

Teerthanker Mahaveer University
Teerthanker Mahaveer Medical College & Research Centre

M.Sc. Medical Biochemistry

Programme Outcome

PO-1	:	Get exposed to strong theoretical and practical background in fundamental concepts.
PO-2	:	Get insights of multiple important technical areas of Biochemistry.
PO-3	:	Apply contextual knowledge and modern tools of biochemical research for solving problems.
PO-4	:	Express ideas persuasively in written and oral form to develop their leadership qualities.
		Demonstrate professional and ethical attitude with enormous responsibility to serve the society.
		The training provided will give students the breadth and depth of scientific knowledge.

Course Outcomes

M.Sc. Medical 1st Year

Course code	Course Title	Credit
MSC101	Basics of Anatomy	7

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.

Course code	Course Title	Credit
MSC102	Basics of Physiology	6

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.

Course code	Course Title	Credit
MSC103	Basics of Biochemistry	5

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
MSC104	Research Methodology	1

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
MSC151	Basics of Anatomy (Lab)	3

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
MSC152	Basics of Physiology	3

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
MSC153	Basics of Biochemistry	2

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.

Course code	Course Title	Credit
MSB 201	General biochemistry and instrumentation	5

1. Get insights of multiple important technical areas of Biochemistry.
2. Apply contextual knowledge and modern tools of biochemical research for solving problems.
3. Express ideas persuasively in written and oral form to develop their leadership qualities.
4. Demonstrate professional and ethical attitude with enormous responsibility to serve the society.
5. Understand the breadth and depth of scientific knowledge.

Course code	Course Title	Credit
MSB 202	Metabolism and nutrition	5

1. Apply knowledge and techniques of Biochemistry
2. Scale up of biochemical process after designing, optimization and analysis for developing products required for society.
3. Compile and interpret Biological data using computer software.
4. Apply current developments in the biochemical research

Course code	Course Title	Credit
MSB 201	General biochemistry and instrumentation	5

1. Understand the breadth and depth of scientific knowledge.
2. Identify, analyze and design safe experimental process to provide efficient solutions by fair interpretation of data

Course code	Course Title	Credit
MSB 201	Biochemistry practical I	5

1. Understand the importance of biological macromolecules
2. To acquire knowledge in the quantitative and qualitative estimation of biomolecules
3. Understand the influence and role of structure in reactivity of biomolecules
4. Understand the role of biomolecules and their functions

Course code	Course Title	Credit
MSB 201	General biochemistry and instrumentation	5

1. Understand the overview of major biomolecules –carbohydrates, lipids, proteins, aminoacids, nucleic acids, classification, structure, function of the abovementioned biomolecules
2. Analyse the biosynthesis and the degradation pathways involved.

Course code	Course Title	Credit
MSB 201	General biochemistry and instrumentation	5

1. Analyse the biological significance of biomolecules in metabolism
2. Understanding the properties, structure, function of enzymes, enzyme kinetics and their regulation, enzyme engineering.
3. Apply of enzymes in large scale industrial processes.

Teaching Methodology

Course code	Course Title	Credit
MSC 201	Teaching Methodology	3

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

Fundamental of Computer

Course code	Course Title	Credit
MSC 251	Fundamental of Computer	1

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

Course code	Course Title	Credit
MSC 351	Teaching practice	3

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

Course code	Course Title	Credit
MSA, MSF, MSB, MSM, MSP 352	Thesis	12

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