuberculous infections of the lungs

1. Approach to a patient with pulmonary infection
2. Community-acquired pneumonia
3. Hospital-associated pneumonia, ventilator-associated pneumonia
4. Unusual and atypical pneumonias including bacterial, viral, fungal andparasitic and ricketsial, anerobic
5. Bronchiectasis, lung abscess and other pulmonary suppurations

6. Acquired immunodeficiency syndrome and opportunistic infections inimmuno-compromised host
7. Principles governing use of antibiotics in pulmonary infections
8. Other pneumonias and parasitic infections, Zoonosis

**B. Non-infectious Lung Diseases**

**3. Immunological disorders**

1. Immune defence mechanisms of the lung
2. Sarcoidosis
3. Hypersensitivity pneumonitis and lung involvement
4. Eosinophilic pneumonias and tropical eosinophilia
5. Pulmonary vasculitides
6. Connective tissue diseases involving the respiratory system
7. Interstitial lung disease of other etiologies
8. Reactions of the interstitial space to injury, drugs
9. Occupational and environmental pulmonary diseases

**4. Other non-infectious disorders of the lungs and airways**

1. Aspiration and inhalational (non-occupational) diseases of the lung
2. Drug induced pulmonary diseases
3. Bullous lung disease
4. Uncommon pulmonary diseases (metabolic, immunological, unknownetiology), pulmonary haemorrhagic syndromes
5. Other pulmonary diseases of unknown etiology including PLCH, LAM,PAP, alveolar microlithiasis
6. Cystic fibrosis and disorders of ciliary motility
7. Obesity-related pulmonary disorders
8. Upper airways obstruction syndromes
9. Occupational lung diseases and pneumoconiosis
10. Air-pollution induced diseases, toxic lung and other inhalational injuries

11. Health hazards of smoking
12. Drug-induced lung diseases

**5. Pulmonary Circulatory disorders**

1. Pulmonary hypertension and corpulmonale
2. Pulmonary edema
3. Pulmonary thromboembolic diseases and infarction
4. Cardiac problems in a pulmonary patient and pulmonary complicationsproduced by cardiac diseases

**6. Obstructive diseases of the lungs**

5. Asthma including allergic bronchopulmonaryaspergillosis, specific allergenimmunotherapy and immunomodulation
6. Chronic obstructive lung disease and diseases of small airways
7. Special aspects of management including Long term oxygen therapy,
8. Inhalation therapy and Pulmonary rehabilitation

**7. Tumors of the lungs**

1. Comprehensive knowledge of neoplastic and non-neoplastic diseases of lung including epidemiology, natural history, staging, and principles of treatment (medical, surgical, and radiation)
2. Solitary pulmonary nodule

**8. Diseases of the mediastinum**

1. Non-neoplastic disorders
2. Benign and malignant (primary and secondary) neoplasms and cysts

**9. Disorders of the pleura**

1. Pleural dynamics and effusions
2. Non-neoplastic and neoplastic pleural diseases
3. Pneumothorax
4. Pyothorax and broncho-pleural fistula
5. Fibrothorax

**10. Critical Care Pulmonary Medicine**

1. Management of emergency problems of different pulmonary diseases
2. Adult respiratory distress syndrome
3. Respiratory failure in the patient with obstructive airway disease
4. Respiratory failure in other pulmonary diseases
5. Management of sepsis
6. Respiratory and haemodynamic monitoring in acute respiratory failure
7. Non-invasive and Mechanical ventilation
8. Principles of critical care, diagnosis and management of complications; severity of illness scoring systems
9. Ethical and end-of-life issues in critical care

**11. Extra pulmonary manifestations of pulmonary diseases**

**12. Sleep-related pulmonary diseases**

1. Polysomnography
2. Sleep apneas
3. Other sleep-disordered breathing syndromes

**13. Miscellaneous aspects**

1. Diseases of the diaphragm
2. Disorders of chest wall
3. Obesity-related pulmonary disorders
4. Oxygen therapy
5. End-of-life care
6. Aerospace Medicine
7. Pulmonary problems related to special environments (high altitude, diving,miners)
8. Assessment of quality of life using questionnaires
9. Health impacts of global warming

**14. Preventive Pulmonology**

1. Principles of smoking cessation and smoking cessation strategies
2. Cardiopulmonary rehabilitation
3. Preventive aspects of pulmonary diseases
4. Vaccination in pulmonary diseases

**III. Surgical aspects of Pulmonary Medicine**

1. Pre- and post-operative evaluation and management of thoracic surgical patients
2. Chest trauma/trauma related lung dysfunction
3. Lung transplantation

**Postgraduate teaching programme**

**General principles**

Acquisition of practical competencies being the keystone of PG medical education, PG training should be skills oriented. Learning in PG program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

**Teaching methodology**

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars, journal clubs, clinical meetings, and combined conferences with allied departments. The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision.

| | | |
|---|---|---|
| 1. | Clinical Case discussion | twice a week. |
| 2. | Journal Club | Once in two weeks |
| 3. | Subject Seminar | Once a week |
| 4. | Mortality Meeting | Once a month |
| 5. | Grand rounds | Once a week |

A candidate pursuing the course should work in the institution as a full time student. No candidate should be permitted to run a clinic/laboratory/nursing home while studying postgraduate course. Each year should be taken as a unit for the purpose of calculating attendance. Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

**Journal Club**: Recommended to be held once in two weeks. All the PG students are expected to attend and actively participate in discussion and enter in the log book relevant details. Further, every candidate must make a presentation from the allotted journal(s), selected articles at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the student and the moderator should be announced at the beginning of every year.

**Subject Seminar**: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. Further, every candidate must present on selected topics at least four times a year and a total of 12 seminar presentations in three years.

**Ward Rounds:** Ward rounds may be service or teaching rounds.

**Service Rounds:** Postgraduate students and interns should do every day for the care of the patients. Newly admitted patients should be worked up by the PGs and presented to the seniors the following day.

**Teaching Rounds**: Every unit should have 'grand rounds' for teaching purpose. A diary should be maintained for day to day activities by the students.

**Clinical Case Presentations:** Minimum of 5 cases to be presented by every candidate each year. They should be assessed using check lists and entries made in the log book

**Formal teaching sessions**

In addition to bedside teaching rounds, at least 5-hr of formal teaching per week are necessary. The departments may select a mix of the sessions, as given under formative assessment. Further, the student should:

- Attend accredited scientific meetings (CME, symposia, and conferences-2 state & 1 national conference).
- Attend additional sessions on resuscitation, basic sciences, biostatistics, research methodology, teaching methodology, hospital waste management, health economics, medical ethics and legal issues related to medical practice are suggested.
- There should be a training program on Research methodology for existing faculty build capacity to guide research.
- The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- A postgraduate student of a postgraduate degree course in broad specialities /super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

**Maintenance of Log book**

The logbook is a record of the important activities of the candidates during his training, Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate. Every Post Graduate student shall maintain a record of skills he/she has acquired during the

three years training period certified by the various Head of departments where he/she has under gone training including outside the institution as follows

1) Posting
2) Interesting case
3) Journal club
4) Seminars
5) Case demonstration
6) Clinical procedures / operations performed
7) Lectures
8) Group discussion - a. Radiology, b. Biopsy, c. Death review
9) Emergencies
10) Conferences /CME Programmes attended
11) Papers presentations & publications

**Rotation Postings**

In the parent department of Pulmonary Medicine 29 months

| | | | |
|---|---|---|---|
| i) | Department of Medicine | - | 2 months |
| ii) | Cardiology | - | 1 month |
| iii) | Department of Radio-diagnosis | - | 2 weeks |
| iv) | Casualty (Emergency Med) | - | 2 weeks |
| v) | Rajiv Gandhi Chest disease hospital | - | 2 weeks |
| vi) | ICU | - | 1 month |
| vii) | Pediatrics | - | 2 weeks |
| viii) | Medical Oncology | - | 2 weeks |
| ix) | NTI | - | 2 weeks |

**Monitoring Learning Progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only also helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various

teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects.

The learning out comes to be assessed should included: (i) Personal Attitudes, (ii) Acquisition of Knowledge, (iii) Clinical and operative skills, (iv) Teaching skills and (v) Dissertation.

**Personal Attitudes.** The essential items are:

- Caring attitudes
- Initiative
- Organisational ability
- Potential to cope with stressful situations and undertake responsibility
- Trust worthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- A critical enquiring approach to the acquisition of knowledge

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

**Acquisition of Knowledge**: The methods used comprise of `Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisors.

Journal Review Meeting (Journal Club): The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist)

**Seminars / Symposia:** The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using a checklist (see Model Checklist)

**Clinico-pathological conferences:** This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.

**Medical Audit:** Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

**Clinical skills**

**Day to Day work:** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills

**Clinical meetings:** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a checklist.

**Clinical and Procedural skills:** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book.

**Teaching skills:** Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students

**Dissertation in the Department:** Periodic presentations are to be made in the department. Initially the topic selected is to be presented before submission to the University for Registration, again before finalization for critical evaluation and another before final submission of the completed work

**Periodic tests:** The departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

Work diary / Log Book- Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

Records: Records, logbooks and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

**Procedure for defaulters:** Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

**Internal evaluation of P.G. Students performance during three years**

**I Year of M.D. Students**

Assessment of students with multiple choice questions multiple short notes covering wide range of topics and practical examination with attention to history taking, clinical skills, relevant diagnostics and therapeutic plans ascertained.

Suggested time of evaluation after first six months and at the end of first year rotation.

**II Year of M.D. Students**

Students should be evaluated at the end of II year on Theory and Practical examinations along with one faculty from General Medicine. For other specialities with short rotations of one month may evaluate the candidate for comprehension of the subject and clinical skills.

**III Year of M.D. Students**

P.G's should be evaluated at the beginning of his 3rd year training by panel of senior Postgraduate teachers. Suggested pattern of assessment with two essay type theory papers and multiple choice questions (200) – clinical skills, diagnostic and therapeutic skills evaluated intermittently by unit faculties.

Mock examination suggested – 3 to 4 months prior to final university exam should consist of two question papers each 3 hours duration, and Clinical and viva voce similar to university examination under the supervision of senior faculty.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

**Dissertation**

1. Every candidate pursuing MD/MS degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.
2. The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem,

formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

3. Every candidate shall submit to the Registrar of in the prescribed proforma, a synopsis containing particulars of proposed dissertation work six months from the date of commencement of the course on or before the dates notified by the University. The synopsis shall be sent through the proper channel.

4. Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

5. The dissertation should be written under the following headings:

    i) Introduction
    ii) Aims or Objectives of study
    iii) Review of Literature
    iv) Material and Methods
    v) Results
    vi) Discussion
    vii) Conclusion
    viii) Summary
    ix) References (Vancouver style)
    x) Tables
    xi) Annexures

6. The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27” x 11.69”) and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

7. Four copies of dissertation thus prepared shall be submitted to the Registrar (Evaluation), six months before final examination on or before the dates notified by the University.
8. The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.
9. For some more details regarding Guide etc., please see Chapter I and for books on research methodology, ethics, etc., see Chapter IV.

**Scheme of Examination**

Candidates will be allowed to appear for examination only if attendance (minimum 80%) and internal assessment are satisfactory and dissertation is accepted.

**A. Theory (Written Papers) 400 marks**

The examinations shall be organized on the basis of marking system to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for M.D/ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period**.**

There shall be four question papers, each of three hours duration. Each paper shall consist of 10 short essay questions each question carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers.

| | |
|---|---|
| Paper I | = 100 Marks |
| Paper II | = 100 Marks |
| Paper III | = 100 Marks |
| Paper IV | = 100 Marks |
| | --- |
| **Total** | **400 Marks** |
| | --- |

Details of distribution of topics for each paper will be as follows:

**Paper I:** General pulmonary medicine and basic sciences;

**Paper II:** Clinical pulmonary medicine including medical emergencies;

**Paper III:** Clinical pulmonary medicine including critical care medicine;

**Paper IV:** Recent advances in pulmonary medicine, and research methodology

**B. Clinical Examination: 200 marks**

To elicit competence in clinical skills and to discuss differential diagnostic therapeutic aspects.

| | | |
|---|---|---|
| One Long case | - 1 x 100 | 100 marks |
| Two Short cases | - 2 X 50 | 100 marks |

**C. Viva Voce Examination 100 marks**

Aims to elicit candidate's knowledge and investigative / therapeutic skills.

**Viva-voce examination**: (80 marks)

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be given case reports, charts, Spirometry, ABG, gross specimens, histo-pathology slides, x- rays, ultrasound, CT scan images, etc., for interpretation and questions on these as well as use of instruments will be asked. It includes discussion on dissertation also.

**Pedagogy Exercise**: (20 marks)

A topic be given to each candidate in the beginning of clinical examination.

He/she is asked to make a presentation on the topic for 8-10 minutes.

| Maximum marks for M.D. Respiratory Medicine | Theory | Practical & Viva | Grand Total |
|---|---|---|---|
| | 400 | 300 (Practical – 200 & Viva – 100) | 700 |

**MARKS QUALIFYING FOR A PASS**

Obtaining a minimum of 40% marks in each theory paper and not less than 50% cumulatively in all the four papers for degree examination. Obtaining of 50% marks in Practical examination shall be mandatory for passing the examination as a whole in the degree examination.

**Examination and evaluation**

**(1) EXAMINERS**

a) All the Post Graduate Examiners shall be recognised Post Graduate Teachers holding recognised Post Graduate qualifications in the subject concerned.

b) For all Post Graduate Examinations, the minimum number of Examiners shall be four, out of which at least two (50%) shall be External Examiners, who shall be invited from other recognised universities from outside the State and other two will be internal examiners for M.D.

c) Under exceptional circumstances, examinations may be held with 3 (three) examiners provided two of them are external and Medical Council of India is intimated the justification of such action prior to publication of result for approval. Under no circumstances, result shall be published in such cases without the approval of Medical Council of India.

d) The guidelines regarding appointment of examiners are as follows;-

1. No person shall be appointed as an examiner in any subject unless he/she fulfils the minimum requirements for recognition as a Post Graduate teacher as laid down by the Medical Council of India and has teaching experience of 8 (Eight) years as a Lecturer / Assistant Professor out of which he has not less than 5 (Five) years teaching experience after obtaining Post Graduate degree. For external examiners, he should have minimum three years experience of examinership for Post Graduate diploma in the concerned subject. Out of internal examiners, one examiner shall be a Professor and Head of Department or Professor.

2. There shall be at least four examiners in each subject at an examination out of which at least 50% (Fifty percent) shall be external examiners. The external examiner who fulfils the condition laid down in clause – 1 above shall ordinarily be invited from another recognised university, from outside the State: provided that in exceptional circumstances examinations may be held with 3 (three) examiners if two of them are external and Medical council of India is intimated with the justification of such examination and the result shall be published in such a case with the approval of Medical council of India.

**(2) Number of candidates**

The maximum number of candidates to be examined in Clinical / practical and Oral on any day shall not exceed 6 for M.D. degree examination.

**3) Number of examinations**

The university shall conduct not more than two examinations in a year, for any subject, with an interval of not less than 4 and not more than 6 months between the two examinations.

**Recommended reading**

**Books (latest edition)**

1. Harrison's Principles of Internal Medicine ed. Petersdorf (McGraw Hill)
2. Cecil Text book of Medicine ed. Wyngaarden
3. Crofton & Douglas Respiratory diseases ed. Seaton et al (Oxford)
4. Pulmonary diseases & disorders by Fishman (McGraw Hill)
5. Textbook on Pulmonary disease by Fraser & Pare
6. Asthma by Clarke et al
7. Bronchoscopy by Straddling
8. Tuberculosis by SK Sharma
9. Lung diseases in the Tropics ed. OP Sharma (Marcel Dekker)

10. The Normal Lung by Murray (Saunders)
11. Pulmonary Function Testing by Clausen (Academic Press)
12. Respiratory Physiology by J.B. West (Williams & Wilkins)
13. Physiology of Respiration by J.H. Comroe (Yearbook Med Pub.)
14. Respiratory Function in disease by Bates et al (Saunders)
15. Text book of Respiratory Medicine by Murray & Nadel
16. The ICU book by Paul Marino
17. Text book of Pulmonary & critical care medicine by SK Jindal

**Journals**

1. Indian Journal of Chest Diseases and Allied Sciences
2. Indian Journal of Tuberculosis
3. American Journal of Respiratory and Critical Care Medicine
4. Tuberculosis
5. Clinics in Chest Medicine
6. Infectious disease clinics of North America
7. Immunology and Allergy clinics
8. Journal of infectious diseases
9. Chest
10. European Respiratory Journal
11. Lung India

**MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS**

Name of the Student: Name of the Faculty/Observer:
Date:

| Sl. No. | Items for observation during presentation | Poor 0 | Below Average 1 | Average 2 | Good 3 | Very Good 4 |
|---|---|---|---|---|---|---|
| 1. | Article chosen was | | | | | |
| 2. | Extent of understanding of scope & objectives of the paper by the candidate | | | | | |
| 3. | Whether cross references have been consulted | | | | | |
| 4. | Whether other relevant publications consulted | | | | | |
| 5. | Ability to respond to questions on the paper / subject | | | | | |
| 6. | Audio-Visual aids used | | | | | |
| 7. | Ability to defend the paper | | | | | |
| 8. | Clarity of presentation | | | | | |
| 9. | Any other observation | | | | | |
| | **Total Score** | | | | | |

## MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student: Name of the Faculty/Observer:
Date:

| Sl. No. | Items for observation during presentation | Poor 0 | Below Average 1 | Average 2 | Good 3 | Very Good 4 |
|---|---|---|---|---|---|---|
| 1. | Whether other relevant publications consulted | | | | | |
| 2. | Whether cross references have been consulted | | | | | |
| 3. | Completeness of Preparation | | | | | |
| 4. | Clarity of Presentation | | | | | |
| 5. | Understanding of subject | | | | | |
| 6. | Ability to answer questions | | | | | |
| 7. | Time scheduling | | | | | |
| 8. | Appropriate use of Audio-Visual aids | | | | | |
| 9. | Overall Performance | | | | | |
| 10. | Any other observation | | | | | |
| | **Total Score** | | | | | |

**MODEL CHECK LIST FOR EVALUATION OF**

**CLINICAL WORK IN WARD / OPD**

(To be completed once a month by respective Unit Heads including posting in other departments)

Name of the Student: Name of the Unit Head:

Date:

| **Sl. No.** | **Points to be considered:** | **Poor 0** | **Below Average 1** | **Average 2** | **Good 3** | **Very Good 4** |
|---|---|---|---|---|---|---|
| 1. | Regularity of attendance | | | | | |
| 2. | Punctuality | | | | | |
| 3. | Interaction with colleagues and supportive staff | | | | | |
| 4. | Maintenance of case records | | | | | |
| 5. | Presentation of cases during rounds | | | | | |
| 6. | Investigations work up | | | | | |
| 7. | Bedside manners | | | | | |
| 8. | Rapport with patients | | | | | |
| 9. | Counseling patient's relatives for blood donation or Postmortem and Case follow up. | | | | | |
| 10. | Over all quality of Ward work | | | | | |
| | **Total Score** | | | | | |

## EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student: Name of the Faculty:

Date:

| Sl. No. | Points to be considered | Poor 0 | Below Average 1 | Average 2 | Above Average 3 | Very Good 4 |
|---|---|---|---|---|---|---|
| 1. | Completeness of history | | | | | |
| 2. | Whether all relevant points elicited | | | | | |
| 3. | Clarity of Presentation | | | | | |
| 4. | Logical order | | | | | |
| 5. | Mentioned all positive and negative points of importance | | | | | |
| 6. | Accuracy of general physical examination | | | | | |
| 7. | Whether all physical signs elicited correctly | | | | | |
| 8. | Whether any major signs missed or misinterpreted | | | | | |
| 9. | Diagnosis: Whether it follows logically from history and findings | | | | | |
| 10 | Investigations required<br>▪ Complete list | | | | | |
| | ▪ Relevant order | | | | | |
| | ▪ Interpretation of investigations | | | | | |
| 11 | Ability to react to questioning Whether it follows logically from history and findings | | | | | |
| 12 | Ability to defend diagnosis | | | | | |
| 13 | Ability to justify differential diagnosis | | | | | |
| 14 | Others | | | | | |
| | **Grand Total** | | | | | |

## MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

| Sl. No. | | Strong Point | Weak Point |
|---|---|---|---|
| 1. | Communication of the purpose of the talk | | |
| 2. | Evokes audience interest in the subject | | |
| 3. | The introduction | | |
| 4. | The sequence of ideas | | |
| 5. | The use of practical examples and/or illustrations | | |
| 6. | Speaking style (enjoyable, monotonous, etc., specify) | | |
| 7. | Attempts audience participation | | |
| 8. | Summary of the main points at the end | | |
| 9. | Asks questions | | |
| 10. | Answers questions asked by the audience | | |
| 11. | Rapport of speaker with his audience | | |
| 12. | Effectiveness of the talk | | |
| 13. | Uses AV aids appropriately | | |

## MODEL CHECK LIST FOR DISSERTATION PRESENTATION

Name: Faculty/observer:
Date:

| Sl. No. | Points to be considered divine | Poor 0 | Below Average 1 | Average 2 | Good 3 | Very Good 4 |
|---|---|---|---|---|---|---|
| 1. | Interest shown in selecting a topic | | | | | |
| 2. | Appropriate review of literature | | | | | |
| 3. | Discussion with guide & other faculty | | | | | |
| 4. | Quality of protocol | | | | | |
| 5. | Presentation of cases during rounds | | | | | |

## CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE / CO-GUIDE

Name of the Student: Name of the Faculty/Observer:

Date:

| Sl. No. | Items for observation during presentation | Poor 0 | Below Average 1 | Average 2 | Good 3 | Very Good 4 |
|---|---|---|---|---|---|---|
| 1. | Periodic consultation with guide/co-guide | | | | | |
| 2. | Regular collection of case material | | | | | |
| 3. | Depth of analysis / discussion | | | | | |
| 4. | Departmental presentation of findings | | | | | |
| 5. | Quality of final output | | | | | |
| 6. | Others | | | | | |
| | **Total Score** | | | | | |

**LOG BOOK**

**Table 1 : Academic activities attended**

Name: Admission Year:

College:

| Date | Type of Activity<br>Specify Seminar, Journal Club, Presentation, UG teaching | Particulars |
|---|---|---|
| | | |
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**Table 2 : Academic presentations made by the student**

Name: Admission Year:

College:

| Date | Topic | Type of Presentation<br>Specify Seminar, Journal Club, Presentation, UG teaching etc. |
|---|---|---|
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**Table 3 : Diagnostic and Operative procedures performed**

Name: Admission Year:

College:

| Date | Name | ID No. | Procedure | Category O, A, PA, PI* |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

*** Key:** O - Washed up and observed

A - Assisted a more senior Surgeon

PA - Performed procedure under the direct supervision of a senior surgeon

PI - performed independently

## Model Overall Assessment Sheet

**Name of the College:** **Academic Year:**

| Sl. No | Faculty Member & Others | Name of Student and Mean Score | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I | J |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| Total Score | | | | | | | | | | | |

Note: Use separate sheet for each year.