



**SRM**  
UNIVERSITY  
(Under section 3 of UGC Act 1956)



## **MD Respiratory Medicine**

Curriculum and Syllabus 2015

Branch Code: 23

**SRM Medical College Hospital & Research Centre**

SRM University

SRM Nagar, Kattankulathur

Kancheepuram (Dt). 603 203



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## M.D. RESPIRATORY MEDICINE

### 1. GOALS AND OBJECTIVES:

At the end of the postgraduate training in the discipline concerned the student shall be able to:

1. Recognize the importance of the Respiratory Medicine & Tuberculosis in the context of the health needs of the community and the national priorities sector
2. Practice the field of Respiratory Medicine & Tuberculosis ethically and in step with the principles of primary health care
3. Demonstrate sufficient understanding of the basic sciences relevant to the Respiratory Medicine
4. Obtain relevant skills required for the medical or surgical management of the patient required in Respiratory Medicine & Tuberculosis
5. Obtain adequate knowledge in the subjects closely acquainted with the subjects of his post graduation in Respiratory Medicine
6. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and promotive measures/ strategies.
7. Diagnose and manage majority of the conditions in the field of chest medicine concerned on the basis of clinical assessment and appropriately select and conduct investigations.
8. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability in the field of Respiratory Medicine.
9. Demonstrate skills in documentation of individual case details as well as morbidity and data relevant to the assigned situation.
10. Demonstrate empathy and human approach towards patients and their families and exhibit interpersonal behavior in accordance with societal norms and expectations
11. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
12. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
13. Function as an effective leader of a health team engaged in health care research or training.

## **2.COURSE OVERVIEW**

### **DURATION OF THE COURSE**

The period of certified study and training for the Post-Graduate MD RESPIRATORY MEDICINE shall be Three Academic years (six academic terms). The academic terms shall mean six months training period.

### **COMMENCEMENT OF ACADEMIC SESSION**

The academic session for the Post-Graduate shall commence from May /June of the Academic Year.

### **DATE OF EXAMINATION**

The students admitted up to May/June of the academic year shall be registered for that academic year and shall take up their Final Third Year regular examination in April/October of the academic year after completion of 3 years/36 months.

### **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.

### **ATTENDANCE**

All students joining the postgraduate training programme shall work as full time residents during the period of training, attending not less than 80% (eighty percent) of the training during each calendar year, and will be given full time responsibility, assignments and participation in all facets of the educational process.

The period of training for obtaining the degrees shall be three completed years including the period of examination.

### 3.SYLLABUS FOR THE PG DEGREE COURSE IN M.D. RESPIRATORY MEDICINE

Respiratory Medicine is one of the specialities of medical science which has witnessed several newer developments in the field of diagnosis and treatment in the past two decades. Different medical institutions in India are offering PG course in this speciality. MCI has decided to formulate syllabus with the objective to provide uniform high standard medical training and impart adequate skills and capabilities to the students undergoing PG degree course in the speciality in the Respiratory Medicine.

1. Development of respiratory tract
2. Structure & functions of respiratory tract
3. Control of ventilation
4. Sleep physiology
5. Ventilation and perfusion
6. Transport of blood gases  
Diffusion, Diffusion capacity.
7. Non - respiratory functions of lung
8. Immunology as applied to lung
- 9 Acid - Base balance
10. Diagnostic procedures
  - Sputum cytology/examination
  - Bronchoscopy
  - Pleural biopsy/ lung biopsy
  - Thoracoscopy
  - Radiology and lung imaging
  - CT scan, MRI,USG, interventional radiology
11. Assessment of lung function
  - Pulmonary function test
  - Cardio pulmonary exercise testing
  - Pulmonary disability assessment
  - Preoperative lung function assessment
- 12.Symptomatology and physical examination
- 13.Interstitial lung disease including drug induced/  
Radiation induced lung disease
14. Occupational lung disease
15. Environmental lung disease including indoor/outdoor air pollution, high altitude/ diving injuries.
16. Pulmonary vascular disorders including pulmonary emboli,  
vasculitis syndromes, pulmonary hypertension, cor pulmonale..

17. Obstructive airway diseases-
  - Asthma
  - COPD
  - Cystic fibrosis
  - Bronchiolitis
  - Bronchiectasis
18. Infectious diseases / Pneumonias
  - Nosocomial pneumonia
  - CAP ( Community Acquired Pneumonia)
  - Viral
  - Fungal
  - Protozoal
19. Mycobacterial diseases
  - Epidemiology
  - Rapid culture and molecular methods of diagnosis
  - Assessment of drug resistance
  - Pulmonary/extra pulmonary disease
  - Chemotherapy including RNTCP- DOTS
  - Atypical Mycobacteria
20. Pleural diseases
21. Sleep related disorders
22. Surgical aspects of Respiratory Medicine including lung transplantation
23. Neoplasm of lung
  - Bronchial Cancer epidemiology and etiology
  - Clinical features& Investigations
  - WHO Classification and staging
  - Medical, surgical and radiation management of lung cancer
  - Benign Neoplasms of lung
24. Diseases of the mediastinum
25. Diseases of the chest wall, spine, diaphragm
26. Acute respiratory failure including ARDS, SEPSIS/management
27. Chronic respiratory failure
28. Mechanical ventilation, Non Invasive ventilation (NIV), oxygen therapy, hemodynamic and respiratory monitoring
29. Ethics in ICU
30. Respiratory diseases in children
31. Upper Airway diseases.

## **Skills to be acquired by the PG students at the end of the Course:**

1. Adequate skills in the clinical examination of the patient including approach to the patient, history taking, knowledge about the basic pulmonary lesions, proper respiratory and systemic examination and familiarity with elicitation of important clinical signs.
2. Basic skills in laboratory investigations related to the diseases of the lung like:
  - a. Gram staining
  - b. Ziehl - Neelsen's staining
  - c. Pulmonary Function Test
3. Knowledge in clinical respiratory and applied basic sciences such as Anatomy, Physiology, Biochemistry, Immunology, Molecular Microbiology and Pharmacology including therapeutic in relation to Respiratory Medicine syllabus
4. Awareness of current treatment modalities of various pulmonary diseases
5. Knowledge about the preventive aspects, education, counseling, service to the patient National program of HIV & TB and Revised National Tuberculosis Control Program in India.
6. Adequate skills in procedures such as
  - Pleurodesis - Medical
  - Bronchoscopy (diagnostic and therapeutic)
  - Pleuroscopy
  - FNAC
  - Tru-cut Biopsy
  - Thoracocentesis
  - ICD insertion
  - Pleural biopsy,
  - Endotracheal intubation
  - Central line insertion
  - Arterial line insertion
  - ABG sampling.
7. Knowledge regarding management of critically ill patients including
  - Mechanical ventilator management
  - Non invasive ventilator management



- Oxygen therapy
- Fluid therapy
- Infection control
- Thromboprophylaxis.

8. Knowledge about sleep pathophysiology and sleep related disorders.

**PG Training Program**  
**First year PG**  
**Timing 12.00 noon to 1.00pm**  
**(Weekly Programme)**

Monday	Theory class
Tuesday	Case Discussion by Post Graduates
Wednesday	COPD/ Asthma Clinic /Research activities Journal Club / Recent Advances in Respiratory Medicine
Thursday	X ray chest Differential Diagnosis
Friday	

**Schedule of PG Training Program for 1<sup>st</sup> year**  
**(Every Day)**

8.00 am to 10.00 am	Ward Rounds/IRCU/Other wards/ OPD intervention Procedure
10.15 am to 10.30 am	Meeting With Prof & HOD
10.30 am to 11.30 am	Clinical Presentation
12.00 pm to 1.00 pm	Lecture Class
1.15 pm to 1.30pm	Meeting with Prof & HOD

#### 4.MAINTENANCE OF LOGBOOK

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

The Head of the Department should scrutinize the logbook every three months and certify the work done.

At the end of the course the student should summarise the contents and get the logbook certified by the Head of the Department and submit the logbook at the time of the University Practical Examination for the scrutiny of the Board of Examiners.

**4.1** It is preferable that a post graduate student during the course to present one poster presentation and /or to read one paper at a national /state conference and /or to present one research paper which can be published/accepted for publication/sent for publication during the period of his/her postgraduate studies.

## 5.THESIS

Every student registered as post graduate shall carry out work on an assigned research project under the guidance of a recognized post graduate teacher, the result of which shall be written up and submitted in the form of a thesis.

Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Thesis shall be submitted at least six months before the theoretical and clinical / practical examination.

The thesis shall be a bound volume of a minimum of 50 pages and not exceeding 75 pages of typed matter (Double line spacing and on one side only) excluding certification, acknowledgements, annexure and bibliography.

Thesis should consist of

- (a) Introduction
- (b) Review of literature
- (c) Aims and objectives
- (d) Material and methods
- (e) Result
- (f) Discussion
- (g) Summary and conclusion
- (h) Tables
- (i) Annexure
- (j) Bibliography

Four copies of thesis shall be submitted six months prior to the commencement of the theory examinations on the date prescribed by the Controller of Examinations of this University. The thesis should be approved by the Professor of that branch and the same has to be forwarded to the Controller of Examinations, by the head of the department through the Dean of the college.

Two copies in addition are to be submitted as an electronic version of the entire thesis in a standard C.D. format by mentioning the details and technicalities used in the C.D. format.

The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and clinical; and on the acceptance of the thesis by two examiners, the student shall be allowed to appear for the final examination.

#### **EVALUATION OF THESIS :**

#### **ACCEPTED / NOT ACCEPTED**

No marks will be given

#### **6. SCHEME OF EXAMINATION - EXAMINATION PATTERN:**

The examinations shall be organised on the basis of grading or marking system to evaluate and certify student's level of knowledge, skill and competence at the end of the training and obtaining a minimum of 50% marks in theory as well as practical / clinical separately shall be mandatory for passing the whole examination. The examination for shall be held at the end of third academic years.

#### **Theory Examination:**

Theory exams consists of four papers as detailed below

Paper 1- Applied Basic Sciences in Respiratory Medicine	-	100marks
Paper II- Tuberculosis (Pulmonary and Extra Pulmonary)	-	100marks
Paper III- Non-Tuberculosis Chest Diseases	-	100marks
Paper IV- Recent advances in Tuberculosis and chest diseases	-	100marks

#### **Practical Examination:**

The pattern of practical /clinical examination is as follows

#### **Clinical Examination**

One Long Case	100marks
Two Short Cases (2x50)	100marks

**Viva Voce Examination:**

Slides, Specimens, Spotters, Radiology, PFT, ECG, ABG, Polysomnography, Instruments	}	50 marks
Oral Examination		50 marks
Total		300 marks

**MARKS QUALIFYING FOR A PASS**

MARKS QUALIFYING FOR A PASS	MAXIMUM MARKS	QUALIFYING FOR A PASS 50% MARKS
Theory Examination	400	200
Practical Including clinical and Viva voce examination	300	150

A student shall secure not less than 50% marks in each head of passing, which shall include 1.Theory, 2.Practical including clinical and viva voce examination.

\* "The postgraduate medical students are required to pass theory and practical examinations separately. An examinee should obtain minimum 40% marks in each theory paper and not less than 50% marks cumulatively in all the four papers for Degree examination to be cleared as "Passed" at the said Degree examination"

*\*As per Medical Council of India notification date 03.09.2014 and the same approved in the 28<sup>th</sup> Academic council meet of SRM University held on 23/03/2015.*

## 7. 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.
3. An external examiner may be ordinarily been appointed for not more than three years consecutively. Thereafter he may be reappointed after an interval of two years.

4. The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his subject.
5. The same set of examiners shall ordinarily be responsible for the written, practical or part of examination.
6. There shall be a Chairman of the Board of paper – setters who shall be an external examiner and shall moderate the question papers.
7. The Head of the Department of the institution concerned shall ordinarily be one of the internal examiners and second internal examiner shall rotate after every two year.

### **(2) Number of candidates**

The maximum number of candidates to be examined in Clinical / practical and Oral on any day shall not exceed six 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.

### **(4) Doctor of Medicine (M.D.) Respiratory Medicine**

M.D. examination shall consist of Thesis, Theory Papers, and clinical/Practical and Oral examinations.

#### **(a) Thesis**

Every candidate shall carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis.

Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the candidate to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Thesis shall be submitted at least six months before the theoretical and clinical / practical examination.

The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical; and on the

acceptance of the thesis by two examiners, the candidate shall appear for the final examination.

**(b) Theory**

(i) There shall be four theory papers.

(ii) Out of these one shall be of Basic Medical Sciences and one shall be of Recent Advances.

(iii) The theory examinations shall be held sufficiently earlier than the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the start of the Clinical/Practical and Oral examination.

**(c) Clinical / Practical and Oral**

(i) Clinical examination for the subjects in Clinical Sciences shall be conducted to test the knowledge and competence of the candidates for undertaking independent work as a specialist/Teacher, for which candidates shall examine a minimum one long case and two short cases.

(ii) The Oral examination shall be thorough and shall aim at assessing the candidate knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the speciality, which form a part of the examination.

A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including clinical and viva voce examination.

**Evaluation of Answer Scripts**

The answer books will be valued by two examiners. One of the two examiners will be from this university and the other will be from any other university. The Average of the two marks secured by the candidate will be taken into account. If the difference between two marks exceeds 20%, the answer scripts shall be valued by the third examiner. The average of the nearest two marks shall be considered as the final mark.



## 8. MODEL QUESTION PAPER

### M.D. RESPIRATORY MEDICINE

#### Paper I

#### Applied basic sciences in Respiratory Medicine

**Time: Three hours**

**Maximum Marks: 100**

#### **I. ANATOMY**

**(4 X 5=20)**

1. Azygos lobe.
2. Congenital anomalies of diaphragm.
3. Bronchogenic cyst.
4. Lung Sequestration.

#### **II. PHYSIOLOGY**

**(4 X 5=20)**

1. Mucociliary escalator.
2. Obesity hypoventilation.
3. Oxygen dissociation curve.
4. PEFV.

#### **III. BIOCHEMISTRY**

**(3 X 5=15)**

1. Metabolic acidosis.
2. Alpha I antitrypsin.
3. Secretory IgA.

#### **IV. PHARMACOLOGY**

**(3 X 5=15)**

1. Ciclesonide.
2. Long acting beta agonist.
3. Meropenem.

#### **V. PATHOLOGY**

**(3 X 5=15)**

1. Askin tumor.
2. Reid index.
3. Bronchoalveolar lavage.

#### **VI. MICROBIOLOGY**

**(3 X 5=15)**

1. Restriction Fragment Length Polymorphism (RFLP) analysis.
2. Pneumocystis jirovecii.
3. Lowenstein Jensen medium.

**M.D. RESPIRATORY MEDICINE**  
**Paper - II**  
**Tuberculosis (Pulmonary and Extra Pulmonary)**

**Time: Three hours**

**Maximum Marks: 100**

**Answer ALL questions.**

**I. Essay questions: (2 X 20 = 40)**

1. Discuss the epidemiological basis of Revised National TB Control Programme and mention its merits and demerits.

2. Describe the formation, fate and complications of a tuberculous cavity.

**II. Write short notes on: (10 X 6 = 60)**

1. Congenital tuberculosis.

2. Rifampicin toxicity.

3. Thoracoplasty.

4. Lag period.

5. Robert Koch.

6. H37 RV.

7. Tuberculosis in pregnancy

8. Breast feeding in the post partum patient with tuberculosis

9. Luciferase reporter assay

10. Diagnosis of MDR – TB

# **M.D. RESPIRATORY MEDICINE**

## **Paper - III**

### **Non-Tuberculosis Chest Diseases**

**Time: Three hours**

**Maximum Marks: 100**

**Answer ALL questions.**

#### **I. Essay questions:**

**(2 X 20 = 40)**

1. Discuss the pathogenesis and management of Pulmonary Thromboembolism.
2. Define bronchiole and draw the diagram. Define bronchiolitis. Write in detail the pathophysiology, clinical features and management of different forms of Bronchiolitis..

#### **II. Write short notes on:**

**(10 X 6 = 60)**

1. Hospital acquired pneumonia.
2. Bupropion.
3. Bronchial provocation test.
4. Vanishing lung syndrome.
5. Acute lung injury.
6. Neurogenic pulmonary oedema.
7. Polysomnography.
8. Tumor markers.
9. Bronchial adenoma.
10. Environmental pollution.

## **M.D. RESPIRATORY MEDICINE**

### **Paper-IV**

#### **Recent advances in Tuberculosis and Chest diseases**

**Time: Three hours**

**Maximum Marks: 100**

**Answer ALL questions.**

#### **I. Essay questions:**

**(2 X 20 = 40)**

1. Classify the mediastinal tumors. Discuss the various investigation with emphasis on mediastinoscopy.
2. Discuss the various modes of weaning from ventilator.

#### **II. Write short notes on:**

**(10 X 6 = 60)**

1. Endobronchial ultrasound (EBUS).
2. Exercise induced asthma.
3. Dynamic stents.
4. Pulmonary rehabilitation.
5. BOOP.
6. Lipoid pneumonitis.
7. Humidifier fever.
8. Melioidosis.
9. Hoover's sign.
10. Chemical Pleurodesis.

## 9.RECOMMENDED LIST OF BOOKS& JOURNALS

1. AP Fish man Pulmonary Diseases and Disorders - 2 volume 5<sup>th</sup> Edition McGraw Hill, 2015.
2. Fraser & Pare's Diagnosis of the Diseases of the Chest - 4<sup>th</sup> Edition Elsevier, 2012.
3. Murray and Nadel - Textbook of Pulmonary medicine - 6<sup>th</sup> Edition 2volume, Saunders, 2015.
4. George and Light - Essentials of Pulmonary and Critical Care Medicine - 5<sup>th</sup> edition, Lippincott, Williams & Wilkins, 2005.
5. Gibson -Textbook of Pulmonary Medicine - 3<sup>rd</sup> edition, Lippincott, 2005.
6. Egan's Fundamentals of Respiratory Care. 9<sup>th</sup> edition, MOSBY, 2009.
7. Principles of Chest X-ray Diagnosis - Simon. 4<sup>th</sup> edition JayPee Bros, 1978.
8. Respiratory Physiology JB west - 9<sup>th</sup> edition, Lippincott, 2012.
9. Paul Marino - The ICU book - 4<sup>th</sup> Edition Lippincott, 2013.
10. Principle of Practice Sleep Medicine - Kryger. 5<sup>th</sup> Edition Elsevier, 2011.
11. Thoracic imaging - Webb & Higgins Lippincott, 2010.
12. Diagnostic thoracic imaging - Miller, McGraw Hill 2006.
13. Crofton & Douglas -Respiratory Diseases - 2 volume 5<sup>th</sup> edition Blackwell, 2008.
14. Macleods - Clinical Examination-13<sup>th</sup> edition Churchill Livingstone, 2013.
15. Harrisons -Principles of Internal Medicine - Fauci et al., 19<sup>th</sup> edition, McGraw Hill, 2015
16. Davidson -Principles and Practice of Medicine. 22<sup>nd</sup> Edition Churchill Livingston, 2014.
17. Udwadia- Principles of critical care - 3<sup>rd</sup> Edition Oxford, 2014.
18. Chang - Clinical Applications of Mechanical Ventilation. 4<sup>th</sup> Edition Thomson, 2014.
19. Clinical Pulmonary Medicine - Albert & Spiro-3<sup>rd</sup> Edition Elsevier Mosby, 2008.

20. Synopsis of Diseases of the Chest -Fraser & Spiro-3<sup>rd</sup> Edition Elsevier, 2005.
21. Tuberculosis – Case finding by Toman. 2<sup>nd</sup> Edition WHO Publication, 2004.
22. Pleural Diseases by Light. 5<sup>th</sup> Edition Lippincott, 2007.

### **Recommended List of Journals**

1. Lung India
2. Indian Journal of Chest diseases and allied sciences
3. Indian Journal of Tuberculosis
4. Thorax
5. International Journal of TB and Lung Diseases
6. Chest
7. American Journal of Respiratory and Critical care medicine
8. European Respiratory journal
9. European Respiratory review
10. The Lancet
11. Journals of Indian medical association
12. New England Journal of Medicine
13. Journal of association of physicians of India
14. Clinics in chest medicine
15. American journal of roentgenology
16. Cancer
17. Cancer research
18. Journal of thoracic and cardiovascular surgery
19. Respiration
20. Current opinion in Pulmonary Medicine

***The secret of success is constancy of purpose***  
***- Disraeli***



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