

**Implement of syllabus for Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics for the academic year 2020-2021 admission onwards.**

**UNIT I: EPIDEMIOLOGY**

Introduction: Historical aspects and evolution of epidemiology, definitions and concepts in Epidemiology.

Natural history of disease. Approaches in Epidemiology. Descriptive and Analytical Epidemiology, Disease burden and Measures of risk and death. Epidemiological Investigations.

**UNIT-II – RESEARCH METHODOLOGY**

Principles of Research study designs, Sampling Methods, Sample size Estimation, Protocol writing and Measures of Association.

Introduction to Operations Research.

**UNIT III: BIOSTATISTICS**

Fundamentals of Biostatistics: Introduction, Types of data, Tabular and graphical presentation of data. Measures of location, dispersion and correlation: Measures of central tendency. Mean, mode, median, GM, HM, quartiles Measures of dispersion— Range, Standard Deviation, Variance, Coefficient of Variation.

Probability and statistical inference: Concept and probability distribution. Normal distribution— density curves, applications and statistical tables. Concept of significance tests, parametric and nonparametric tests, standard error and confidence intervals.

Inferential statistics: Probability and distributions – Poisson, Binomial and Normal distribution – Chi-square test – Hypothesis test - Student's t-test – Correlation and Regression – ANOVA.

**UNIT IV: MEDICAL ETHICS**

Bioethics and Medical ethics: Historical perspectives & Introduction to Bioethics, Nuremberg Code, Declaration of Helsinki, Principle of essentiality, informed consent, confidentiality, minimisation of risk, accountability and responsibility. Ethics of clinical trials: Drug trials, vaccine trials, Clinical Trials with medical devices/surgical procedures/radioactive materials, Research in transplantation and stem cell therapy. Regulatory framework and guidelines for conduction of human research: Review processes, Institutional ethical committees, composition of committees, review procedures, WHO, UNESCO and ICMR guidelines.

## **References :**

1. Epidemiology: An Introduction. Kenneth J. J. Rothman. Latest edition / Pub. Date: May 2002. Publisher: Oxford University Press.
2. Epidemiology. Leon Gordis. Latest edition / Pub. Date: November 2004. Publisher: Elsevier Health Sciences.
3. Diseases and Human Evolution. Ethne Barnes. Latest edition / Latest edition / Pub. Date: March 2005. Publisher: University of New Mexico Press.
4. Epidemiology: Beyond the Basics. F. Javier Nieto, Moyses Szklo. Latest edition / Pub. Date: November 2003. Publisher: Jones & Bartlett Publishers, Inc.
5. Basic and Clinical Biostatistics. Beth Dawson, Robert G. Trapp, Robert Trapp. Latest edition / Pub. Date: March 2004.
6. Discovering Statistics Using SPSS. Andy Field. Latest edition / Pub. Date: April 2005. Publisher: SAGE Publications.
7. Arora PN & Malhon PK (1996). Biostatistics Imalaya Publishing House, Mumbai.
8. Sokal & Rohlf (1973). Introduction to Biostatistics, Toppan Co. Japan.
9. Stanton A & Clantz, Primer of Biostatistics — The McGraw Hill Inc., New York.
10. Government of India. Good Clinical Practices for Clinical Research in India. New Delhi: 2001
11. Indian Council of Medical Research. Ethical Guidelines for Biomedical Research on Human Subjects. New Delhi: 2000
12. United Nations Educational, Scientific and Cultural Organisation (UNESCO). Universal Declaration on Bioethics and Human Rights. Paris; 2005

## SCHEME OF EXAMINATION:

### 1. M.OPTOM :-

#### **FIRST YEAR**

| Paper | Subjects                                                                           | Internal Assessment |     | Theory |     | Practical |     | Viva Voice |     |
|-------|------------------------------------------------------------------------------------|---------------------|-----|--------|-----|-----------|-----|------------|-----|
|       |                                                                                    | (IA)                |     |        |     |           |     |            |     |
|       |                                                                                    | Max                 | Min | Max    | Min | Max       | Min | Max        | Min |
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50                  | 25  | 100    | 50  | --        | --  | -          | -   |
| 2.    | Ocular Diseases and Diagnostics - I                                                | 50                  | 25  | 100    | 50  | -         | -   | -          | -   |
| 3.    | Advanced Contact Lenses - I                                                        | 50                  | 25  | 100    | 50  | 100       | 50  | -          | -   |
| 4.    | Paediatric Optometry and Binocular Vision                                          | 50                  | 25  | 100    | 50  | 100       | 50  | -          | -   |
| 5.    | Low Vision Care and Geriatric Optometry                                            | 50                  | 25  | 100    | 50  | 100       | 50  | -          | -   |
| 6.    | Clinics (General)                                                                  | 50                  | 25  | --     | --  | 100       | 50  | 50         | 25  |

### 2. M.SC MEDICAL LABORATORY TECHNOLOGY :-

#### **FIRST YEAR**

| Paper | Subjects                                                                           | Internal Assessment |     | Theory |     | Practical |     | Viva Voice |     |
|-------|------------------------------------------------------------------------------------|---------------------|-----|--------|-----|-----------|-----|------------|-----|
|       |                                                                                    | (IA)                |     |        |     |           |     |            |     |
|       |                                                                                    | Max                 | Min | Max    | Min | Max       | Min | Max        | Min |
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50                  | 25  | 100    | 50  | -         | -   | -          | -   |
| 2.    | General Biochemistry Medical Laboratory                                            | 50                  | 25  | 100    | 50  | 100       | 50  | -          | -   |

|    |                                                   |    |    |     |    |     |    |   |   |
|----|---------------------------------------------------|----|----|-----|----|-----|----|---|---|
|    | Technology                                        |    |    |     |    |     |    |   |   |
| 3. | General Bacteriology, Immunology and Parasitology | 50 | 25 | 100 | 50 | 100 | 50 | - | - |
| 4. | Haematology and clinical Pathology                | 50 | 25 | 100 | 50 | 100 | 50 | - | - |
| 5  | General Pathology                                 | 50 | 25 | 100 | 50 | 100 | 50 | - | - |

### 3. M.Sc., MOLECULAR VIROLOGY

#### FIRST YEAR

| Paper | Subjects                                                                          | IA  |     | Theory |     | Practicals |     |
|-------|-----------------------------------------------------------------------------------|-----|-----|--------|-----|------------|-----|
|       |                                                                                   | Max | Min | Max    | Min | Max        | Min |
| I     | Principles of Epidemiology, Research Methodology, Biostatistic and Medical Ethics | 50  | 25  | 100    | 50  | -          | -   |
| II    | Basic Microbiology, Virology and Immunology                                       | 50  | 25  | 100    | 50  | 100        | 50  |
| III   | Basic and Applied Viral Genetics and Entomology                                   | 50  | 25  | 100    | 50  | 100        | 50  |

### 4. MSc., Clinical Nutrition

#### FIRST YEAR

| Paper | Subject                                                                            | IA  |     | Theory |     |
|-------|------------------------------------------------------------------------------------|-----|-----|--------|-----|
|       |                                                                                    | Max | Min | Max    | Min |
| 1     | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50  | 25  | 100    | 50  |
| 2     | Applied Physiology                                                                 | 50  | 25  | 100    | 50  |

|   |                             |    |    |     |    |
|---|-----------------------------|----|----|-----|----|
| 3 | Nutritional Biochemistry    | 50 | 25 | 100 | 50 |
| 4 | Medical & Food Microbiology | 50 | 25 | 100 | 50 |
| 5 | Advance Nutrition           | 50 | 25 | 100 | 50 |
| 6 | Principles of Food Science  | 50 | 25 | 100 | 50 |

## 5. M.SC RESPIRATORY THERAPY :

### **FIRST YEAR**

| PAPER | SUBJECTS                                                                          | THEORY |     | PRACTICAL |     | VIVA |     | INTERNAL ASSESSMENT |     |
|-------|-----------------------------------------------------------------------------------|--------|-----|-----------|-----|------|-----|---------------------|-----|
|       |                                                                                   | MAX    | MIN | MAX       | MIN | MAX  | MIN | MAX                 | MIN |
| I     | PRINCIPLES OF EPIDEMIOLOGY, RESEARCH METHODOLOGY, BIostatISTICS & MEDICAL ETHICS  | 100    | 50  |           |     |      |     | 50                  | 25  |
| 11    | APPLIED ASPECTS OF ANATOMY, PHYSIOLOGY AND BIOCHEMISTRY                           | 100    | 50  | 100       | 50  | 50   | 25  | 50                  | 25  |
| III   | APPLIED ASPECTS OF PHARMACOLOGY, MICROBIOLOGY AND PATHOLOGY                       | 100    | 50  | 100       | 50  | 50   | 25  | 50                  | 25  |
| IV    | EQUIPMENTS IN RESPIRATORY MEDICINE & ADVANCED RESPIRATORY THERAPY & CRITICAL CARE | 100    | 50  | 100       | 50  | 50   | 25  | 50                  | 25  |

## **6. M.SC SPORTS AND FITNESS NUTRITION**

### **First Year**

| Paper | SUBJECTS                                                                           | I.A |    | THEORY |    |
|-------|------------------------------------------------------------------------------------|-----|----|--------|----|
| 1     | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50  | 25 | 100    | 50 |
| 2     | Exercise Physiology for Sports and Fitness                                         | 50  | 25 | 100    | 50 |

## **7. M.SC Sports and Fitness Psychology**

### **First Year**

| Paper | Subjects                                                                           | Internal Assessment<br>(IA) |     | Theory |     |
|-------|------------------------------------------------------------------------------------|-----------------------------|-----|--------|-----|
|       |                                                                                    | Max                         | Min | Max    | Min |
| I     | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50                          | 25  | 100    | 50  |
| II    | Exercise Physiology for Sports and Fitness                                         | 50                          | 25  | 100    | 50  |

## **8. M.SC BIOETHICS**

### **FIRST YEAR**

| PAPER | SUBJECTS                                                                           | THEORY |     | PRACTICAL |     | VIVA |     | I.A |     |
|-------|------------------------------------------------------------------------------------|--------|-----|-----------|-----|------|-----|-----|-----|
|       |                                                                                    | Max    | Min | Max       | Min | Max  | Min | Max | Min |
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 100    | 50  | -         | -   | -    | -   | 50  | 25  |
| 2.    | Philosophy and theories                                                            | 100    | 50  | 150       | 75  | 50   | 25  | 50  | 25  |
| 3.    | Religion and Bioethics                                                             | 100    | 50  |           |     |      |     | 50  | 25  |
| 4.    | Law and Global Health ethics                                                       | 100    | 50  |           |     |      |     | 50  | 25  |

## **09. M.Sc Medical Physics :-**

### **FIRST YEAR**

| PAPER | SUBJECTS                                                                           | I.A |     | THEORY |     | PRACTICAL |     | VIVA |     |
|-------|------------------------------------------------------------------------------------|-----|-----|--------|-----|-----------|-----|------|-----|
|       |                                                                                    | MAX | MIN | MAX    | MIN | MAX       | MIN | MAX  | MIN |
| 1     | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 2     | Radiation Physics                                                                  | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 3     | Radiological Mathematics                                                           | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 4     | Anatomy and Physiology and Pathology                                               | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 5     | Radiation Dosimetry and Standardization                                            | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 6     | Radiation Detectors and Instrumentation                                            | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 7     | Physics of Medical Imaging                                                         | 50  | 25  | 100    | 50  | -         | -   | -    | -   |
| 8     | Physics of Radiation Therapy                                                       | 50  | 25  | 100    | 50  | 100       | 50  | 50   | 25  |

## **10. M.Sc Radiotherapy Technology:-**

| PAPER | SUBJECTS                                                                                            | I.A |     | THEORY |     |
|-------|-----------------------------------------------------------------------------------------------------|-----|-----|--------|-----|
|       |                                                                                                     | MAX | MIN | MAX    | MIN |
| 1     | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics                  | 50  | 25  | 100    | 50  |
| 2     | Human applied and Imaging Anatomy, Physiology, Pathology & Terminiology                             | 50  | 25  | 100    | 50  |
| 3     | Imaging Modalities, Equipment Operation, Safety and Maintenance related to Radiotherapy and Medical | 50  | 25  | 100    | 50  |

|    |                                                                                    |    |    |     |    |
|----|------------------------------------------------------------------------------------|----|----|-----|----|
|    | Physics                                                                            |    |    |     |    |
| 4  | Patient Care and Evaluation including BLS                                          | 50 | 25 | 100 | 50 |
| 5. | Adoption of New Radiotherapy Technology, Radiation Hazards, Evaluation and Control | 50 | 25 | 100 | 50 |

## 11. M.Sc Blood Banking Technology

### FIRST YEAR

| Paper | Subjects                                                                           | Internal Assessment (IA) |     | Theory |     | Practical |     | Viva |     |
|-------|------------------------------------------------------------------------------------|--------------------------|-----|--------|-----|-----------|-----|------|-----|
|       |                                                                                    | Max                      | Min | Max    | Min | Max       | Min | Max  | Min |
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50                       | 25  | 100    | 50  | -         | -   | -    | -   |
| 2.    | Microbiology & Biochemistry                                                        | 50                       | 25  | 100    | 50  | 100       | 50  | -    | -   |
| 3.    | Haematology                                                                        | 50                       | 25  | 100    | 50  | 100       | 50  | -    | -   |
| 4.    | General Immunology                                                                 | 50                       | 25  | 100    | 50  | -         | -   | -    | -   |
| 5.    | Immunohaematology                                                                  | 50                       | 25  | 100    | 50  | 100       | 50  | -    | -   |

## **12. M.SC Critical Care Technology**

### **FIRST YEAR**

| PAPER | SUBJECTS                                                                           | THEORY |    | IA |    | Practical |    | Viva |    |
|-------|------------------------------------------------------------------------------------|--------|----|----|----|-----------|----|------|----|
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 100    | 50 | 50 | 25 | -         | -  | -    | -  |
| 2.    | Applied Anatomy and Physiology related to critical care                            | 100    | 50 | 50 | 25 | 100       | 50 | 50   | 25 |
| 3.    | Applied Biochemistry and Pharmacology related to critical care                     | 100    | 50 | 50 | 25 | 100       | 50 | 50   | 25 |
| 4.    | Applied pathology and Microbiology related to critical care                        | 100    | 50 | 50 | 25 | -         | -  | -    | -  |

## **13. Master of Hospital Administration (AHS)**

### **First year**

| Paper | Subject                                                                            | Internal Assessment (IA) |     | Theory |     |
|-------|------------------------------------------------------------------------------------|--------------------------|-----|--------|-----|
|       |                                                                                    | Max                      | Min | Max    | Min |
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50                       | 25  | 100    | 50  |
| 2.    | Management Concepts and Organization Behaviour                                     | 50                       | 25  | 100    | 50  |
| 3. *  | Financial and Management Accounting                                                | 50                       | 25  | 100    | 50  |
| 4. *  | Health Care Economics                                                              | 50                       | 25  | 100    | 50  |
| 5.    | Community Medicine                                                                 | 50                       | 25  | 100    | 50  |
| 6.    | Marketing of Hospital Services                                                     | 50                       | 25  | 100    | 50  |
| 7     | Logistics and Supply Chain Management in Health Care Services                      | 50                       | 25  | 100    | 50  |
| 8     | Healthcare Human Resources Management                                              | 50                       | 25  | 100    | 50  |
| 9.    | Hospital Management Information System                                             | 50                       | 25  | 100    | 50  |
| 10. * | Materials and Equipment Management                                                 | 50                       | 25  | 100    | 50  |
| 11 *  | Public Health, Health Education                                                    | 50                       | 25  | 100    | 50  |

#### **14. M.PHIL CLINICAL SOCIAL WORK**

##### **First Year**

| Paper | Subject                                                                            | Internal Assessment (IA) |     | Theory |     | Practical |     | Viva |     |
|-------|------------------------------------------------------------------------------------|--------------------------|-----|--------|-----|-----------|-----|------|-----|
|       |                                                                                    | Max                      | Min | Max    | Min | Max       | Min | Max  | Min |
| 1.    | Principles of Epidemiology, Research Methodology, Biostatistics and Medical Ethics | 50                       | 25  | 100    | 50  | -         | -   | -    | -   |
| 2     | Social and Community Health                                                        | 50                       | 25  | 100    | 50  | -         | -   | -    | -   |
| 3     | Health Psychology                                                                  | 50                       | 25  | 100    | 50  | -         | -   | -    | -   |
| 4     | Case Log                                                                           | 50                       | 25  | -      | -   | -         | -   | 50   | 25  |