

**Teerthanker Mahaveer University**  
**Teerthanker Mahaveer Medical College & Research Centre**

**M.Sc. Medical Pharmacology**

**Programme Outcome**

<b>PO-1</b>	:	Describe the pharmacokinetics and pharmacodynamics, indications, contraindications, interactions and adverse reactions of essential and commonly used drugs.
<b>PO-2</b>	:	Understand the concept of rational drug therapy in clinical pharmacology, the use of appropriate drug/ drugs in a particular disease with consideration of its/ their cost, efficacy and safety for individual needs and for mass therapy under national health programmes.
<b>PO-3</b>	:	Understand pharmacological basis of prescribing drugs in special medical situations such as pregnancy, lactation, infancy and old age.
<b>PO-4</b>	:	Prescribe drugs for common ailments and identify adverse drug reactions and their reporting.

**Course Outcomes**

**M.Sc. Medical 1st Year**

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSC101</b>	<b>Basics of Anatomy</b>	<b>7</b>

1. Understanding the basics of gross anatomy.
2. Understanding the biology of cells and tissues.
3. Analysing different types of Genetics and their applications
4. Able to show anatomical relation of various organs.
5. Able to answer genetic basis of various developmental anomalies.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSC102</b>	<b>Basics of Physiology</b>	<b>6</b>

1. Understanding the working of internal organ and system.
2. Understanding the anatomy of different organs
3. Understanding the physiological functions of the biological systems
4. Application of functioning aspects of the human body at molecular level.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSC103</b>	<b>Basics of Biochemistry</b>	<b>5</b>

1. Analysing the concepts of electrolytes and electrolytic dissociation, pH and its biological significance, buffers, Henderson-Hasselbalch equation, biological buffer systems and their importance.

2. Understanding the laws of thermodynamics, concepts of entropy, enthalpy and free energy changes and their application to biological systems and various biochemical studies and reactions.
3. Understanding the aerobic and anaerobic respiration and various intermediary mechanisms involved, oxidative phosphorylation

Course code	Course Title	Credit
<b>MSC104</b>	<b>Research Methodology</b>	<b>1</b>

1. Understanding the use and application of the methods of data collection and analysis.
2. Critically evaluating research methodology and findings.
3. Applying their role and others' roles as researchers.

Course code	Course Title	Credit
<b>MSC151</b>	<b>Basics of Anatomy (Lab)</b>	<b>3</b>

1. Understanding gross anatomy of entire body including upper limb, lower limb, thorax, abdomen, pelvis, perineum, head and neck, brain and spinal cord.
2. Understanding the normal disposition of gross structure and their interrelationship in the human body.
3. Analysing the integrated functions of organs systems and locate the site of gross lesions according to deficits encountered.
4. Analysing the process of gametogenesis, fertilization, implantation and placenta formation in early human embryonic development along with its variation and applied anatomy.

Course code	Course Title	Credit
<b>MSC152</b>	<b>Basics of Physiology</b>	<b>3</b>

1. Understanding all aspect of general and applied physiology and general principles of medical education.
2. Applying the basic physiological mechanisms of human body with reference to their implications in the pathophysiology of diseases, their diagnosis, treatment and management.
3. Conducting clinical and experimental research and interpret relevant findings.

Course code	Course Title	Credit
<b>MSC153</b>	<b>Basics of Biochemistry</b>	<b>2</b>

1. Understanding the concepts of electrolytes and electrolytic dissociation, pH and its biological significance, buffers, Henderson-Hasselbalch equation, biological buffer systems and their importance.
2. Understanding the laws of thermodynamics, concepts of entropy, enthalpy and free energy changes and their application to biological systems and various biochemical studies and reactions.
3. Understanding aerobic and anaerobic respiration and various intermediary mechanisms involved oxidative phosphorylation.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSP 201</b>	<b>General pharmacological principles &amp; applied sciences</b>	<b>5</b>

1. Describe the pharmacokinetics and pharmacodynamics, indications, contraindications, interactions and adverse reactions of essential and commonly used drugs.
2. Explain the concept of rational drug therapy in clinical pharmacology, the use of appropriate drug/ drugs in a particular disease with consideration of its/ their cost, efficacy and safety for individual needs and for mass therapy under national health programmes.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSP 202</b>	<b>Systemic pharmacology</b>	<b>5</b>

1. Explain pharmacological basis of prescribing drugs in special medical situations such as pregnancy, lactation, infancy and old age.
2. Prescribe drugs for common ailments and identify adverse drug reactions and their reporting.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSP 251</b>	<b>Pharmacology practical I</b>	<b>12</b>

1. This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.
2. Interpret the data of experiments designed for the study of effects of drugs and bioassays, which are observed during the study.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSP 301</b>	<b>Experimental pharmacology, bioassay &amp; recent advancement</b>	<b>5</b>

1. Detail understanding of theoretical and practical knowledge of all core and allied subjects of pharmaceutical sciences, which consist of dosage form design, routes of administration of various drugs, their mechanism of action, chemical moiety involved, doses of drugs, patient treatment, patient counseling, drug dispensing, hospital administration, drug manufacturing, QA/QC and regulation etc.
2. This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSP 302</b>	<b>Clinical pharmacokinetics &amp; recent advances</b>	<b>5</b>

1. Highlight the concepts and operative components of pharmacovigilance, clinical pharmacy, hospital pharmacy, community pharmacy, pharmaceutical care, pharmacovigilance, pharmacoeconomics, clinical research, clinical pharmacokinetics and other related areas for the benefit of academicians, hospital/community pharmacists and industry, emphasizing the consequences of the use of medications.

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSP 351</b>	<b>Pharmacology practical II</b>	<b>12</b>

1. Interpret the data of experiments designed for the study of effects of drugs and bioassays, which are observed during the study.
2. Critically appraise the promotional drug literature.

#### **Teaching Methodology**

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSC 201</b>	<b>Teaching Methodology</b>	<b>3</b>

1. Understand various teaching modalities.
2. Apply experiments related to the subject.
3. Apply skills required for teaching to undergraduate students.

#### **Fundamental of Computer**

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSC 251</b>	<b>Fundamental of Computer</b>	<b>1</b>

1. Apply computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing and data analytics of varying complexity.
2. Apply the contemporary trends in industrial/research settings and there by innovate novel solutions to existing problems.
3. Identify, analyze, and synthesize scholarly literature relating to the field of computer science.
4. Apply software development tools, software systems, and modern computing platforms.

#### **Teaching practice**

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSC 351</b>	<b>Teaching practice</b>	<b>3</b>

1. Understand teaching methods required for explaining the subject.
2. Build ability to communicate well to students
3. Apply practical skills required for demonstration/teaching.

#### **Thesis**

<b>Course code</b>	<b>Course Title</b>	<b>Credit</b>
<b>MSA, MSF, MSB, MSM, MSP 352</b>	<b>Thesis</b>	<b>12</b>

1. Develop deeper knowledge, understanding, capabilities and attitudes in the context of the programme of study.
2. Delve more deeply into and synthesise knowledge acquired in previous studies. A thesis for a Master of Science programmes should place emphasis on the technical/scientific/artistic aspects of the subject matter.
3. Display the knowledge and capability required for independent work as a Master of Science.
4. Plan and use adequate methods to conduct qualified tasks in given frameworks and to evaluate this work.
5. Contribute to research and development work