

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

MBBS (Bachelor of Medicine and Bachelor of Surgery)

Programme Outcome & Programme Specific Outcome

1. Provides the global competencies extracted from the Graduate Medical Education Regulations, 2018. The global competencies identified as defining the roles of the Indian Medical Graduate are the broad competencies that the learner has to aspire to achieve; teachers and curriculum planners must ensure that the learning experiences are aligned to this Manual.

2. Objectives of the Indian Graduate Medical Training Programme

The undergraduate medical education program is designed with a goal to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training program are hereby prescribed:-

2.1. National Goals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

- (a) recognize “health for all” as a national goal and health right of all citizens and by undergoing training for medical profession fulfill his/her social obligations towards realization of this goal.
- (b) learn every aspect of National policies on health and devote herself/himself to its practical implementation.
- (c) achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.
- (d) develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.
- (e) become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

2.2. Institutional Goals

In consonance with the national goals, each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

- (a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.
- (b) be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems.
- (c) appreciate rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.
- (d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

- (e) possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.
- (f) be familiar with the basic factors which are essential for the implementation of the National Health Programs including practical aspects of the following:
 - i) Family Welfare and Maternal and Child Health (MCH);
 - ii) Sanitation and water supply;
 - iii) Prevention and control of communicable and non-communicable diseases;
 - iv) Immunization;
 - v) Health Education;
 - vi) Indian Public Health Standards (IPHS) at various level of service delivery;
 - vii) Bio-medical waste disposal; and
 - viii) Organizational and or institutional arrangements.
- (g) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, General and hospital management, principal inventory skills and counseling.
- (h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.
- (i) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.
- (j) be competent to work in a variety of health care settings.
- (k) have personal characteristics and attitudes required for professional life including personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate, as given in the Graduate Medical Education Regulations, 2018

2.3. Goals for the Learner

In order to fulfill this goal, the Indian Medical Graduate must be able to function in the following roles appropriately and effectively:

- 2.3.1. Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- 2.3.2. Leader and member of the health care team and system with capabilities to collect, analyze, synthesize and communicate health data appropriately.
- 2.3.3. Communicator with patients, families, colleagues and community.
- 2.3.4. Lifelong learner committed to continuous improvement of skills and knowledge.
- 2.3.5. Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

3. Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

- 3.1. Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion

- 3.1.1. Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioral and social perspective.
 - 3.1.2. Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
 - 3.1.3. Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
 - 3.1.4. Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
 - 3.1.5. Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
 - 3.1.6. Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
 - 3.1.7. Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
 - 3.1.8. Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
 - 3.1.9. Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
 - 3.1.10. Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frameworks.
 - 3.1.11. Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
 - 3.1.12. Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:
 - i) Disease prevention,
 - ii) Health promotion and cure,
 - iii) Pain and distress alleviation, and
 - iv) Rehabilitation and palliation.
 - 3.1.13. Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
 - 3.1.14. Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
 - 3.1.15. Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.
- 3.2. Leader and member of the health care team and system

- 3.2.1. Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- 3.2.2. Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- 3.2.3. Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- 3.2.4. Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- 3.2.5. Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- 3.2.6. Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition:
 - in a) life style diseases and b) cancer, in collaboration with other members of the health care team.
- 3.3. Communicator with patients, families, colleagues and community
 - 3.3.1. Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
 - 3.3.2. Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
 - 3.3.3. Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
 - 3.3.4. Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision making.
- 3.4. Lifelong learner committed to continuous improvement of skills and knowledge
 - 3.4.1. Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
 - 3.4.2. Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
 - 3.4.3. Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
 - 3.4.4. Demonstrate ability to search (including through electronic means), and critically reevaluate the medical literature and apply the information in the care of the patient.
 - 3.4.5. Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.
- 3.5. Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession
 - 3.5.1. Practice selflessness, integrity, responsibility, accountability and respect.
 - 3.5.2. Respect and maintain professional boundaries between patients, colleagues and society.

- 3.5.3. Demonstrate ability to recognize and manage ethical and professional conflicts.
- 3.5.4. Abide by prescribed ethical and legal codes of conduct and practice.
- 3.5.5. Demonstrate a commitment to the growth of the medical profession as a whole.

Course Outcomes

MBS101	CO-1	Understanding of the gross and microscopic structure and development of human body,
	CO-2	Comprehension of the normal regulation and integration of the functions of the organs and systems on basis of the structure and genetic pattern,
	CO-3	Understanding of the clinical correlation of the organs and structures involved and interpret the anatomical basis of the disease presentations.
MBS102	CO-1	Understanding of the normal functioning of the organs and organ systems of the body,
	CO-2	Comprehension of the normal structure and organization of the organs and systems on basis of the functions,
	CO-3	Understanding of age-related physiological changes in the organ functions that reflect normal growth and development,
	CO-4	Understand the physiological basis of diseases.
MBS103	CO-1	Biochemical and molecular processes involved in health and disease,
	CO-2	Importance of nutrition in health and disease,
	CO-3	Biochemical basis and rationale of clinical laboratory tests, and demonstrate ability to interpret these in the clinical context.
MBS301	CO-1	Understanding of physical, social, psychological, economic and environmental determinants of health and disease,
	CO-2	Ability to recognize and manage common health problems including physical, emotional and social aspects at individual family and community level in the context of National Health Programmes,
	CO-3	Ability to Implement and monitor National Health Programmes in the primary care setting,
	CO-4	Knowledge of maternal and child wellness as they apply to national health care priorities and programmes,
	CO-5	Ability to recognize, investigate, report, plan and manage community health problems including malnutrition and emergencies.
MBS201	CO-1	Comprehension of the causes, evolution and mechanisms of diseases,
	CO-2	Knowledge of alterations in gross and cellular morphology of organs in disease states,
	CO-3	Ability to correlate the natural history, structural and functional changes with the clinical manifestations of diseases, their diagnosis and therapy
MBS202	CO-1	Understanding of role of microbial agents in health and disease,
	CO-2	Understanding of the immunological mechanisms in health and disease,
	CO-3	Ability to correlate the natural history, mechanisms and clinical manifestations of infectious diseases as they relate to the properties of microbial agents,
	CO-4	Knowledge of the principles and application of infection control

		measures,
	CO-5	An understanding of the basis of choice of laboratory diagnostic tests and their interpretation, antimicrobial therapy, control and prevention of infectious diseases.
MBS203	CO-1	Knowledge about essential and commonly used drugs and an understanding of the pharmacologic basis of therapeutics,
	CO-2	Ability to select and prescribe medicines based on clinical condition and the pharmacologic properties, efficacy, safety, suitability and cost of medicines for common clinical conditions of national importance,
	CO-3	Knowledge of pharmacovigilance, essential medicine concept and sources of drug information and industry-doctor relationship,
	CO-4	Ability to counsel patients regarding appropriate use of prescribed drug and drug delivery systems.
MBS204	CO-1	Understanding of medico-legal responsibilities of physicians in primary and secondary care settings,
	CO-2	Understanding of the rational approach to the investigation of crime, based on scientific and legal principles,
	CO-3	Ability to manage medical and legal issues in cases of poisoning / overdose,
	CO-4	Understanding the medico-legal framework of medical practice and medical negligence,
	CO-5	Understanding of codes of conduct and medical ethics.
MBS302	CO-1	Knowledge of common eye problems in the community
	CO-2	Recognize, diagnose and manage common eye problems and identify indications for referral,
	CO-3	Ability to recognize visual impairment and blindness in the community and implement National programmes as applicable in the primary care setting.
MBS303	CO-1	Knowledge of the common Otorhinolaryngological (ENT) emergencies and problems,
	CO-2	Ability to recognize, diagnose and manage common ENT emergencies and problems in primary care setting,
	CO-3	Ability to perform simple ENT procedures as applicable in a primary care setting,
	CO-4	Ability to recognize hearing impairment and refer to the appropriate hearing impairment rehabilitation programme.
MBS401	CO-1	Demonstrate understanding of the patho-physiologic basis, epidemiological profile, signs and symptoms of disease and their investigation and management,
	CO-2	Competently interview and examine an adult patient and make a clinical diagnosis,
	CO-3	Appropriately order and interpret laboratory tests,
	CO-4	Initiate appropriate cost-effective treatment based on an understanding of the rational drug prescriptions, medical interventions required and preventive measures,
	CO-6	Follow up of patients with medical problems and refer whenever required,

	CO-7	Communicate effectively, educate and counsel the patient and family,
	CO-8	Manage common medical emergencies and refer when required,
	CO-9	Independently perform common medical procedures safely and understand patient safety issues.
MBS401A	CO-1	Knowledge of common chest diseases, their clinical manifestations, diagnosis and management,
	CO-2	Ability to recognize, diagnose and manage pulmonary tuberculosis as contemplated in National Tuberculosis Control programme,
	CO-3	Ability to manage common respiratory emergencies in primary care setting and refer appropriately.
MBS401B	CO-1	Understanding of the principles of diagnosis of diseases of the skin, hair, nail and mucosa,
	CO-2	Ability to recognize, diagnose, order appropriate investigations and treat common diseases of the skin including leprosy in the primary care setting and refer as appropriate,
	CO-3	A syndromic approach to the recognition, diagnosis, prevention, counseling, testing and management of common sexually transmitted diseases including HIV based on national health priorities,
	CO-4	Ability to recognize and treat emergencies including drug reactions and refer as appropriate.
MBS401C	CO-1	Ability to promote mental health and mental hygiene,
	CO-2	Knowledge of etiology (bio-psycho-social-environmental interactions), clinical features, diagnosis and management of common psychiatric disorders across all ages,
	CO-3	Ability to recognize and manage common psychological and psychiatric disorders in a primary care setting, institute preliminary treatment in disorders difficult to manage, and refer appropriately,
	CO-4	Ability to recognize alcohol/ substance abuse disorders and refer them to appropriate centers,
	CO-5	Ability to assess risk for suicide and refer appropriately,
	CO-6	Ability to recognize temperamental difficulties and personality disorders,
	CO-7	Assess mental disability and rehabilitate appropriately,
	CO-8	Understanding of National and State programmes that address mental health and welfare of patients and community.
MBS402	CO-1	Ability to assess and promote optimal growth, development and nutrition of children and adolescents and identify deviations from normal,
	CO-2	Ability to recognize and provide emergency and routine ambulatory and First Level Referral Unit care for neonates, infants, children and adolescents and refer as may be appropriate,
	CO-3	Ability to perform procedures as indicated for children of all ages in the primary care setting,
	CO-4	Ability to recognize children with special needs and refer appropriately,
	CO-5	Ability to promote health and prevent diseases in children,
	CO-6	Ability to participate in National Programmes related to child health and in conformation with the Integrated Management of Neonatal and Childhood Illnesses (IMNCI) Strategy,
	CO-7	Ability to communicate appropriately and effectively.

MBS403	CO-1	<p>Obstetrics: The student must demonstrate ability to:</p> <ol style="list-style-type: none"> 1. Provide peri-conceptual counseling and antenatal care, 2. Identify high-risk pregnancies and refer appropriately, 3. Conduct normal deliveries, using safe delivery practices in the primary and secondary care settings, 4. Prescribe drugs safely and appropriately in pregnancy and lactation, 5. Diagnose complications of labor, institute primary care and refer in a timely manner, 6. Perform early neonatal resuscitation, 7. Provide postnatal care, including education in breast-feeding, 8. Counsel and support couples in the correct choice of contraception 9. Interpret test results of laboratory and radiological investigations as they apply to the care of the obstetric patient, 10. Apply medico-legal principles as they apply to tubectomy, Medical Termination of Pregnancy (MTP), Pre-conception and Prenatal Diagnostic Techniques (PC PNDT Act) and other related Acts. <p>Competencies in Gynecology: The student must demonstrate ability to:</p> <ol style="list-style-type: none"> a) Elicit a gynecologic history, perform appropriate physical and pelvic examinations and PAP smear in the primary care setting, b) Recognize, diagnose and manage common reproductive tract infections in the primary care setting, c) Recognize and diagnose common genital cancers and refer them appropriately.
MBS404	CO-1	Understanding of the structural and functional basis, principles of diagnosis and management of common surgical problems in adults and children,
	CO-2	Ability to choose, calculate and administer appropriately intravenous fluids, electrolytes, blood and blood products based on the clinical condition,
	CO-3	Ability to apply the principles of asepsis, sterilization, disinfection, rational use of prophylaxis, therapeutic utilities of antibiotics and universal precautions in surgical practice,
	CO-4	Knowledge of common malignancies in India and their prevention, early detection and therapy,
	CO-5	Ability to perform common diagnostic and surgical procedures at the primary care level,
	CO-6	Ability to recognize, resuscitate, stabilize and provide Basic & Advanced Life Support to patients following trauma,
	CO-7	Ability to administer informed consent and counsel patient prior to surgical procedures,
	CO-8	Commitment to advancement of quality and patient safety in surgical practice.
MBS404A	CO-1	Ability to recognize and assess bone injuries, dislocation and poly-trauma and provide first contact care prior to appropriate referral,
	CO-2	Knowledge of the medico-legal aspects of trauma,
	CO-3	Ability to recognize and manage common infections of bone and joints in

		the primary care setting,
	CO-4	Recognize common congenital, metabolic, neoplastic, degenerative and inflammatory bone diseases and refer appropriately,
	CO-5	Ability to perform simple orthopaedic techniques as applicable to a primary care setting,
	CO-6	Ability to recommend rehabilitative services for common orthopaedic problems across all ages.
MBS404B	CO-1	<p>Competencies in Anaesthesiology: The student must demonstrate ability to:</p> <ol style="list-style-type: none"> 1. Describe and discuss the pre-operative evaluation, assessing fitness for surgery and the modifications in medications in relation to anaesthesia / surgery, 2. Describe and discuss the roles of Anaesthesiologist as a peri-operative physician including pre-medication, endotracheal intubation, general anaesthesia and recovery (including variations in recovery from anaesthesia and anaesthetic complications), 3. Describe and discuss the management of acute and chronic pain, including labour analgesia, 4. Demonstrate awareness about the maintenance of airway in children and adults in various situations, 5. Demonstrate the awareness about the indications, selection of cases and execution of cardiopulmonary resuscitation in emergencies and in the intensive care and high dependency units, 6. Choose cases for local / regional anaesthesia and demonstrate the ability to administer the same, 7. Discuss the implications and obtain informed consent for various procedures and to maintain the documents.
MBS404C	CO-1	Understanding of indications for various radiological investigations in common clinical practice,
	CO-2	Awareness of the ill effects of radiation and various radiation protective measures to be employed,
	CO-3	Ability to identify abnormalities in common radiological investigations.