

No. D-11011/500/2024-AcademicCell (e-8284443)
Government of India
National Medical Commission

Sector-8, Dwarka
New Delhi-110075
12-09-2024

Subject: Guidelines for Competency Based Medical Education (CBME) Curriculum 2024- regarding

The revised guidelines for Competency Based Medical Education (CBME) Curriculum 2024 by the Under Graduate Medical Education Board (UGMEB) is enclosed herewith. All concerned stakeholders are requested to kindly take note of the same.

Encl.: As above

Signed by B Srinivas
Date: 12-09-2024 14:52:16

DR B SRINIVAS
SECRETARY

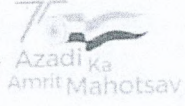
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- i. ACS/ PS/ Secretaries/ Department/s of Medical Education in all States/ Union Territories
- ii. PPS to Chairman, NMC
- iii. PPS to President(UGMEB)
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राष्ट्रीय आयुर्विज्ञान आयोग
National Medical Commission
Academic Cell
Undergraduate Medical Education Board

No.D-11011/500/2024/AC

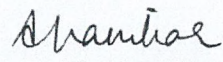
New Delhi, dated the 12/09/2024

Subject: Revised Competency Based Medical Education Curriculum (CBME) Guidelines, 2024 - National Medical Commission.

In response to the various queries raised by stakeholders in respect to the Disability Guidelines (Annexure-14) mentioned in the CBME Guidelines, 2024 and other issues raised in respect of Topics and Competencies of various departments mentioned in the Guidelines, all the requisite addition/deletion has been carried out after due consultation with the experts of each Subject group.

2. Accordingly, Under Graduate Medical Education Board in exercise of powers conferred by the National Medical Commission Act, 2019 particularly by sections 10, 24, 25 and 57 of the NMC Act, publishes the Modified Competency Based Medical Education Guidelines, 2024 along with CBME Topics and Competencies Volume-I, II and III.

3. These guidelines will supersede the earlier Guidelines issued by Undergraduate Medical Education Board (UGMEB) and will be implemented from the MBBS batch of 2024-25 onwards.


(Aruna V. Vanikar)
President (UGMEB)





COMPETENCY BASED MEDICAL EDUCATION (CBME) CURRICULUM 2024

1. Preamble

The new Graduate Medical Education Regulations (GMER) attempt to stand on the shoulders of the contributions and the efforts of resource persons, teachers and students (past and present). It intends to prepare the learner to provide health care to the evolving needs of the nation and the world.

Following the Regulations on Graduate Medical Education (GMER) 1997, a new crisp 'avatar' in the form of GMER 2023 was placed last year. Since five years are completed after implementation of CBME it was time to have a relook at all aspects of the various components in the existing regulations and guidelines, and adapt them to the changing demography, socio-economic context, perceptions, values, advancements in medical education and expectations of stakeholders. Emerging health care issues particularly in the context of emerging diseases, impact of advances in science and technology and shorter distances on diseases and their management also need consideration.

The thrust in the new guidelines is put on continuation and evolution of medical education based on feedback and experience of CBME in the last 5 years since its inception in 2019, making it more learner-centric, patient-centric, gender- sensitive, outcome-oriented and environment appropriate. The result is an outcome driven curriculum which conforms to global trends. Emphasis is made on alignment and integration of subjects both horizontally and vertically while respecting the strengths and necessity of subject-based instruction and assessment. This has necessitated a deviation from using "broad competencies"; instead, the reports have written end of phase subject competencies. These "competencies" can be mapped to the global competencies in the Graduate Medical Education Regulations.

The importance of ethical values, responsiveness to the needs of the patient and acquisition of communication skills is underscored by providing dedicated time in curriculum in the form of a longitudinal program titled 'AETCOM' based on Attitude, Ethics and Communication (AETCOM) competencies. Great emphasis has been placed on collaborative and inter disciplinary teamwork, professionalism, altruism and respect in professional relationships with due sensitivity to differences in thought,

socioeconomic position and gender.

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. The first contact physician needs to be skillful to perform duties of primary care physician and have requisite skills for promotive, preventative, rehabilitative, palliative care & referral services.

3. 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 to fulfill his social obligations towards realization of this goal.
- b) Learn key aspects of National policies on health and devote himself to its practical implementation.
- c) Achieve competence in the 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 an exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

4. 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 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.

- a. Be competent for working in the health care team from Phase 1 MBBS to Compulsory rotatory medical internship (CRMI) in a gradual manner with increasing complexity in an integrated multi-department involvement.
- b. Be competent to practice preventive, promotive, curative, palliative 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 medicines" and their common adverse effects.
- d. 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 and advocacy;
 - vi) Indian Public Health Standards (IPHS) at various level of service delivery;

- vii) Bio-medical waste disposal;
- 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 with maximum community participation.
- 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.

5. Goals for the Learner

In order to fulfill these goals, the Indian Medical Graduate must be able to function in the following Roles appropriately and effectively:-

- a. **Clinician** who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- b. **Leader** and member of the health care team and system with capabilities to collect, analyze, synthesize and communicate health data appropriately.
- c. **Communicate with patients**, families, colleagues, and community in a methodological and skillful way using various approaches in family visits, family adoption program, clinic-social cases, clinical cases and AETCOM training programs.

- d. **Lifelong learner** committed to continuous improvement of skills and knowledge.
- e. **Professional**, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession and society. Training of humanities and social sciences will be useful for this training.
- f. **Critical Thinker** who demonstrates problem solving skills in professional practice
- g. **Researcher** who generates and interprets evidence to ensure effective patient care as well as contribute in the field of medical research and practice.

6. 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 fulfill the roles, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

- a. **Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.**
 - Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioral and social perspective.
 - Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioral and social perspective.
 - Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence healthcare.
 - 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.
 - 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.

- 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.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
- 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.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frameworks.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- 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 confirm to established national and regional health programmers and policies for the following:
 - Disease prevention,
 - Health promotion and cure,
 - Pain and distress alleviation, and
 - Rehabilitation and palliation.
- Demonstrate ability to provide a continuum of care at the primary (including home care) and/or secondary level that addresses chronicity, mental and physical disability,
- Demonstrate ability to appropriately identify and refer patients who may require

specialized or advanced tertiary care.

- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

b. Leader and member of the health care team and system

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings. 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.
- 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.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- 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.

c. Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients, families, colleagues and community in a language that they understand and in a manner that will be mutually satisfying and beneficial to them as well as care givers cum learners to yield positive health care outcomes.
- Demonstrate ability to establish professional relationships with patients, families,

colleagues and community that are positive, understanding, humane, ethical, empathetic, and trustworthy.

- Demonstrate ability to communicate with patients, families, colleagues and community in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making and overcoming hesitancy towards health initiatives.

d. Lifelong learner committed to continuous improvement of skills and knowledge

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning. Demonstrate ability to search (including through electronic means), and critically re- evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

e. Professional who is committed to excellence, is ethical, responsive and accountable to patients, the profession and community.

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate commitment to the growth of the medical profession as a whole.

f. Critical Thinker who demonstrates problem solving skills in professional practice

- Perceive, analyse, synthesise and evaluate information obtained through observation, experience and communication that leads to rational clinical decision.
- Evaluate the credibility of information resources.
- Adequately consider the social, cultural and geographical diversity while practicing personalized medicine
- Develop independence of thought, clarity, integrity and self confidence in decision making.

g. Researcher who generates and interprets evidence to ensure effective patient care as well as contribute in the field of medical research and practice.

- Read, review, appraise and critique the scientific body of literature for practice of Evidence Based Medicine.
- Apply methodological approach to scientific enquiry for generating evidence.
- Demonstrate basic principles and ethical implications of research governance.

A. CURRICULUM (subject wise competencies are given in Competency Based Undergraduate Curriculum 2024 on NMC website)

➤ **Phase 1 :**

1. ANATOMY

Subject Goals:

At the end of anatomy teaching, a student should be able to demonstrate:

- i. Comprehension of normal structure, development and genetic pattern of organ and organ systems, as well as the clinical correlation of structures involved in diseases and its anatomical basis.

- ii. Comprehension of the normal disposition, clinically relevant inter-relationships, functional and cross -sectional Anatomy of the various organs and structures of the body.
- iii. Identification of the microscopic structure of various organs and tissues with the functions, as a prerequisite for understanding the altered state in various disease processes.
- iv. Basic principles and sequential development of the organs and systems; recognize the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards.
- v. Principles of karyotyping and identify the gross congenital anomalies.
- vi. Principles of newer imaging techniques and interpretation of CT scan, sonogram, MRI & Angiography.

2. PHYSIOLOGY

Subject Goals:

At the end of physiology teaching, the learner must be able to:

- i. Demonstrate knowledge of normal human physiology, organizational and functional relationship between cells, tissues and organs and body systems, age and sex related physiological changes in the organ functions that reflect normal growth and development.
- ii. Explain physiological variations (Genotype/Phenotype) with healthy ageing through the course of life i.e. fetal, neonatal, childhood, adolescence and adulthood and demonstrate understanding of the physiological responses and adaptation to environment and exercise.
- iii. Perform experiments to demonstrate physiological phenomenon and principles, interpret investigation results falling within the scope of physiology.

- iv. Apply principles of Physiology in clinicopathological conditions, diagnosis, investigations and management of diseased conditions.
- v. Conduct physical examination (general and system based) of normal subject in real or simulated conditions and demonstrate understanding of altered findings in physical examination of diseased conditions.

3. BIOCHEMISTRY

Subject Goals:

The learner after teaching learning in Biochemistry should be able to:

- i. Understand and explain Biochemical and molecular processes involved in health and disease.
- ii. Enlist and describe the cell organelles with their molecular and functional organization.
- iii. Understand basic enzymology and emphasize on its clinical applications wherein regulation of enzymatic activity is disturbed.
- iv. Describe Importance of nutrition in health and disease.
- v. Describe digestion and assimilation of nutrients and consequences of malnutrition.
- vi. Describe function and interrelationships of various biomolecules and consequences of deviation from the normal.
- vii. Describe and integrate metabolic pathways of various biomolecules with their regulatory mechanisms relevant to clinical conditions.
- viii. Describe Biochemical basis and rationale of clinical laboratory tests, Perform biochemical analytical tests relevant to clinical screening and diagnosis using conventional techniques / instruments and interpret investigative data.
- ix. Explain the biochemical basis of inherited disorders with their associated

sequel.

- x. Describe mechanisms involved in maintenance of water, electrolyte and acid base balance and consequences of their imbalances.
- xi. Outline basics genetics, explain the molecular mechanisms of gene expression and regulation, basic principles of biotechnology and latest techniques and their applications in medicine.
- xii. Demonstrate the skills of solving scientific and clinical problems and decision making.

➤ **Phase 2 :**

4. PATHOLOGY

Subject Goals:

At the end of the teaching learning in pathology learner should be able to:

- i. Demonstrate knowledge of causes, mechanisms, alterations in gross and cellular morphology of organs in disease states.
- ii. Explain, interpret and analyse the pathology with clinical condition including diseases which are locally and regionally relevant.
- iii. Perform experiments to demonstrate routine pathological investigations on blood and explain principles, interpret investigation results.
- iv. Perform experiments to demonstrate routine pathological investigations on the various biological samples and explain principles, interpret investigation results.
- v. Demonstrate updated pathological investigations on the various biological samples.

5. MICROBIOLOGY

Subject goals

At the end of Microbiology teaching-learning activities learner should be able to:



- i. Comprehend the immunological mechanisms in health and disease.
- ii. Comprehend the role of microbial agents in health and disease.
- iii. Correlate the natural history, mechanisms and clinical manifestations of infectious diseases as they relate to the properties of microbial agents.
- iv. Comprehend the principles and application of infection control measures.
- v. Comprehend the basis of choice of laboratory diagnostic tests and their interpretation.
- vi. Comprehend the principles of antimicrobial therapy and the control and prevention of infectious diseases.
- vii. Comprehend the mechanisms of antimicrobial resistance (AMR) and its prevention along with concept and application of the antimicrobial stewardship program.
- viii. Demonstrate the knowledge of outbreak investigation and its control.
- ix. Describe commensals, opportunistic and pathogenic organisms and explain host parasite relationship.
- x. Describe the characteristics (morphology, cultural characteristics, resistance, virulence factors, incubation period, mode of transmission etc.) of different microorganisms.
- xi. Explain the various defense mechanisms of the host against the microorganisms which can cause human infection.
- xii. Describe the laboratory diagnosis of microorganisms causing human infections and disease.
- xiii. Describe the prophylaxis for the particular infecting microorganisms.
- xiv. Operate routine and sophisticated instruments in the laboratory.

- xv. Demonstrate respect for patient samples, confidentiality pertaining to patient identity in laboratory results and effective communication skills in patient care.

6. PHARMACOLOGY

Subject Goals:

At the end of teaching learning in pharmacology, the student should be able to:

- i. Know about essential and commonly used drugs and an understanding of the pharmacologic basis of therapeutics.
- ii. Apply pharmacokinetic and pharmacodynamic concept of drugs to drug selection and dosage regimens.
- iii. Explain mechanism of action of commonly used drugs.
- iv. Select and rationally prescribe drugs based on clinical condition and the pharmacologic properties, efficacy, safety and cost of medicines for common clinical conditions of national importance.
- v. Understand generic, branded, over the counter (OTC) and prescription only drugs.
- vi. Understand pharmacovigilance and identify adverse drug reactions and drug interactions of commonly used drugs.
- vii. Understand essential medicine concept and explore sources of drug information.
- viii. Administer drugs through various common routes of administration.
- ix. Understand and apply concept of evidence based medicine and rational use of drugs.
- x. Communicate well in imparting drug related information to patients.
- xi. Knows basics of new drug delivery and industry-doctor relationship.
- xii. Critically analyze drug promotional literature and drug formulations.

- xiii. Understand regulatory and ethical aspects of drug discovery and drug use.

➤ **PHASE III PART I**

7. FORENSIC MEDICINE AND TOXICOLOGY

Subject Goals:

At the end of teaching learning in forensic medicine and toxicology, the student should be able to:

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- i. Comprehend Medico-legal responsibilities of a general physician while rendering community service either in a rural primary health center or an urban health center.
 - ii. Comprehend of basic Medico-legal aspects of hospital and general practice.
 - iii. Understand the rational approach to the investigation of crime, based on scientific and legal principles.
 - iv. Understand the medico-legal framework of medical practice, codes of conduct, medical ethics, Professional Misconduct and Medical Negligence.
 - v. Conduct Medico-legal examination and documentation of various Medico-legal cases. Identify and interpret important post-mortem findings in common unnatural deaths.
 - vi. Conduct postmortem examination and Preparation of postmortem reports in unnatural deaths- Suicidal, Homicidal, Accidental.
 - vii. Prepare Medical Certificate of Cause of Death (MCCD) and Medico-legal reports of injuries and age estimation.
 - viii. Conduct examination and documentation of sexual offences, intoxication cases and preservation of relevant ancillary materials for medico-legal examination.
 - ix. Analyse, Diagnose, manage legal aspects of common acute and chronic poisoning cases.

- x. Understand of latest Acts and laws related to medical professional including related Court judgements e.g. MTP Act, CPA, HOTA etc.

8. COMMUNITY MEDICINE

Subject Goals:

At the end of teaching learning in Community Medicine, the student should be able to:

- i. Demonstrate understanding of role of primary care physician for preventive, promotive, curative, rehabilitative, palliative care & referral services.
- ii. Demonstrate understanding of the concept of health and disease, demography, population dynamics and disease burden in National and global context, comprehension of principles of health economics and hospital management.
- iii. Apply the understanding of physical, social, psychological, economic and environmental determinants of health and disease, 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,
- iv. Ability to implement and monitor National Health Programmes in the primary care setting.
- v. Ability to recognize, investigate, report, plan and manage community health problems including malnutrition and emergencies.
- vi. Apply understanding the role of nutrition in health promotion and disease prevention.
- vii. Demonstrate role of researcher & community medicine physician by understanding the concepts of various epidemiological study designs and their application and epidemiology of diseases and ability to critically review.
- viii. Demonstrate understanding of pandemic and epidemic situations with emerging and re-emerging diseases and able to investigate under supervision and plan, advise and promote preventive aspects as per international and national health

regulations and programs.

- ix. Demonstrate understanding of all principles of public health, community medicine, preventive aspects, social aspects utilizing family adoption program , providing services to the families adopted and being first care physician under the guidance of mentor.
- x. Apply the principles of behaviour change communication for improving health related aspects for communicable, non-communicable diseases, health promotive aspects, related to addictions, health related information and misinformation.

9. OTO-RHINOLARYNGOLOGY (ENT)

Subject Goals:

At the end of training in ENT, the learner should be able to:

- i. Demonstrate knowledge of the common Otorhinolaryngological (ENT) emergencies and problems.
- ii. Recognize, diagnose and manage common ENT emergencies and problems in primary care setting.
- iii. Perform simple ENT procedures as applicable in a primary care setting.
- iv. Recognize hearing impairment and refer to the appropriate hearing impairment rehabilitation programme.
- v. Communicate to patients in respectful non-threatening non-judgmental empathetic manner appropriately
- vi. Identify, discuss and defend medicolegal socio cultural and ethical issues as they pertain to consent for ENT surgical procedures and address patients queries in patient undergoing a basic ENT surgical procedure in a simulated environment.

10. OPHTHALMOLOGY

Subject Goals:

The student after teaching / learning in Ophthalmology should be able to:

- i. Demonstrate knowledge of common eye disease in the community and the ability to diagnose and manage the common eye disease in primary care set up.
- ii. Recognize diagnose and manage (primary management) of ocular emergencies in primary care setting and have knowledge of the indication for their referral.
- iii. Demonstrate knowledge about various cause of blindness and visual impairment in the community.
- iv. Demonstrate knowledge about various national programs for the control of blindness in the community and their implementation in the primary care setting.
- v. Demonstrate knowledge about common Ocular drugs, their mechanism of action, their pharmaceutical, indications dosage schedule, side effects and complications.
- vi. Demonstrate knowledge about common ocular surgeries, their indication and counselling regarding various ocular procedures and indications for referral from primary care setting.
- vii. Demonstrate knowledge about eye donations, eye transplantation and eye bank.
- viii. Perform simple ocular procedures as applicable in primary care setting.
- ix. Be a team member of national program for control of blindness.
- x. Have good rapport with public, colleagues, superiors and subordinates.
- xi. Counsel patients and their families regarding various ocular conditions, management, indication for referral.
- xii. Counsel the blind and visually impaired patients regarding their Rehabilitation.

➤ **Phase III PART - II**

11. GENERAL MEDICINE

Subject Goals:

At the end of training learning in general medicine, the learner should be able to:

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- i. Demonstrate understanding of the pathophysiologic basis, epidemiological profile, signs and symptoms of disease and their investigation and management.
 - ii. Competently interview and examine an adult patient and make a clinical diagnosis.
 - iii. Appropriately order and interpret laboratory tests.
 - iv. Initiate appropriate cost-effective treatment based on an understanding of the rational drug prescriptions, medical interventions required and preventive measures.
 - v. Follow up of patients with medical problems and refer whenever required.
 - vi. Communicate effectively, educate and counsel the patient and family.
 - vii. Manage common medical emergencies and refer when required.
 - viii. Independently perform common medical procedures safely and understand patient safety issues.
 - ix. Diagnose common clinical disorders with special reference to infectious diseases, nutritional disorders, tropical and environmental diseases.
 - x. Outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indications and contra- indications.
 - xi. Propose diagnostic and investigative procedures and ability to interpret them.
 - xii. Provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required.
 - xiii. Recognize geriatric disorders and their management.
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- xiv. Develop clinical skills (history taking, clinical examination and other instruments of examination) to diagnose various common medical disorders and emergencies;
- xv. Refer a patient to secondary and/or tertiary level of health care after having instituted primary care.
- xvi. Perform simple routine investigations like hemogram, stool, urine, sputum and biological fluid examinations.
- xvii. Assist the common bedside investigative procedure like pleural tap, Lumbar puncture, bone marrow aspiration/biopsy and liver biopsy.

12. PEDIATRICS

Subject Goals:

At end of training on pediatrics, the student should be able to:

- i. Assess and promote optimal growth, development and nutrition of children and adolescents and identify deviations from normal.
- ii. 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.
- iii. Perform procedures as indicated for children of all ages in the primary care setting.
- iv. Recognize children with special needs and refer appropriately.
- v. Promote health and prevent diseases in children.
- vi. Participate in National Programmes related to child health and in conformation with the Integrated Management of Neonatal and Childhood Illnesses (IMNCI) Strategy.
- vii. Communicate appropriately and effectively.
- viii. Describe the normal Growth and Development during fetal life, Neonatal period, Childhood and Adolescence and the deviations thereof.
- ix. Describe the common Pediatric disorders and emergencies in terms of Epidemiology, Etiopathogenesis, Clinical manifestations, Diagnosis and also describe the rational therapy and rehabilitation services.

- x. Workout age related requirements of calories, nutrients, fluids, dosages of drugs etc. in health and disease.
- xi. Describe preventive strategies for common infectious disorders, Malnutrition, Genetic and Metabolic disorders, Poisonings, Accidents and Child abuse.
- xii. Outline national programs related to child health including Immunization programs.
- xiii. Take detailed Pediatric and Neonatal history and conduct an appropriate physical examination of children and neonates, make clinical diagnosis, conduct common.
- xiv. Bedside investigative procedures, interpret common laboratory investigations, plan and institute therapy.
- xv. Take anthropometric measurements, resuscitate newborn, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current National programs, perform venesection, start intravenous fluids and provide nasogastric feeding.
- xvi. Demonstrate knowledge about all steps of the diagnostic procedures such as lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural and ascitic tap.
- xvii. Distinguish between normal Newborn babies and those requiring special care and institute early care to all newborn babies including care of preterm and low birth weight babies, provide correct guidance and counseling about Breast feeding and Complementary feeding.
- xviii. Provide ambulatory care to all not so sick children, identify indications for specialized/ inpatient care and ensure timely referral to those who require hospitalization.

13. DERMATOLOGY, VENEREOLOGY AND LEPROSY

Subject Goals:

At the end of training, the learner should be able to:

- i. Demonstrate understanding of the principles of diagnosis of diseases of the skin,

- hair, nail and mucosa.
- ii. Recognize, diagnose, order appropriate investigations and treat common diseases of the skin including leprosy in the primary care setting and refer as appropriate.
 - iii. Learn a syndromic approach to the recognition, diagnosis, prevention, counseling, testing and management of common sexually transmitted diseases including HIV based on national health priorities.
 - iv. Recognize and treat emergencies including drug reactions and refer as appropriate.
 - v. Counsel and provide patient education on safe sexual behaviors/ disease prevention/ prognosis including pretest counseling for HIV.

14. PSYCHIATRY

Subject Goals:

At the end of training, the learner should be able to:

- i. Promote mental health and mental hygiene.
- ii. Identify clinical features, make diagnosis and manage common psychiatric disorders across all ages.
- iii. Identify and manage psychotic disorders, mainly schizophrenia.
- iv. Identify and manage stress related psychiatric disorders, institute preliminary treatment in disorders difficult to manage, and refer appropriately.
- v. Identify alcohol/ substance abuse disorders and refer them to appropriate centers.
- vi. Assess the risk for suicide and refer appropriately.

15. GENERAL SURGERY

Subject Goals:

At the end of training in general surgery, the student should be able to:

- i. Demonstrate understanding of the structural and functional basis, principles of diagnosis and management of common surgical problems in adults and children.

- ii. Choose, calculate and administer appropriately intravenous fluids, electrolytes, blood and blood products based on the clinical condition.
- iii. Apply the principles of asepsis, sterilization, disinfection, rational use of prophylaxis, therapeutic utilities of antibiotics and universal precautions in surgical practice.
- iv. Demonstrate knowledge about common malignancies in India and their prevention, early detection and therapy.
- v. Perform common diagnostic and surgical procedures at the primary care level.
- vi. Demonstrate knowledge about organ retrieval from deceased donor and living donor.
- vii. Administer informed consent and counsel patient prior to surgical procedures.
- viii. Describe etiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies in adult and children.
- ix. Describe common malignancies in the country and their management including prevention.
- x. Enumerate different types of anesthetic agents, their indications, contraindications, mode of administration, and side effects.
- xi. Plan various laboratory tests for surgical conditions and interpret the results.
- xii. Identify and manage patients of hemorrhagic, septicemia and other types of shock.
- xiii. Recognize, resuscitate, stabilize and provide Basic Life Support to patients following trauma.
- xiv. Monitor patient of head, chest, spinal and abdominal injuries, both in adults and children.
- xv. Provide primary care for a patient of burns.
- xvi. Acquire principles of operative surgery including preoperative, operative and post operative care and monitoring.
- xvii. Treat open wound including preventive measures against tetanus and gas gangrene.

16. OBSTETRICS AND GYNAECOLOGY

Subject Goals:

At the end of training in Obstetrics and gynecology, the learner should be able to:

- i. Provide preconceptional counseling and antenatal care.
- ii. Identify high-risk pregnancies and refer appropriately.
- iii. Conduct normal deliveries, using safe delivery practices in the primary and secondary care settings.
- iv. Prescribe drugs safely and appropriately in pregnancy and lactation.
- v. Diagnose complications of labor, institute primary care and refer in timely manner.
- vi. Perform early neonatal resuscitation.
- vii. Provide postnatal care, including education in breast-feeding.
- viii. Counsel and support couples in correct choice of contraception.
- ix. Interpret test results of laboratory and radiological investigations as they apply to the care of the obstetric patient.
- x. 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.
- xi. Elicit gynecologic history, perform appropriate physical and pelvic examinations and PAP smear in the primary care setting.
- xii. Recognize, diagnose and manage common reproductive tract infections in the primary care setting.
- xiii. Recognize and diagnose common genital cancers and refer them appropriately.

17. ORTHOPAEDICS

Subject Goals:

At the end of training in orthopedics, the learner should be able to:

- i. Demonstrate ability to recognize and assess bone injuries, dislocation and poly-trauma and provide first contact care prior to appropriate referral.
- ii. Recognize and manage common infections of bone and joints in the primary care setting.
- iii. Recognize common congenital, metabolic, neoplastic, degenerative and inflammatory bone diseases, treat and refer appropriately.
- iv. Perform simple orthopedic techniques as applicable to a primary care setting.
- v. Recommend rehabilitative services for common orthopedic problems across all ages.
- vi. Demonstrate knowledge about the medico-legal aspects of trauma.

18. ANAESTHESIOLOGY

Subject Goals:

At the end of training in anesthesiology, the learner should be able to:

- 
- i. Explain principles of administration of general, regional and local anaesthesia including selection of cases, pre-operative evaluation, optimisation and recovery.
 - ii. Comprehend management of acute and chronic pain including labour analgesia Clear and maintain airway in an unconscious patient.
 - iii. Explain principles of oxygen therapy, select oxygen delivery devices and administer oxygen therapy judiciously.
 - iv. Perform cardiopulmonary resuscitation with available resources and transfer the patient to higher centre for advanced life support.
 - v. Comprehend the implications and obtain informed consent for various procedures and maintain the documents.
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19. RADIODIAGNOSIS

Subject Goals:

At the end of training in Radiodiagnosis, the learner should be able to:

- i. Make rational choice of imaging modality and imaging procedure for common diseases
- ii. Exhibit mindful behaviour regarding risks associated with imaging modalities
- iii. Exhibit appropriate interdisciplinary conduct and documentation
- iv. Interpretation of images of normal x-rays, abnormalities in x-rays involving emergency conditions and diseases that would be treated by the primary care physician.

PHASE WISE TRAINING AND TIME DISTRIBUTION FOR PROFESSIONAL DEVELOPMENT

Subject wise competencies published in Competency Based Undergraduate Curriculum 2024 on NMC website and Attitude, Ethics and Communication (AETCOM) course available on the NMC website, shall be the curriculum for the batches admitted in MBBS from the academic year 2024-25 onwards. **Teaching learning and assessment may be carried out using bilingual mode (Assamese, Bangla, Gujarati, Hindi, Kannada, Malayalam, Marathi, Odiya, Punjabi, Tamil, and Telugu) along with English language.**



In order to ensure that training is in alignment with the goals and competencies required for a medical graduate, there shall be a **Foundation Course** to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills.

I. Training period and time distribution:

Universities shall organize admission timing and admission process in such a way that teaching in the phase I commences with induction through the Foundation Course at the beginning of academic year. There shall be no admission of students in respect of any academic session beyond dates specified for each academic year.

The Universities/ Institutions/colleges shall not register any student (in MBBS course) admitted beyond the said date. Any student identified as having obtained admission after the last date for closure of admission shall be discharged from the course of study, or any medical qualification granted to such a student shall not be a recognized qualification by National Medical Commission.

The institution which grants admission to any student after the last date specified from the same shall also be liable to face such action as may be prescribed by National Medical Commission.

Every learner shall undergo a period of certified study extending over 4 ½ academic years, divided into four professional years from the date of commencement of course to the date of completion of examination which shall be followed by one year of compulsory rotating medical internship.

Each academic year will have at least 39 teaching weeks with a minimum of 39 hours a week.

Large group teaching shall not exceed one third of the total allotted hours for a subject. Two third of the total allotted hours shall include small group teaching, interactive sessions, practicals, clinical, small group teaching, self-directed learning and tutorials etc. The learning process shall include clinical experiences, problem- oriented approach, case studies and community health care activities.

Learner centered teaching learning methods shall include early clinical exposure, problem/case-based learning, case studies, community-oriented learning, self-directed, integrated learning, experiential learning & electives. Teaching and learning shall be aligned and integrated across specialties both vertically and horizontally for better learner comprehension.

At the end of each professional year university examination will be conducted. If any student fails to clear the regular university examination, student will appear in supplementary examination.

(7)

Supplementary examinations and declaration of results shall be processed by universities within 6-8 weeks from the date of declaration of the results of the main examination for every professional year, so that the candidates, who pass, can join the main batch for progression.

If the student fails in the supplementary examination in phase 1 of MBBS, the student goes to the junior batch for teaching learning as well as for university examinations. There shall be no supplementary batches. If a candidate has not appeared for university examination (both theory and practical) for a subject then it shall not be counted as an attempt for that subject. Partial attendance in examination (only theory or only practical) in any subject shall be counted as an attempt. No more than four attempts shall be allowed for a candidate to pass the Phase 1 examination. The total period for successful completion of phase I course shall not exceed four (4) years. A learner shall not be entitled to graduate later than ten (10) years of her/his joining the first MBBS course (including continuous rotatory medical internship).

Phase wise details are:

- A candidate, who fails in the Phase-I examination, shall not be allowed to join the Phase-II until the candidate passes all subjects of Phase-I examination.
- A candidate who fails in the Phase-II regular/ supplementary university examination, shall be allowed to join the Phase-III Part I training, however he shall not be allowed appear for the university examination.



- A candidate who fails in the Phase III, Part-I regular/supplementary university examination, shall be allowed to join the Phase-III Part II training, however he shall not be allowed appear for the university examination.

II. The period of 4½ years is divided as follows:

i) **Phase-I of 12 months including Foundation Course of two weeks and university exams.** It shall consist of - Anatomy, Physiology, Biochemistry, Introduction to Community Medicine, Humanities, Attitude, Ethics & Communication (AETCOM) module, family adoption programme through village outreach where-in each student shall adopt minimum of three (03) families and preferably at least five (05) families, simulation-based learning, early clinical exposure, alignment & integration and pandemic module integrated.

ii) **Phase-II of 12 months including university exams.** It will consist of Pathology, Pharmacology, Microbiology, family visit under Community Medicine, General Surgery, General Medicine, Obstetrics & Gynecology, AETCOM module, Forensic Medicine & Toxicology, alignment & integration and introduction to clinical subjects. Family Adoption Programme through village outreach where-in each student shall continue to follow up and provide necessary services under the supervision. Pandemic module integration & simulation-based learning to be continued with increasing complexity.

The clinical exposure to learners will be in the form of learner-doctor method of clinical training in all phases. The emphasis will be on primary, preventive and comprehensive health care. A part of training during clinical postings shall take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible. This will involve: Experience in recognizing and managing common problems seen in outpatient, inpatient and emergency settings,

- Involvement in patient care as a team member,
- Involvement in patient management and performance of basic procedures.

iii) **Phase III - 30 months**

a. Phase III Part I (12 months, including University exams)

Forensic Medicine and Toxicology, Community Medicine, Medicine & allied subjects, Ophthalmology, Otorhinolaryngology (ENT), Surgery & allied subjects, Pediatrics, Obstetrics & Gynecology, Radiodiagnosis, Anesthesiology, AETCOM, Pandemic module integration, alignment & integration and Clinical postings. Family Adoption Programme through village outreach and simulation- based learning to be continued with increasing complexity.

Electives (1 month) shall be in 2 blocks of 15 days each in Phase III part II. First 15 days block starts after annual exam of Phase III MBBS part 1 and 2nd block after the end of 1st elective.

b. Phase 3 Part II (18 months, including University exam)-

Subjects include:

Medicine and allied specialties (General Medicine, Psychiatry, Dermatology, Venereology and Leprosy (DVL), Surgery and allied specialties (General Surgery, Orthopedics, Anesthesiology and Radiodiagnosis), Obstetrics and Gynecology (including Family Welfare), Pediatrics, AETCOM module, Pandemic module integration, alignment & integration and Clinical postings.

III. Distribution of teaching hours phase wise:

a Phase I, phase II and phase III- part 1 teaching hours:

Time allotted 12 months (approximately 52 weeks) out of which time available for teaching- learning: approximately 39 weeks.

(Excluded- 13 weeks: Preliminary/ University examinations and results: 9 weeks, vacations: 2 weeks, public holidays: 2 weeks)

Time distribution in weeks: 39 weeks x 39 hours = 1521 hours for Teaching-Learning.

b Phase-III Part-II, teaching hours:

Time allotted: 18 months (approx. 78 weeks)

Time available: Approx. 62 weeks (excluding 16 weeks) (39 hours/ week)

Prelim / University Exam & Results: 10 weeks

Vacation: 3 weeks

Public Holidays: 3 weeks

Time distribution in weeks: 62 x 39 hrs= 2418 hrs available for Teaching-Learning

(Clinical Postings: 15 hours/ week Phase II onwards included in academic schedule.

These are attached in separate annexure with all relevant tables).

- Academic calendar is given in annexure.
- Distribution of subjects for Professional Phase-wise training is given in annexure
- Minimum teaching hours prescribed in various disciplines phase wise are given in annexures.
- Distribution and duration of clinical postings is given in annexure.

Time allotted excludes time reserved for internal /University examinations, and vacation.

Phase II clinical postings shall commence before / after declaration of results of the first professional phase examinations, as decided by the institution/ University.

Phase III part I and part II clinical postings shall start no later than two weeks after the completion of the previous professional examination.

Note:

A total of approximately 20% of allotted time of a Phase shall be utilized for integrated teaching learning with other subjects. This will be included in the assessment of subjects.

The period of training is minimum suggested. Adjustments where required depending on availability of time may be made by the concerned college/ institution. This period of training does not include university examination period. Pandemic module teaching hours are added to respective allocated subjects and these subjects will teach as per module.

An exposure to skills lab based teaching by each subject in each phase shall be there weekly or fortnightly.

c New teaching /learning elements (Refer to booklets on NMC website related to these elements)

1) Foundation Course

Goal: The goal of the Foundation Course is to prepare a learner to study medicine effectively.

Objectives:

(a) Orient the learner to:

- The medical profession and the physician's role in society
- The MBBS programme
- Alternate health systems i.e. AYUSH in India and history of Medicine
- Medical ethics, attitudes and professionalism
- Health care system, its delivery and visits to health centers
- National health programmes and policies
- Universal precautions and vaccinations
- Patient safety and biohazard safety
- Principles of primary care (general and community based care)
- Mental Health
- The academic ambience



(b) **Enable the learner to acquire enhanced skills in:**

- Language
- Interpersonal relationships
- Communication emphasis on clinico-laboratory communication
- Learning including self-directed learning
- Time management
- Stress management, Mental Health
- Use of information technology, and artificial intelligence

(c) **Train the learner to provide:**

- First-aid
- Basic /cardiopulmonary/emergency life support

In addition to the above, learners maybe enrolled in one of the following programmes which will be run concurrently:

- Local language programme
- English language programme
- Computer skills

These may be done in the last two hours of the day. These sessions must be as interactive as possible. Sports (to be used through the Foundation Course as protected 04 hours/week). Leisure and extracurricular activity (to be used through the Foundation Course).

Institutions shall develop learning modules and identify the appropriate resource persons for their delivery. The time committed for the Foundation Course may not be used for any other curricular activity. The Foundation Course shall have a minimum of 75% attendance of all students mandatorily. This will be certified by the Principal/Dean of the college.

The Foundation Course shall be organized by the Coordinator appointed by the Principal/Dean of the college and shall be under supervision of the Heads of MBBS phase I departments.



Every college shall arrange for a meeting with parents/ wards of all students and records of the same shall be made available to UGMEB of NMC. Mentor- mentee program shall be carried out judiciously, with the ratio of 1 Mentor to 3 mentees. Mentor may be selected from all disciplines from the level of Professor/ HOD to Assistant Professor. Mentor shall be allotted his mentees during the foundation course itself from Phase 1. The mentee shall stay connected with the Mentor throughout his career till he completes CRMI. Each year when 3 new mentees are added from phase 1 to the mentor, the senior batch students shall support the junior students and create a healthy sibling environment.

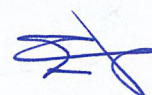
2) Early Clinical Exposure

Objectives: The objectives of early clinical exposure of the first-year medical learners are to enable the learner to:

- Recognize the relevance of sciences basic to diagnosis, patient care and management,
- Provide a context that will enhance learning of sciences basic to clinical reasoning,
- Relate to experience of patients as a motivation to learn,
- Recognize attitude, ethics and professionalism as integral to doctor- Patient relationship,
- Understand the socio-cultural context of disease through the study of humanities.

Elements

- Phase I subject correlation: i.e. apply and correlate principles of phase I subjects as they relate to patient care (this shall be part of integrated modules as well as in routine teaching wherever relevant).
- Clinical skills: to include basic skills in interviewing patients, doctor- patient communication, ethics and professionalism, critical thinking and analysis and self-learning (this training shall be imparted in the time allotted for early clinical exposure).



- Humanities: to introduce learners to a broader understanding of the socio-economic framework and cultural context within which health is delivered through the study of humanities and social sciences.

3) Electives

Objectives: To provide the learner with opportunities:

- For diverse learning experiences.
- It is mandatory for learners to do an elective. The elective time shall not be used to make up for missed clinical postings, shortage of attendance or other purposes.
- Institutions will pre-determine the number and nature of electives, names of the supervisors, and the number of learners in each elective based on the local conditions, available resources and faculty.
- Electives on topics in areas such as Research methodology, Research ethics, Use of Artificial intelligence and computers in Health and Medical Education, Health Management, Health economics, Indian system of medicine, Medical photography /clinical photography, Global health, Evidence based medicine, Art and music, Physiotherapy, Nutrition, ethical use of technology including artificial intelligence etc. in medicine, Literary activities, etc. may be provided by the college/ institution.
- It shall be preferable that elective choices are made available to the learners in the beginning of the academic year.
- The learner must submit a learning log book based on both blocks of the electives.
- 75% attendance in the electives and submission of log book maintained during electives is required for eligibility to appear in the University MBBS examination/ (or NExT whenever it is applicable).

4) Attitude, Ethics and Communication Module (AETCOM)

Objectives of the programme: At the end of the programme, the learner must demonstrate ability to:

- Understand and apply principles of bioethics and law as they apply to medical practice and research, understand and apply the principles of clinical reasoning as they apply to the care of the patients,
- Understand and apply the principles of system-based care as they relate to the care of the patient,
- Understand and apply empathy and other human values to the care of the patient,
- Communicate effectively with patients, families, colleagues and other health care professionals,
- Understand the strengths and limitations of alternative systems of medicine,
- Respond to events and issues in a professional, considerate and humane fashion,
- Translate learning from the humanities in order to further his professional and personal growth.

Learning experiences:

- This will be a longitudinal programme spread across the continuum of the MBBS programme including internship.
- Learning experiences shall include small group discussions, patient care scenarios, self-directed learning, workshops, seminars, role plays, large/small group teaching etc.
- Application based subject oriented cases may be used as additional resources for this training and real-life case studies are the best examples for this AETCOM training. Community based case studies must be used in communication aspects of health education, informed consent and counseling in addition to clinical case studies.
- Attitude, Ethics & Communication Module (AETCOM module) developed by the erstwhile Medical Council of India should be used longitudinally for purposes of instruction.
- 75% attendance in AETCOM Module is mandatory for eligibility to appear for all

university examinations of all subjects in each Phase.

(5) Alignment and integration (AIT) teaching

Integration is a learning experience that allows the learner to perceive relationships from blocks of knowledge and develop a unified view of its basis and its application.

Objectives

In the earlier phases, the purpose of vertical integration (across phases) is to emphasize the applicative use of the basic science concept taught. In the later phases, its purpose is to utilise and build on prior knowledge and emphasize the foundations of clinical practice.

Learning experiences

In order to achieve this, the MBBS curriculum will become -

a) aligned to the extent possible - meaning that as much as possible topics/systems in different subjects in the same phase will be grouped together in the same weeks/months in timetable for teaching learning. The purpose of horizontal integration (within a phase) is to remove redundancy and provide interconnectedness. Suggested formats for alignment in phase 1 & 2 are given in annexures. Phase 3 part 1 and 2 can be aligned accordingly as needed.

b) integrated to a limited extent both vertically and horizontally.

Integration must be horizontal (i.e. across disciplines in a given phase of the course) and vertical (across different phases of the course). Teaching/learning occurs in each phase through study of organ systems or disease blocks in order to integrate the learning process. Clinical linker cases must be used to integrate and link learning across subjects.

The six integrated modules to be used across 4 years $\frac{1}{2}$ are anemia, ischemic heart disease, diabetes mellitus, tuberculosis, hypertension and thyroid. The complete modules are part of documents on NMC website.

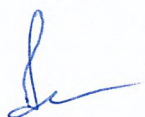
(6) Learner-doctor method of clinical training (Clinical Clerkship)

a. Goal: To provide learners with experience in:

- Longitudinal patient care,
- Being part of the health care team,
- Hands-on care of patients in outpatient and in-patient setting.

b. Structure:

- The first clinical posting in Phase II shall orient learners to the patient, their roles and the specialty.
- The learner-doctor programme shall progress as outlined in Table 9.
- The learner shall function as a part of the health care team with the following responsibilities:
- Be a part of the units' out-patient services on admission days,
- Remain with the admission unit until at least 6 PM except during designated class hours,
- Be assigned patients admitted during each admission day for whom he will undertake responsibility, under the supervision of a senior resident or faculty member,
- Participate in the unit rounds on its admission day and will present the assigned patients to the supervising physician,
- Follow the patient's progress throughout the hospital stay until discharge,
- Participate, under supervision, in procedures, surgeries, deliveries etc. of assigned patients,
- Participate in unit rounds on at least one other day of the week excluding the admission day,
- Discuss ethical and other humanitarian issues during unit rounds,
- Attend all scheduled classes and educational activities,
- Document his observations in a prescribed log book /case record.



No learner will be given independent charge of the patient in the capacity of primary physician of the concerned patient.

The supervising physician shall be responsible for all patient care decisions and guide the learner from time to time as required.

(7) Assessment:

- A designated faculty member in each unit will coordinate and facilitate the activities of the learner, monitor progress, provide feedback and review the log book/ case record.
- The log book/ case record must include the written case record prepared by the learner including relevant investigations, treatment and its rationale, hospital course, family and patient discussions, discharge summary etc.
- The log book shall also include records of outpatients assigned. Submission of the log book/ case record to the department is required for eligibility to appear for the final examination of the subject. An e-logbook is desirable.

Assessment

I. Eligibility to appear for Professional examinations

The performance in essential components of training are to be assessed, based on following three components:

(a) Attendance

- There shall be a minimum of 75% attendance in theory and 80% attendance in practical /clinical for eligibility to appear for the examinations in that subject. In subjects that are taught in more than one phase - the learner must have 75% attendance in theory and 80% attendance in practical in each phase of instruction in that subject. There shall be a minimum of 75% attendance in AETCOM and minimum of 80% attendance in family visits under Family adoption

programme. Each student shall adopt minimum 3 families/ households and preferably five families. The details shall be as per Family Adoption Program guidelines.

- If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have a minimum of 75% attendance in each subject including its allied branches, and 80% attendance in each clinical posting.

Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination/ NExT.

b) Internal Assessment (IA): Internal assessment shall be based on day-to-day assessment. For subjects taught in more than one phase, there shall be IA in every phase in which the subject is taught.

It shall relate to different ways in which learners participate in the learning process including assignments, preparation for seminar, clinical case presentation, preparation of clinical case for discussion, clinical case study/ problem solving exercise, participation in project for health care in the community, Quiz, Certification of competencies, museum study, log books, SDL skills etc.
Internal assessment should have both subjective and objective assessment. Internal assessment shall not be added to summative assessment. However, internal assessment marks in absolute marks should be displayed under a separate column in a detailed marks card.

The internal assessment marks for each subject will be out of 100 for theory and out of 100 for practical/clinical (except in General Medicine, General Surgery and Obstetrics & Gynaecology, in which theory and practical assessment will be of 200 marks each).

For subjects that teach in more than one phase, cumulative IA to be used as eligibility criteria. The final cumulative marks are to be used for eligibility.

The details are:

- I. General medicine: The IA of 200 marks in medicine shall be divided across phases as Phase II - 50 marks,
Phase III part 1 - 50 marks

Phase III part 2 - 100 marks.

Phase III part 2 - 100 marks is divided as

Medicine - 75 marks

Psychiatry - 13 marks

Dermatology- 12 marks.

The final cumulative IA for Medicine is out of 200 marks for theory and practical each.

II. General surgery: The IA in surgery shall be divided across phases as:

Phase II - 25 marks,

Phase III part 1 - 25 marks,

Phase III part 2 - 150 marks.

Phase III part 2 - 150 marks shall be divided as

General surgery - 75 marks,

Orthopedics -50 marks,

Anesthesia -13 marks

Radiodiagnosis - 12 marks.

The final cumulative IA for surgery is out of 200 marks for theory and practical each.

III. IA of Forensic Medicine and Toxicology is divided as 25 marks in phase II and 75 marks in Phase III part 1. The final cumulative IA is out of 100 for theory and practical each.

IV. IA in Community Medicine is divided as 25 marks in phase I, 25 marks in phase II, and 50 marks in Phase III- part 1. The final cumulative IA for Community Medicine is out of 100 marks for theory and practical each.

V. IA in ophthalmology and ENT is divided as 25 marks in phase II and 75 marks in Phase III part 1. The final cumulative IA is out of 100 for theory and practical each for each subject.

(b) Certifiable Competencies Achieved:

1. Learners must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university

examination of that subject.

2. Regular periodic examinations shall be conducted throughout the course. There shall be no less than three theory and practical internal assessment examinations in each subject of phase 1 & II, and this mandatorily includes pre-university examination. There shall be no less than two theory and clinical examinations in each subject of Phase III part 1 & 2 and this mandatorily includes an end of posting assessment. Log book (including required skill certifications) to be assessed and marks given from 10-20% in internal assessment.
3. Learners must secure at least 50% of the total marks (combined in theory and practical / clinical; and minimum 40% in theory and practical separately) for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject.
4. The results of internal assessment should be intimated to students at least once in 3 months and as and when a student wants to see the results.

Remedial measures:

A student whose has deficiency(s) in any of the 3 criteria that are required to be eligible to appear in university examination, should be put into remedial process as below:

- *During the course:* If Internal assessment (IA) or attendance is less or/and certifiable competencies not achieved and marked in log book in quarterly/ six monthly monitoring, the students/parents must be intimated about the possibility of being detained much before the final university examination, so that there is sufficient time for remedial measures. These students should be provided remedial measures as and when needed to improve IA. Any certifiable competency/ IA marks deficiency should be attended with planned teaching/tests for them. Student should complete the remedial measures and it should be documented. **In spite of all above measures, if student is still not meeting the criteria to be eligible for regular exam he shall be offered remedial for the same batch supplementary exam. For attendance, he will be allowed remedial measures ONLY IF attendance is more than 60% for each component.**

At the end of phase: If Internal assessment (IA) or attendance is less or/and certifiable competencies not achieved and marked in log book at the end of regular classes in a phase, the student is detained to appear in regular university examination of that batch.

- Remedial classes can be planned for students missing regular classes on genuine grounds, thus ensuring that all certifiable competencies are achieved.
- Students who have less than 75% attendance in theory and 80% attendance in practical cannot appear for University examination, however; they may appear for Supplementary examination provided they attend the remedial classes organised between University Sit and Supplementary exam. Students who have attendance 60% or above shall be eligible for such remedial classes.

2.University Examinations: University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him to function effectively and appropriately as a physician of the first contact.

Nature of questions in theory examinations shall include different types such as structured essays like Long-Answer Questions (LAQ), Short-Answer Questions (SAQ) and Multiple-Choice Questions (MCQ) shall be accorded minimum 20% weightage of the total marks of each theory paper, Scenario based MCQs shall be accorded more weightage in view of NEXT. Blueprint may be used for theory question papers.

Practical/clinical examinations shall be conducted in the laboratories and /or hospital wards and a blueprint must be used. The objective will be to assess proficiency and skills to conduct experiments, interpret data and form logical conclusion. Clinical cases kept in the examination must be common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyze the case and

develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies and attitudinal, ethical and professional values. Candidate's skill in interpretation of common investigative data like X-rays, identification of specimens, ECG, etc. is to be also assessed.

Application based questions should be included for newer CBME components like foundation course, ECE, AETCOM, Integrated topics, student-learner methods etc. in all theory, practical and clinical examinations of all internal assessments and university assessments.

University Examinations shall be held as under:

- a) **Phase-I** shall be held at the end of Phase I training (in the 12th month of that training), in the subjects of Anatomy, Physiology and Biochemistry.
- b) **Phase-II** examination shall be held at the end of Phase II training (12th month of that training), in the subjects of Pathology, Microbiology, and Pharmacology
- c) **Phase III Part 1** examination shall be held at the end of Phase III part 1 of training (12th month of that training) in the subjects of Community Medicine, Forensic Medicine & Toxicology, Ophthalmology and Otorhinolaryngology.
- d) **Phase III Part 2** / National Exit Test (NExT) as per NExT regulations- (Final Professional) examination shall be at the end of 17th / 18th month of that training, in the subjects of General Medicine, General Surgery, Obstetrics & Gynecology, Pediatrics, and allied subjects as per NExT Regulations.

Criteria for passing in a subject: A candidate shall obtain a cumulative 50% marks in University conducted examination including theory and practical and not less than 40% separately in Theory and in Practical in order to be declared as passed in that subject. **In subjects that have two papers, the learner must secure a minimum 40% marks in aggregate (both theory papers together).**

Appointment of Examiners:

(1) Person appointed as an examiner in the particular subject must have at least three years of total teaching experience as Assistant Professor after obtaining postgraduate degree following MBBS, in the concerned subject in a college affiliated to a recognized medical college (by UGMEB of NMC).

(2) For Practical /Clinical examinations, there shall be at least four examiners for every learner, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner shall act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained.

One examiner
Per 25
Candidates

(3) A University having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college. External examiners may be from outside the college/ university/ state/ union territory.

(4) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall mandatorily moderate the theory question paper(s).

(5) All eligible examiners with requisite qualifications and experience can be appointed internal examiners by rotation in their subjects.

(6) All theory paper assessment should be done as a central assessment program (CAP) of the concerned university.

(7) Internal examiners shall be appointed from the same institution for unitary examination in the same institution. For pooled examinations at one centre, the approved internal examiners from the same university may be appointed.

(8) The Examiners for General Surgery and allied subjects shall be from General Surgery and 25% from orthopedics. There shall be one orthopedics examiner out of four examiners (either internal or external).

(9) Ophthalmology and ENT examinations to be held as separate examinations and not combined with other subjects.

(10) There shall be NO grace marks to be considered for passing in an examination.

ANNEXURES:

1. AETCOM module curricular governance and blueprinting
2. Academic calendar
3. Phase wise distribution of subjects
4. Foundation course hours distribution
5. Distribution of hours phase wise
6. Clinical postings distribution
7. Learner doctor (Clinical Clerkship) method
8. University examination marks
9. Sample format of paper theory with marks distribution
10. Alignment Phase I
11. Alignment Phase II
12. Family adoption programme
13. Guidelines for manpower requirement for research facilities

Annexure 1

AETCOM Modules teaching and assessment

The tables below show the suggested AETCOM blueprinting for various university papers and for module leader/in-charge for coordinating Module teaching. Each module leader/in-charge should select a multi-subject team and then the module is taught by various members of the team. The module teaching learning activities should be planned and conducted by this team.

Assessment: All internal and University exams must have one question/application based question on AETCOM in each theory paper (5%) and it should be assessed in various components of practical/clinical exams.

AETCOM Phase 1		
Subject	Paper	Module number
Anatomy	Paper 1	1.5
	Paper 2	1.4 Foundations of communications
Physiology	Paper 1	1.2
	Paper 2	1.3
Biochemistry	Paper 1	1.1 • Enumerate and describe professional qualities and roles of a physician • Describe and discuss commitment to lifelong learning as an important part of physician growth
	Paper 2	1.1 • Describe and discuss the role of a physician in health care system • Identify and discuss physician's role and responsibility to society and the community that she/ he serves

AETCOM Phase 2		
Subject	Paper	Module number
Microbiology	Paper 1	2.1
	Paper 2	2.8
Pharmacology	Paper 1	2.2, 2.3
	Paper 2	2.5
Pathology	Paper 1	2.4
	Paper 2	2.7

AETCOM Phase 3, part 1		
Subject	Paper	Module number
Ophthalmology	Single paper	3.1
ENT	Single paper	3.3
Forensic Medicine & Toxicology	Single paper	2.6, 3.4
Community Medicine	Paper 1	3.2
	Paper 2	3.5

AETCOM Phase 3, part 2		
Subject	Competency Number	Competency
Medicine and Allied Subjects, integration	Paper 1	4.1
	Paper 2	4.3
Surgery and Allied Subjects,	Paper 1	4.4
	Paper 2	4.5, 4.6
Obstetrics and Gynecology	Paper 1	4.2, 4.7
	Paper 2	4.8
Pediatrics	Single paper	4.9

Annexure 2 Time distribution of MBBS Teaching & Examination Schedule

Academic calendar for admission batch 2024-2025												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Adm year										1 14 Oct	2	3
Phase 1 exam	4	5	6	7	8	9	10	11	12 Phase 1 exam, result	13 Phase 2 starts	14	15
Phase 2 exam	16	17	18	19	20	21	22	23	24 Phase 2 exam, result	25 Phase 3 part 1 starts	26	27
Phase 3 part I exam	28	29	30	31	32	33	34	35	36 Phase 3 Part 1 exam, result	37 Phase 3 part 2 starts	38	39
	40	41	42	43	44	45	46	47	48	49	50	51
Phase 3 part II exam	52	53	54 Proposed NExT step1	1 CRMI	2	3	4	5	6	7	8	9
Internship	10	11	12 Proposed NExT step2									

Legends:

CRMI-Compulsory rotating medical internship

Proposed time distribution of MBBS Teaching & Examination Schedule from A.Y. 2025-'26

Generic proposed academic calendar from admission batch 2025-2026 onwards												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Adm year									1	2	3	4
Phase 1 exam	5	6	7	8	9	10	11	12 Phase 1 exam, result	13 Phase 2 starts	14	15	16
Phase 2 exam	17	18	19	20	21	22	23	24 Phase 2 exam, result	25 Phase 3 part 1 starts	26	27	28
Phase 3 part I exam	29	30	31	32	33	34	35	36 Phase 3 Part 1 exam, result	37 Phase 3 part 2 starts	38	39	40
	41	42	43	44	45	46	47	48	49	50	51	52
Phase 3 part II exam	53	54 Proposed NExT step1	1 CRMI	2	3	4	5	6	7	8	9	10
Internship	11	12 Proposed NExT step2										

Legends:

CRMI-Compulsory rotating medical internship

Annexure 3**Distribution of subjects in each Professional Phase**

Phase & year of MBBS training	Subjects & Teaching Elements	Duration (months)	University Examination
Phase-1	1. Foundation course of 2 weeks at start of course 2. Anatomy, Physiology & Biochemistry, Introduction to Community Medicine, including Family adoption programme (FAP) through village outreach 3. Early Clinical Exposure 4. Attitude, Ethics, and communication Module (AETCOM) including Humanities	12 months	Phase 1
Phase-2	1. Pathology, Microbiology, Pharmacology 2. Community Medicine (including FAP) 3. Forensic Medicine and Toxicology 4. Introduction to clinical subjects 5. Clinical postings, Family visits for FAP 6. AETCOM	12 months	Phase 2
Phase-3, Part-I	1. Community Medicine, Forensic Medicine and Toxicology, Medicine & allied, Surgery & allied, Pediatrics, Obstetrics & Gynecology 2. Family visits for FAP 3. Oto-rhinolaryngology, 4. Ophthalmology 5. Clinical postings 6. AETCOM	12 months	Phase 3, Part 1
Electives	2 blocks, 15 days each (after the annual exams are over, irrespective of result outcome)	1 month	Phase 3, Part II
Phase-3, Part- II, MBBS	1. General Medicine, Dermatology, Psychiatry, Pediatrics, General Surgery, Orthopedics, Radiodiagnosis, Anesthesiology, Obstetrics & Gynecology 2. Clinical postings 3. AETCOM	18 months (including electives)	Phase 3, Part II

Annexure 4**Foundation Course- 2 weeks at start of course**

Subjects/Contents	Teaching hours
Orientation Module including History of Indian Medicine	15
Skills Module	15
Community orientation module	5
Professional Development and Ethics Module (P&E) including Mental health	20
Enhancement of Language and Computer Skills Module including clinico-laboratory communication	10
Sports and Extra curricular Activities	15
Total	80

Annexure 5

Distribution of Subject Wise Teaching Hours for Phase -1 MBBS

Subject	Large group teaching	SGT/ Practical/ Tutorials/ Seminars	SDL	Total
Foundation Course				80
Anatomy	180	430	10	620
Physiology	130	305	10	445
Biochemistry *	82	157	10	249
Early Clinical Exposure (ECE)**	-	27	-	27
Community Medicine	20	20	-	40
Family adoption Program (FAP)	-	24	-	24
(AETCOM)***	-	26	-	26
Sports and extra-curricular Activities	-	-	-	10
Total	412	989	30	1521

SGT: Small group teaching, SDL: Self-directed learning

*Including Molecular Biology

**Minimum ECE hours. These hours are to be divided equally by anatomy, physiology & biochemistry.

***AETCOM module is a longitudinal programme.

Distribution of Subject Wise Teaching Hours for Phase-2 MBBS

Subjects	Large group teaching	SGT/ Practicals/ Tutorials/ Seminars	Clinical Postings*	SDL	Total
Pathology	80	170	-	10	260
Pharmacology	80	170	-	10	260
Microbiology	75	143	-	10	228
Community Med (including FAP)	25	0	24	10	59
Forensic Medicine and Toxicology	12	25	-	08	45
Clinical Subjects	60		540	-	600
AETCOM	-	29	-	8	37
Sports, Yoga extra-curricular activities	-	-	-	32	32
Final total	332	537	564	88	1521

SGT: Small group teaching SDL: Self-directed learning

Pl. note: *Clinical postings shall be for 3 hours per day, Monday to Friday.

There will be 15 hours per week for all clinical postings.

Distribution of Subject Wise Teaching Hours for MBBS Phase-3, part 1

Subject	Large group teaching	SGT/ Practicals/ Tutorials/ Seminars	SDL	Total
Electives	0	156	0	156
Gen. Medicine	20	30	10	60
Gen Surgery	20	30	10	60
Obstetrics & Gynecology	20	30	10	60
Pediatrics	20	30	05	55
Forensic Medicine and Toxicology	35	65	20*	120
Community Med	50	80	20	150
FAP (Visits +log book submission)	-	26	10	36
Otorhinolaryngology (ENT)	30	50	20	100
Ophthalmology	30	50	20	100
Clinical posting*				593
AETCOM	0	19	12	31
Total	225	566	137	1521

*Out of this, 21 Hours (07 days x 03 hours) must be utilised for demonstration of post mortem examinations

Pl. note: *Clinical postings shall be for 3 hours per day, Monday to Saturday.

There will be 18 hours per week for all clinical postings.

Distribution of Subject wise Teaching Hours for Phase 3 part-2 MBBS

Subjects	Lectures	SGL	SDL	Total
General Medicine	110	185	40	335
General Surgery	90	153	30	273
Obstetrics and Gynecology	80	150	30	260
Pediatrics	20	35	10	65
Orthopedics	30	50	20	100
AETCOM	30	0	22	52
Dermatology, Venereology & Leprosy	13	17	10	40
Psychiatry	13	17	10	40
Radiodiagnosis	8	10	8	26
Anesthesiology	8	10	8	26
Clinical postings*				1201
TOTAL	402	627	188	2418

Pl. note: *Clinical postings shall be for 3 hours per day, Monday to Saturday.

***There will be 18 hours per week for all clinical postings.
Extra hours may be used for preparation of NExT or SDL.***

Annexure 6**Clinical Posting Schedules in weeks phase wise**

Subjects	Period of training in weeks			Total Weeks
	Phase 2	Phase 3, Part 1	Phase 3, Part 2	
Electives	0	4	0	4
General Medicine	8	3	13	24
General Surgery	6	5	13	24
Obstetrics & Gynaecology	6	3	13	22
Pediatrics	4	2	6	12
Community Medicine	4	4	0	8
Orthopaedics	0	2	6	8
Otorhinolaryngology	4	4	0	8
Ophthalmology	4	4	0	8
Psychiatry	0	2	4	6
Radio-diagnosis	0	0	2	2
Dermatology, Venereology & Leprosy	0	0	6	6
Anaesthesiology	0	0	2	2
Total	36	33	65	134

Annexure 7: Learner- Doctor programme (Clinical Clerkship)

Year of Curriculum	Focus of Learner-Doctor programme
Phase-1	Introduction to hospital environment, early clinical exposure, understanding perspectives of illness, family adoption program
Phase-2	History taking, physical examination, assessment of change in clinical status, communication and patient education, family adoption program
Phase-3, Part -1	All of the above and choice of investigations, basic procedures and continuity of care
Phase-3, Part -2	All of the above (except Family adoption programme) and decision making, management and outcomes

Annexure 8**Marks distribution for various subjects for University Annual Examinations**

Phase of Course	Theory	Practicals	Passing criteria
Phase-I MBBS			
Anatomy- 2 papers	Paper 1- 100	100	Mandatory to get 40% marks separately in theory and in practicals; and totally 50% for theory plus practicals.
	Paper 2 -100		
Physiology- 2 papers	Paper 1- 100	100	
	Paper 2 -100		
Biochemistry- 2 papers	Paper 1- 100	100	
	Paper 2- 100		
Phase-II MBBS			
Pathology - 2 papers	Paper 1- 100	100	
	Paper 2 -100		
Microbiology- 2 papers	Paper 1- 100	100	
	Paper 2- 100		
Pharmacology- 2 papers	Paper 1 -100	100	
	Paper 2- 100		
Phase-III MBBS part 1			
Forensic Medicine and Toxicology- 1 paper	Paper 1 – 100	100	
Community Med – 2 papers	Paper 1 -100	100	
	Paper 2- 100		
Otorhinolaryngology	Paper-1 100	100	
Ophthalmology	Paper-1 100	100	
Phase-III MBBS part 2			
Medicine & allied	Paper 1- 100	100	
	Paper 2- 100		
Surgery & allied	Paper 1- 100	100	
	Paper 2- 100		
Obstetrics and Gynecology	Paper 1- 100	100	
	Paper 2- 100		
Pediatrics	Paper-1 100	100	

Medicine & allied Paper-2 to have Medicine 50%, Psychiatry 25% and Dermatology 25% questions.

Surgery & allied Paper-2 to have General Surgery 40%, Orthopedics 40%, Anesthesia 10% and Radiodiagnosis 10%.

Any further updates as per NEXT regulations.

Annexure 9

Suggested format for a Theory paper – Universities and colleges may design their unique question paper blueprint as per the principles given in the format		
Duration-3 hours		100 marks
	Type of question/ Number of questions	Marks per question
Q No 1	Scenario based MCQ/ 10-20	1-2
Q No 2	Long essay question/ ONE	10-12
Q No 3	Reasoning Questions/ FIVE	3
Q No 4	Short notes (applied aspects)/ FOUR All four subparts related to six integrated topics if subject is part of integrated modules. However, if a subject has less competencies in integrated module than atleast 2 sub-parts from integrated modules.	4-5
Q No 5	Short notes / THREE	5-6
Q No 6	Short notes / FOUR (one subpart of 5 marks from AETCOM)	4-5

Annexure 10- Phase I Alignment

Suggested Phase-I Alignment Table (Anatomy, Physiology & Biochemistry) (Topics written here are indicative and can be adjusted if required)			
Month	Anatomy	Physiology	Biochemistry
1	-General Anatomy -Lower Limb (LL)	General Physiology, Blood	Cell membrane and organelles, extracellular matrix, Chemistry of carbohydrates, amino-acid & proteins, Lab Safety and Biomedical Waste Management and Chromatography (Demo)
2	-LL/UL -General Embryology & Histology	Blood, N-M	Plasma protein, immunoglobulins, Enzymes, Hemoglobin structure and Hemoglobinopathies, Electrophoresis (Demo), Heme synthesis, Porphyrin's, Hemecatabolism, iron metabolism (mineral) Bilirubin formation, Jaundice, colorimetry (Demo)
3	UL -General Embryology & Histology	ANS, CVS	Clinical Enzymology, Chemistry of lipids, and lipoprotein metabolism, carbohydrate metabolism, vitamins, Estimation of Protein and albumin
4	-Abdomen -Related Systemic Embryology & Histology	GIT, Renal	Vitamins, Nutrition, Liver Function Tests, Renal Function Tests, acid-base balance and its disorders, water and electrolyte normal and abnormal analysis of urine(DOAP), Estimation of Urea, creatinine
5	-Abdomen, Pelvis -Related Systemic Embryology & Histology	GIT (contd.), Repro.	Metabolism of proteins and their metabolic disorders, Metabolism of carbohydrates and their metabolic disorders, Diabetes mellitus, Electron transport chain and oxidative phosphorylation, Xenobiotics, Estimation of Glucose.
6	-Thorax -Related systemic Embryology & Histology	Repro (contd.), RS	Metabolism of lipids (remaining) and disorders, Metabolism of proteins, minerals, vitamins, Reproductive Hormones, Prenatal screening, new born screening.
7	H & N-I -Related Systemic Embryology & Histology, Genetics	Endocrine (Neck region), CNS	Hormone Biochemistry; Tumour markers and, Thyroid Function Tests, Adrenal Function tests, Free radicals, and antioxidants
8	H & N-II -Related Systemic Embryology & Histology, Genetics	CNS contd , Special senses	Purine and pyrimidines metabolism, gout, purine salvage pathway, replication, DNA damage and repair mechanism, transcription, translation, post-translational modifications, protein synthesis inhibitors, genetic code, and mutations, estimation of uric acid
9	- Neuroanatomy -Related Systemic Embryology & Histology	CNS (Contd.) Integrated physiology	Molecular biology techniques and Miscellaneous.

Annexure 11- Phase 2 Alignment

Annexure 11- Phase 2 Alignment

	Pathology	Microbiology	Pharmacology
1 st month	Gen. Path	Gen. Micro, Communication and Ethics(14 competencies)	Gen. Pharm
2 nd month	Gen. Path	Gen. Micro, Communication and Ethics(14 competencies)	Gen. Pharm
3 rd month	Inflammation Immunology HIV	Immunology and Immunological Disorders (8 competencies)	(ANS/PNS) NSAIDs
4 th month	Immunology	Immunology and Immunological Disorders	Immunosuppressants CVS
	CVS	CVS & Bloodstream infections (1.5 months)	
1 st Internal Assessment			
5 th month	CVS Hematology	CVS & Bloodstream infections (1.5 months)	CVS Blood
6 th month	Respiratory System (2-3 weeks)	Respiratory System (2.5 weeks) Tb	Chemo
7 th month	Respiratory System	CNS 1.5 weeks	Respiratory System TB (7 hours)
	CNS 2 hours Kidney		CNS 4weeks
2 nd Internal Assessment			
8 th month	Kidney Genito-urinary 2 weeks	Genito-urinary and STI 2 wks GIT Hepatobiliary	Chemotherapy
9 th month	GIT Hepatobiliary	GIT Hepatobiliary	GIT
10 th month	Bone Breast Skin, eye, joints Endocrine	Musculoskeletal system, Skin and Soft Tissue Infections (2 weeks) Zoonotic & Miscellaneous Infections (2 weeks) HAI and Antimicrobial Stewardship Hospital Infection Control	Drugs on skin, ocular Endocrine
3 rd Internal Assessment/ Pre University			
11 th month	Phase 2 University Exam		

Annexure 12-FAMILY ADOPTION PROGRAMME

CURRICULUM FOR FAMILY ADOPTION PROGRAMME (FAP)

The National Medical Commission (NMC) envisages the FAP as an opportunity for the Institute(s) to discharge its social responsibility and as a critical platform to facilitate *Authentic learning* of the under-graduate students to sensitize them with the real-life challenges of working for the Universal health coverage (UHC). The FAP will present an opportunity for the students to experience the health inequities and understand the social factors contributing to it.

The FAP is expected to complement the other Competency-Based Medical Education (CBME) reforms e.g., posting of interns in the public health facilities under the Compulsory Rotating Medical Internship (CRMI) and the District Residency Program (DRP) for producing socially-responsive competent Indian Medical Graduates who would contribute for the cause of reducing inequities in health and society in the future. Institute(s) should leverage collaboration and partnership with the community and the public health care delivery system for effective implementation of the FAP so as to serve the larger purpose of the CBME reforms in the country.

TARGETS TO BE ACHIEVED BY STUDENTS:

Phase 1:

1. Rapport building and connect with the families
2. Learning communication skills and inspire trust building amongst families
3. Understand the dynamics of community set-up of that region
4. Mobilize families for participation in Screening programs
5. Undertake detailed family study and prepare the family diagnosis to identify diseases/ ill-health/ malnutrition of allotted families/ risk factors / scope for health promotion
6. Formulate objectives to be achieved for each family

Phase 2:

1. Continue active involvement to become the first doctor /reference point of the family by continued active interaction
2. Ensure follow-up of members from adopted families for vaccination, growth monitoring and promotion, menstrual hygiene, IFA prophylaxis, health lifestyle adoption, nutrition, vector control measures, compliance to medications etc.
3. Work collaboratively with adopted families to achieve the formulated objectives
4. Inform families about ongoing government sponsored health related programs
5. Ensure appropriate referral of family members considering their choice for additional or annual screening at higher health facilities.

Phase 3:

1. Work collaboratively with adopted families to achieve the formulated objectives
2. Observation of services delivered at the community level during Village Health Nutrition Days (VHND), Community-based events (CBEs), Health and Wellness Centres (HWC) camps under the different national health program
3. Build understanding regarding work of frontline workers (ANM, ASHA/USHA, AWW, MPW) through interaction
4. Build understanding around intersectoral action for health through Local self-governing bodies, NGOs, SHGs etc for health promotion
5. Undertake short term action projects for improving health in the adopted families or community
6. Analysis of their own involvement and impact on improving the health conditions in the adopted families

Final visit to have last round of active interaction with families - prepare a report to be submitted to department addressing:

1. Improvement in overall health of the family
2. Immunization

3. Sanitation,
4. De-addiction
5. Whether healthy lifestyles like reading good books. Sports/yoga activities have been inculcated in the house-holds
6. Improvement in anaemia, tuberculosis control
7. Health awareness
8. Any other issues
9. Role of the student in supporting family during illness / medical emergency
10. Social responsibility in the form of environment protection programme in form of plantation drive (medicinal plants/trees) cleanliness and sanitation drive with the initiative of the medical student

Phase wise competencies to be achieved through the FAP

Professional year and topics for visit	Competency	Objectives	Suggested T-L methods	Suggested Assessment methods	Teaching Hours
First year Visit 1 – Rapport building with the Families and Orientation Socio-demographic and Socio-economic profile Visit 2 – Environmental health	Collect demographic profile of allotted families, take history and conduct clinical examination of all family members	By the end of this visit, students should be able to compile the basic demographic profile of allocated family members and formulate objectives for each family	Family survey, Screening camps Field visit clinics	Community case presentation. OSPE, Observation, FAP logbook Multi-source feedback Reflections Case studies	Total 24 hours [A minimum of 4 visits of full day of around 6 hours] OR [If 3 hours visit then 8 visits to be conducted]
	Mobilize the adopted family members for participation in screening camps and coordinate treatment of adopted family under overall guidance of mentor	By the end of this visit, students should be able to report the basic health profile and treatment history of allocated family members	Screening camps Field visit clinics PLA techniques (sorting, ranking etc)	Community case presentation. OSPE, Observation, FAP logbook Multi-source feedback Reflections Case studies	

Drinking Water supply, Sanitation and Vector control	Maintain communication and follow-up of remedial measures	By the end of this visit, students should be able to provide details of communication maintained with family members for follow up of treatment and suggested remedial measures.	Family survey, Screening camps Field visit clinics Reporting of follow up visits.	Community case presentation. OSPE, FAP logbook based verification of competency, Multi-source feedback Reflections	
Visit 3 – Individual health profile including Anthropometry	Take part in health promotion, environment protection and sustenance activities	By the end of this visit, students should be able to report the activities undertaken for health promotion, environment protection and sustenance like tree plantation, herbal plantation activities conducted in the community	Participation in and process documentation of activities (NSS activities) along with reporting of case studies	Community case presentation. OSPE, Observation, FAP logbook Multi-source feedback Reflections Case studies	
Visit4 – Addictions Tobacco, Alcohol, Screen addiction and other addictions					
Second year	Take history and conduct clinical examination of all family members	By the end of this visit, Students should be able to compile the updated medical history of family members through family follow-up	Family survey, Field visit clinics Referral and follow-up	Community case presentation. OSPE, Observation, FAP logbook Multi-source feedback Reflections Case studies	Total 24 hours [A minimum of 4 visits of full day of around 6 hours] OR
Visit 5 – Healthy Lifestyle Dietary assessment,					

Physical activity and Exercise	Facilitate checkup and/or referral of adopted family under overall guidance of mentor	By the end of this visit, students should be able to report the details of clinical examination and investigations like HB %, blood group urine routine and blood sugar or any other investigation along with treatment history, compliance to treatment, of allocated family members	Field visit clinics Referral Field visit clinics Reporting of follow up visits.	Community case presentation. OSPE, FAP logbook Case studies Multi-source feedback	[If 3 hours visit then 8 visits to be conducted]
Visit 6 – Micronutrient deficiencies - Nutritional anemia, Iodine deficiency disorders Care of under-5 children					
Visit 7 – Feeding, vaccination, HBYC Maternal health	Maintain communication and follow-up of remedial measures	By the end of this visit, students should be able to provide details of communication maintained with family members including information about National programs provided. Students should also be able to follow up on treatment and suggested remedial measures under the guidance of a mentor. Documentation of referral in logbook	Family survey, Screening camps Field visit clinics Reporting of follow up visits.	Community case presentation. OSPE, FAP logbook based verification of competency, Multi-source feedback Reflections	
Visit 8 – Care of Pregnant and Lactating mothers					
Third year	Take history and conduct clinical examination of all family members and facilitate health check-up if required	By the end of this visit, students should be able to maintain follow-up with the families and update the medical history of family members	Family survey, Field visit clinics Referral and follow-up	Community case presentation. OSPE, Observation, FAP logbook Multi-source feedback Reflections Case studies	Total 36 hours [A minimum of 6 visits of full day of around 6 hours] OR [If 3 hours visit then
Visit 9 – Communicable diseases – Tuberculosis, Influenza and others					
Visit 10 –					

Non-communicable diseases – HTN, DM and others	Maintain communication and follow-up of remedial measures	By the end of this visit, students should be able to provide details of communication maintained with family members and collaborative efforts undertaken with family members for improving their health.	Family survey, Field visit clinics Referral and tracking Reporting of follow up visits.	Community case presentation. OSPE, Observation, FAP logbook based verification of competency, Multi-source feedback Reflections	12 visits to be conducted]
Visit 11 – Adolescent health / School health Menstrual hygiene, Life skills	Counsel the family members of allotted families and analyze the health trajectory of adopted family under overall guidance of mentor	By the end of this visit, students <u>should</u> be able to analyze and report the findings of short term action projects and its effect on health trajectory at individual Family and community level	Participation in and process documentation of activities (NSS activities) along with reporting of photographic evidences. Small group discussion (report of the health trajectory of adopted family)	Community case presentation. OSPE, Logbook based verification of competency. Observation Viva-voce Multi-source feedback Reflections	
Visit 12 – Healthy ageing Health care of the Elderly					
Visit 13 – Mental health Healthy coping strategies and Resilience					
Visit 14 – Well-being of the Families Final visit and Report submission	Work as a member of Health Team and facilitate intersectoral action for health	By the end of this visit, students should be able to report the role of various frontline functionaries’ delivery primary health care and Local self-governing bodies, NGOs, SHGs etc for health promotion	Observation and reporting of events Exposure visits Interaction with frontline functionaries	Logbook based verification of competency, Observation Viva-voce Multi-source feedback Reflections	

LOG BOOK FOR FAMILY ADOPTION PROGRAMME

(To be modified by the Institute as per their requirement)

Institute:

University:

Name of the Student:

Roll No:

Batch:

Address of Community for FAP:

Number of Adopted Families:

Names of Head of Household of Adopted families:

Dates of Screening Camp: _____

Name of Faculty Guide/Mentor

Names of PGs/SRs Guide/Mentor

Names of Para-medical staff Guide/Mentor

Annexure 13

DRAFT GUIDELINES FOR MANPOWER REQUIREMENT FOR RESEARCH FACILITIES IN A MEDICAL COLLEGE

Research labs may be under following categories:

1. Molecular lab
2. Stem cell research lab
3. Cytogenetics lab
4. HLA and tissue typing research lab
5. Integrative Research lab

Applied Clinical research for organ perfusion, cancer research, in vitro fertilization, etc. can be under any of the above research facilities.

For integrative research lab, qualified faculty from Yoga/ Ayurvedic/ Siddha etc can also be employed and man-power may be selected as per AYUSH guidelines.

MAN POWER

(1) Lab Director-post-1

Minimum Qualifications required:

MD Path/ MD Microbiology/ MD Transfusion Medicine/ MD Biochemistry/

Faculty with PhD/ MSc PhD may be taken if exceptional in research.

Lab work: 10 years experience

Lab research related publications- minimum 10 in last 10 years

(2) Lab Supervisor- post-1 (per research facility)

Minimum Qualifications required:

MD Path/ MD Microbiology/ MD Transfusion Medicine/ MD Biochemistry

Faculty with PhD (Medical subject) will be preferred

or MSc in life sciences with PhD from Medical college

Lab work: 7 years experience

Lab research related publications- minimum 5 in last 5 years

(3) Senior Scientific Research Officer- posts- 1 or more (per research facility)

Minimum Qualifications required:

PhD with MD Path/ MD Microbiology/ MD Transfusion Medicine/ MD Biochemistry /

PhD in medical college or MSc in life sciences with PhD from medical college

Lab work: 4years experience

Lab research related publications- minimum 3 in last 3 years

(4) Junior Research Officer-posts- 1 or more (per research facility)

Minimum Qualifications required:

MD Path/ MD Microbiology/ MD Transfusion Medicine/ MD Biochemistry or Diploma
in Clinical Pathology/ MSc in life sciences, PhD scholar/ Postdoc fellow

Diploma holder in any branch may pursue PhD if experience / research inclinations
proved for minimum of 1 year. They can be enrolled for integrated Master's PhD course.

Lab work: 1 year experience

Lab research related publications- preferably 1 in last 2 years

(5) Laboratory Technicians- Posts- minimum 2

Minimum Qualifications required: BSc/ MSc, in life sciences including Biotechnology,
DMLT

(6) Data entry operator/ Clerk -1 (minimum)

Minimum Qualifications required:

Graduation

(7) Store keeper -1 (minimum)

Minimum Qualifications required: **Graduate**

Experience: 5 years

(8) Biostatistician- 1(minimum)-Asst Professor/ Above

Experience: 5 years

(9) Lab attendant

(10) Peon/ Multi-task worker

(11) Clinical Monitors-

Any MBBS or above with research inclination

**(12) Social worker/ MSW with applied research
inclinations**

DISABILITY GUIDELINES

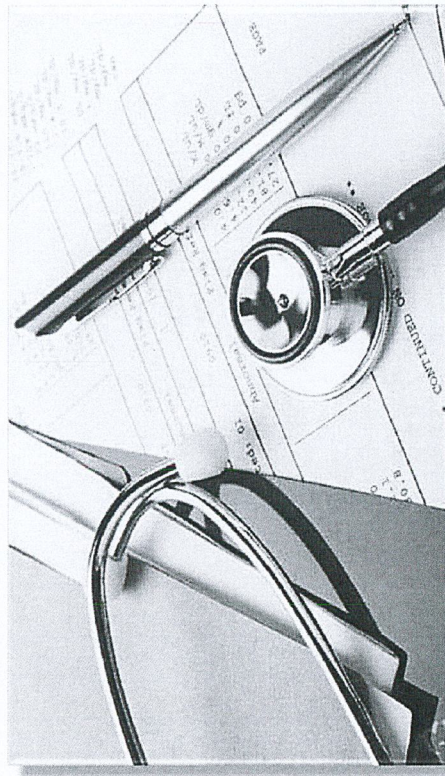
Modified guidelines for the academic year 2025-'26 onwards regarding admission of students with 'specified disabilities' under the 'Rights Of Persons With Disabilities Act 2016' with respect to admission in MBBS will be notified separately. Till further notice, the disability guidelines (page numbers 96 to 98) stipulated under CBME Guidelines 2023 dated 1st August, 2023 shall be applicable for the academic year 2024-'25.





NATIONAL MEDICAL COMMISSION COMPETENCY BASED UNDERGRADUATE CURRICULUM FOR THE INDIAN MEDICAL GRADUATE

Knows		Knows how		Shows		Shows how		Performs	
Enumerate		Describe		Observe		Demonstrate		Assist	
Counsel								Prescribe	
	Analyse							Integrate	
Guide								Communicate	
	Correlate							Interpret	
Critique								Collaborate	
Clinician	Communicator	Team Leader	Professional	Lifelong Learner		Communication			
Knowledge	Skills	Attitude	Values	Responsiveness					



Volume I-2024

**COMPETENCY BASED UNDERGRADUATE CURRICULUM
FOR THE
INDIAN MEDICAL GRADUATE**

2024



**National Medical Commission
Pocket-14, Sector- 8, Dwarka
New Delhi 110 077**



राष्ट्रीय आयुर्विज्ञान आयोग National Medical Commission



FOREWORD

The National Medical Commission (NMC) was created on 24th September, 2020 by the Act of Parliament replacing the erstwhile Medical Council of India and Board of Governors. The foundation for making of an Indian Medical Graduate ('Doctor') depends on building a sound base of medical education. In the year 2019, a committed team appointed by erstwhile MCI revolutionized the age-old didactic teaching system in Indian medical colleges by bringing in Competency Based Medical Education (CBME). This unique approach has raised the level of medical education with respect to quality, versatility and horizontal- vertical alignment of all subjects. The mandate of NMC to see that the first line of health care leaders who reach out to the common masses empathizing with the problems of the rural populace are being met with. The two-pronged approach of increasing the quantity and improving the quality of medical education is being tackled with this approach.

Education has now become student-centric and patient-centric instead of pedagogic system. The first batch of students have now completed their training under CBME implemented in 2019. It was a demand from actively involved academia to revisit the curriculum and modify it so as to keep abreast at international level. Interim years of covid pandemic also were 'a good teaching academy' for all. Increasing influence of artificial intelligence on student community, matched with rising cost of medical education and competitiveness, instead of accommodative, helping and balanced approach,



has led to increasing risk of losing social intelligence and humane approach amidst the emerging doctors. The risk of creating overqualified clerks looms large on our medical system.

A national team of experienced as well as emerging empathetic and talented teachers engaged as full-time faculty in various medical institutions were invited by the Undergraduate Education Board (UGMEB) of the NMC to invest their extra energy and hours to assess the curricula, examinations, AETCOM, vertical and horizontal integration of various subjects and bring in modifications. Each subject had committee of five persons on an average, from different parts of the country. Totally 93 experts have given their valuable time and energy in framing this new curriculum and all three volumes, prepared by their predecessors in 2019. The hard work done by them was the base on which this edifice has further been refined.

We are sure that fraternity and students are going to have an educational journey that will be full of fun, knowledge and experience sharing. UGMEB of the NMC acknowledges each and every one involved in the process, named and unsung heroes who have been the part of this exercise of bringing the document to the readers.



**Dr. Aruna V. Vanikar, President,
Dr. Vijayendra Kumar, Member,
UGMEB.**

Contents Volume I

S. No.	Subject	Legend	Page No.
(i)	How to use the Manual		8
(ii)	Definitions used in the Manual		28
(iii)	Subject wise Competencies		
1.	Anatomy	AN	32
2.	Physiology	PY	74
3.	Biochemistry	BC	86
4.	Pharmacology	PH	98
5.	Pathology	PA	111
6.	Microbiology	MI	130
7.	Forensic Medicine & Toxicology	FM	140
(iv)	List of contributing subject experts		160

Contents Volume II

S. No.	Subject	Legend	Page No.
(i)	How to use the Manual		8
(ii)	Definitions used in the Manual		28
(iii)	Subject wise Competencies		
1.	Community Medicine	CM	32
2.	General Medicine	GM	44
3.	Paediatrics	PE	92
4.	Psychiatry	PS	114
5.	Dermatology, Venerology & Leprosy	DE	118
(iv)	List of contributing subject experts		125

Contents Volume III

S. No.	Subject	Legend	Page No.
(i)	How to use the Manual		8
(ii)	Definitions used in the Manual		28
(iii)	Subject wise Competencies		
1.	General Surgery	SU	32
2.	Ophthalmology	OP	44
3.	Otorhinolaryngology	EN	50
4.	Obstetrics & Gynaecology	OG	57
5.	Orthopaedics'	OR	74
6.	Anaesthesiology	AS	82
7.	Radiodiagnosis	RT	87
(iv)	List of contributing subject experts		91

How to use the Manual

This Manual is intended for curriculum planners in an institution to design learning and assessment experiences for the MBBS student. Contents created by subject experts have been curated to provide guidance for the curriculum planners, leaders and teachers in medical schools. The manual must be used with reference to and in the context of the Regulations.

Section 1

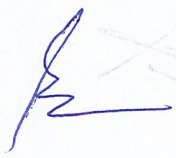
Competencies for the Indian Medical Graduate

Section 1 - provides the Roles (global competencies) extracted from the Competency Based Medical Education (CBME) Guidelines, 2024. The global competencies identified as defining the roles of the Indian Medical Graduate are the broad competencies that the learner must aspire to achieve, teachers and curriculum planners must ensure that the learning experiences are aligned to this Manual.

Extract from the Competency Based Medical Education (CBME) Guidelines, 2024

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 advocated. The first contact physician needs to be skilful to perform duties of primary care physician and have requisite skills for promotive, preventative, rehabilitative, palliative care & referral services.



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 to fulfill his social obligations towards realization of this goal.
- b. Learn key aspects of National policies on health and devote himself to its practical implementation.
- c. Achieve competence in the 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 an 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 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.

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- a. Be competent for working in the health care team from Phase I MBBS to Compulsory rotatory medical internship (CRMI) in a gradual manner with increasing complexity in an integrated multi-department involvement.
 - b. Be competent to practice preventive, promotive, curative, palliative 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 medicines" and their common adverse effects.
- d. 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 and advocacy;
 - vi. Indian Public Health Standards (IPHS) at various level of service delivery;
 - vii. Bio-medical waste disposal;
 - 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 counselling.

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- 
- 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 with maximum community participation.
 - 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, dependability, and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduates to acquire certifiable skills as given in 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.

2.3 Goals for the Learner

In order to fulfil these goals, the Indian Medical Graduate must be able to function in the following roles appropriately and effectively:-

- a. Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- b. Leader and member of the health care team and system with capabilities to collect, analyse, synthesize and communicate health data appropriately.
- c. Communicate with patients, families, colleagues, community and community in a methodological and skillful way using various approaches in family visits, family adoption program, clinic-social cases, clinical cases and AETCOM training programs.
- d. Lifelong learner committed to continuous improvement of skills and knowledge.
- e. Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community, profession, and society. Training of humanities and social sciences will be useful for this training.

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 activity in real life situations. In order to effectively fulfil the roles, 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, biological, clinical, behavioral and social perspective.
- 3.1.2 Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioral and social perspective.
- 3.1.3 Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence healthcare.
- 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.

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- 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:
- a. Disease prevention,
 - b. Health promotion and cure,
 - c. Pain and distress alleviation, and
 - d. Rehabilitation and palliation.
- 3.1.13 Demonstrate ability to provide a continuum of care at the primary (including home care) 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, analyse 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, families, colleagues and community in a language that patients, families, colleagues and community understands and in a manner that will improve patient patients, families, colleagues and community satisfaction and health care outcomes.
- 3.3.2 Demonstrate ability to establish professional relationships with patients, families, colleagues and community that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- 3.3.3 Demonstrate ability to communicate with patients, families, colleagues and community 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 and overcoming hesitancy towards health initiatives.

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 re-evaluate 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, the profession and community.

- 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 commitment to the growth of the medical profession as a whole.

Section 2

Subject-wise competencies

Section 2 contains subject-wise competencies that must be achieved at the end of instruction in that subject. These are organised in tables.

Competencies (Outcomes) in each subject are grouped according to topics number-wise. It is important to review the individual competencies in the light of the topic outcomes as a whole. For each competency outlined - the learning domains (Knowledge, Skill, Attitude, and Communication) are identified. The expected level of achievement in that subject is identified as – [knows (K), knows how (KH), shows how (SH), perform (P)]. As a rule, 'perform' indicates independent performance without supervision and is required rarely in the pre-internship period. The competency is a core (Y - must achieve) or a non-core (N - desirable) outcome. Suggested learning and assessment methods (these are suggestions) and explanation of the terms used are given under the section "definitions used in this document". The suggested number of times a skill must be performed independently for certification in the learner's log book is also given.

The number of topics and competencies in each subject are given below:

Topics and competencies in Phase 1 & Phase 2 subjects (Volume I)

Sr. No.	Subjects	Number of topics	Number of competencies
1.	Anatomy	82	413
2.	Physiology	12	136
3.	Biochemistry	14	84
4.	Pharmacology	10	92
5.	Pathology	35	182
6.	Microbiology	11	74
7.	Forensic Medicine	14	158
	Total	178	1139

Topics competencies in Medicine and Allied subjects (Volume II)

Sr. No.	Subjects	Number of topics	Number of competencies
1.	Community Medicine	20	136
2.	General Medicine	29	525
3.	Paediatrics	35	406
4.	Psychiatry	13	17
5.	Dermatology, Venereology & Leprosy	15	48
	Total	112	1132

Topics and competencies in Surgery and Allied subjects (Volume III)

Sr.No.	Subjects	Number of topics	Number of competencies
1.	General Surgery	30	133
2.	Ophthalmology	10	60
3.	Otorhinolaryngology	04	63
4.	Obstetrics & Gynaecology	38	141
5.	Orthopaedics'	14	40
6.	Anaesthesiology	11	52
7.	Radiodiagnosis	07	21
	Total	114	510

Understanding the competencies table

Understanding the competencies table

A	B	C	D	E	F	G	H
No.	Competencies	Domain	K/KH/SH/P	Core	Suggested Teaching Learning Method	Suggested Assessment method	No. required to certify (P)
Physiology							
PY1.1	Describe the structure and functions of a	K	KH	Y	LGT, SGT	Written/Viva	
IM 4.10	Elicit <i>document</i> and present a medical history that helps delineate the	S	SH	Y	Bed Side Clinic, DOAP	OSCE, Direct observation	3

Description of competency

Identifies if the competency is core or desirable
Y indicates Core;
N-non-core

Unique number of the competency

Identifies the domain

First two alphabets represent the subject code (see list); number following alphabet reflects competency number, following period is a running number.

or domains addressed
K - Knowledge
S - Skill
A - Attitude
C - Communication

Identifies the level of competency required based on the Miller's pyramid
K - Knows
KH - Knows How
SH - Show How
P - Perform independently

Identifies the suggested learning method.
DOAP - Demonstrate (by Student) Observe, Assist Perform)

Number of times a Skill needs to be done

Identifies the suggested assessment method
Skill assessment in Clinics, Skills lab, Practicals etc. by direct observation

LGT-Large group teaching; SGT-Small group teaching; OSCE-Objective structured clinical examination; P- indicate how many competencies/competencies must be done independently under

observation for Certification. *Numbers given are for illustrative purposes only and should not be compared with the same in curriculum documents



Deriving learning objectives from competencies

Deriving learning objectives from competencies

K	Knows	A knowledge attribute – Usually enumerates or describes
KH	Knows how	A higher level of knowledge – is able to discuss or analyse
S	Shows	A skill attribute: is able to identify or demonstrate the steps
SH	Shows how	A skill attribute: is able to interpret / demonstrate a complex procedure requiring thought, knowledge and behaviour
P	Performs (under supervision or independently)	Mastery for the level of competence - When done independently under supervision a pre-specified number of times - certification or capacity to perform independently

Competency: An observable ability of a health professional, integrating multiple components such as knowledge, skills, values and attitudes.

PA42.3*	Identify the etiology of meningitis based on given CSF parameters	K/S	SH	Y
---------	---	-----	----	---

LO 1	At the end of the session the phase II student must be able to enumerate the most common causes of meningitis correctly			
LO 2	At the end of the session the phase II student must be able to enumerate the components of CSF analysis correctly			
LO 3	At the end of the session the phase II student must be able to describe the CSF features for a given etiology of meningitis accurately			
LO 4	At the end of the session the phase II student must be able to identify the aetiology of meningitis correctly from a given set of CSF parameters			

Audience - who will do the behavior

Behavior - What should the learner be able to do?

Condition - Under what conditions should the learner be able to do it?

Degree - How well must it be done

Learning Objective (LO): Statement of what a learner should be able to do at the end of a specific learning experience
 *Numbers given are for illustrative purposes only and should not be compared with the same in curriculum documents

Deriving learning methods from competencies

Deriving learning methods from competencies

Competency: An observable ability of a health professional, integrating multiple components such as knowledge, skills, values and attitudes.

PA34.3*	Identify the etiology of meningitis based on given CSF parameters	K, S	SH	Y
---------	---	------	----	---

Objective: Statement of what a learner should be able to do at the end of a specific learning experience

LO 1	At the end of the session the Phase II student must be able to enumerate the most common causes of meningitis correctly	Large or small group teaching
LO 2	At the end of the session the Phase II student must be able to enumerate the components of a CSF analysis correctly	
LO 3	At the end of the session the Phase II student must be able to describe the CSF features for a given etiologic of meningitis accurately	
LO 4	At the end of the session the Phase II student must be able to identify the aetiology of meningitis correctly from a given set of CSF parameters	Small group teaching, practical session

*Numbers given are for illustrative purposes only and should not be compared with the same in curriculum documents

Deriving assessment methods from competencies

Deriving assessment methods from competencies

Competency: An observable ability of a health professional, **integrating multiple components** such as knowledge, skills, values and attitudes.

PA34.3*	Identify the etiology of meningitis based on given CSF parameters	K, S	SH	Y
---------	---	------	----	---

Objective: Statement of what a learner should be able to do at the end of a specific learning experience

LO 1	At the end of the session the Phase II student must be able to enumerate the most common causes of meningitis correctly.....
LO 2	At the end of the session the Phase II student must be able to enumerate the components of a CSF analysis correctly
LO 3	At the end of the session the Phase II student must be able to describe the CSF features for a given aetiology of meningitis accurately
LO 4	At the end of the session the Phase II student must be able to identify the aetiology of meningitis correctly from a given set of CSF parameters

Written/SAQ: Enumerate 5 causes of meningitis based on their prevalence in India

Short note or part of structured essay: Enumerate the components tested in a CSF analysis

Short note or part of structured essay:
Describe the CSF findings that are characteristic of tuberculous meningitis

Short note / part of the structured essay/ Direct observation/OSPE/ Viva voce
Review the CSF findings in the following patient and identify (write or vocalize) the most likely etiology

* Numbers given are for illustrative purposes only and should not be compared with numbers in the curriculum document

Definitions used in the Manual

1. **Goal:** A projected state of affairs that a person or system plans to achieve. In other words: Where do you want to go? or What do you want to become?
2. **Competency:** The habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served. In other words: What should you have? or What should have changed?
3. **Objective:** Statement of what a learner should be able to do at the end of a specific learning experience. In other words: What the Indian Medical Graduate should know, do, or behave.

Action Verbs used in this manual

Knowledge	Skill	Attitude/communicate
Enumerate	Identify	Counsel
List	Demonstrate	Inform
Describe	Perform under supervision	Demonstrate understanding of
Discuss	Perform independently	Communicate
Differentiate	Document	
Define	Present	
Classify	Record	
Choose	Elicit	
Interpret		
Report		

Note: Specified essential competencies only will be required to be performed independently at the end of the final year MBBS.

1. The word 'perform' or 'do' is used ONLY if the task has to be done on patients or in laboratory practical in the pre/para-clinical phases.
2. Most tasks that require performance during undergraduate years will be performed under supervision.
3. If a certification to perform independently has been done, then the number of times the task has to be performed under supervision will be indicated in the last column.

Explanation of terms used in this manual

LGT (LGT)	Any instructional large group method including interactive lecture
SGT (SGT)	Any instructional method involving small groups of students in an appropriate learning context
DOAP (Demonstration-Observation - Assistance-Performance)	A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently
Skill assessment/ Direct observation	A session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands
DOPS (Directly observed procedural skills)	DOPS is a method of assessment for assessing competency of the students in which the examiner directly observes the student performing procedure
Core	A competency that is necessary in order to complete the requirements of the subject (traditional must know)
Non-Core	A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/desirable to know)
National Guidelines	Health programs as relevant to the competency that are part of the National Health Program

Domains of learning

K	Knowledge
S	Skill
A	Attitude
C	Communication

Levels of competency

K	Knows	A knowledge attribute - Usually enumerates or describes
KH	Knows how	A higher level of knowledge - is able to discuss or analyze
SH	Shows how	A skill attribute: is able to interpret/ demonstrate a complex procedure requiring thought, knowledge and behavior
P	Performs (under supervision or independently)	Mastery for the level of competence - When done independently under supervision a pre-specified number of times - certification or capacity to perform independently results

Note:

1. In the table of competency - the highest level of competency acquired is specified and implies that the lower levels have been acquired already. Therefore, when a student is able to SH - Show how - an informed consent is obtained - it is presumed that the preceding steps - the knowledge, the analytical skills, the skill of communicating have all been obtained.
2. It may also be noted that attainment of the highest level of competency may be obtained through steps spread over several subjects or phases and not necessarily in the subject or the phase in which the competency has been identified

Volume I
Competency based Undergraduate Curriculum
in
Phase 1 & Phase 2 subjects

ANATOMY (CODE: AN)

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify p
Anatomy (Topics = 82, Competencies = 413)							
Topic 1: Anatomical terminology -		Number of Competencies (2)		Number of competencies for certification: (NIL)			
AN1.1	Describe & Demonstrate normal anatomical position, various planes, relation, comparison, laterality & movements in the human body	K/S	SH	Y	LGT, Demonstration	Written/ Viva voce/ skills assessment	
AN1.2	Describe composition of bone and bone marrow	K	KH	Y	LGT	Written/ viva	
Topic 2: General features of bones & Joints		Number of Competencies (6)		Number of competencies for certification: (NIL)			
AN2.1	Describe parts, types, peculiarities of each type, blood and nerve supply of bones.	K	KH	Y	LGT	Written/ viva voce	
AN2.2	Describe the laws of ossification, epiphysis, its various types and their importance	K	KH	N	LGT	Written/ Viva voce	
AN2.3	Describe special features of a sesamoid bone	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN2.4	Describe various types of cartilage with its structure & distribution in body	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN2.5	Describe & demonstrate various joints with possible movements, subtypes and examples	K, S	SH	Y	LGT, Demonstration	Written/ Viva voce/ skills assessment	
AN2.6	Explain the concept of nerve supply of joints & Hilton's law	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
Topic 3: General features of Muscle		Number of Competencies (3)		Number of competencies for certification: (NIL)			
AN3.1	Classify & describe muscle tissue according to structure, size, shape, region & action	K	KH	Y	LGT, Demonstration	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN3.2	Describe parts of skeletal muscle and differentiate between tendons and aponeuroses with examples	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN3.3	Explain Shunt and spurt muscles with examples and role in joint movement	K	KH	N	LGT, Demonstration	Written/ Viva voce	
Topic 4: General features of skin and fascia							
AN4.1	Describe different types of skin & dermatomes in body	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN4.2	Describe & demonstrate structure of skin with its appendages along with clinical anatomy	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce	
AN4.3	Describe structure, contents and identify modifications of superficial fascia along with fat distribution in body	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce	
AN4.4	Describe & demonstrate modifications of deep fascia with its location, function & examples	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce	
AN4.5	Explain principles of skin incisions and their surgical importance	K	KH	N	LGT, Demonstration	Written	
Topic 5: General features of the cardiovascular system							
AN5.1	Differentiate between blood vascular and lymphatic system	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN5.2	Differentiate between pulmonary and systemic circulation	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN5.3	Describe general differences between arteries, veins and sinuses	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN5.4	Explain functional and gross structural differences between elastic, muscular arteries and arterioles	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN5.5	Describe portal system giving examples	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN5.6	Describe the concept of anastomoses and collateral circulation, its different sites & significance of end arteries	K	KH	Y	LGT, Demonstration	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN5.8	Describe thrombosis, infarction & aneurysm	K	KH	N	LGT, Demonstration	Written/ Viva voce	
Topic 6: General Features of lymphatic system							
AN6.1	Describe the components and functions of the lymphatic system	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN6.2	Describe structure of lymph capillaries & mechanism of lymph circulation	K	KH	N	LGT, Demonstration	Written	
AN6.3	Explain the concept of lymphoedema and spread of tumors via lymphatics and venous system	K	KH	N	LGT, Demonstration	Written/ Viva voce	
Topic 7: Introduction to the nervous system							
AN7.1	Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN7.2	List components of nervous tissue and their functions	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN7.3	Describe parts of a neuron and classify them based on number of neurites, size & function	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN7.4	Describe structure of a typical spinal nerve	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN7.5	Describe principles of sensory and motor innervation of muscles	K	KH	N	LGT, Demonstration	Written	
AN7.6	Describe concept of loss of innervation of a muscle with its applied anatomy	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN7.7	Describe various types of synapse	K	KH	N	LGT, Demonstration	Written	
AN7.8	Describe differences between sympathetic and spinal ganglia	K	KH	N	LGT, Demonstration	Written	
Topic 8: Features of individual bones (Upper Limb)							
AN8.1	Identify the given bone, its side, anatomical position, joint formation, important features and clinical anatomy (clavicle, scapula, humerus, radius, ulna, carpal bones)	K,S	SH	Y	Demonstration	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN8.2	Demonstrate important muscle attachments on the given bone	K,S	SH	Y	Demonstration	Written/ Viva voce/ skill assessment	
AN8.3	Identify and name various bones in articulated hand, Specify the parts of metacarpals and phalanges and enumerate the peculiarities of pisiform	K,S	SH	Y	Demonstration	Viva voce Practicals	
AN8.4	Describe scaphoid fracture and explain the anatomical basis of avascular necrosis	K	KH	N	LGT, Demonstration	Viva voce	
Topic 9: Pectoral region							
Number of Competencies (3)							
AN9.1	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor and describe clavipectoral fascia	K	KH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce	
AN9.2	Describe the location, extent, deep relations, structure, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	K	KH	Y	LGT,	Written/ Viva voce	
AN9.3	Describe development of breast, associated age changes and congenital anomalies	K	KH	N	LGT, Demonstration	Written/ Viva voce	
Topic 10: Axilla, Shoulder and Scapular region							
Number of Competencies (13)							
AN10.1	Identify & describe boundaries and contents of axilla	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of axillary vein	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN10.4	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage	K	KH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN10.5	Explain variations in formation of brachial plexus	K	KH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce	
AN10.6	Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN10.7	Describe axillary lymph nodes, areas of drainage and anatomical basis of their enlargement	K	KH	Y	LGT, Practical, Demonstration, Dissection	Written	
AN10.8	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN10.9	Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation	K	KH	N	LGT, Practical, Demonstration, Dissection	Written	
AN10.10	Describe and identify the deltoid and rotator cuff muscles along with their nerve supply and clinical anatomy	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN10.11	Describe & demonstrate attachment, action and clinical anatomy of serratus anterior muscle	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN10.12	Describe and demonstrate shoulder joint for- type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN10.13	Explain anatomical basis of injury to axillary nerve during intramuscular injections	K	KH	Y	LGT	Viva voce	
Topic 11: Arm & Cubital fossa							
		Number of Competencies (6)			Number of competencies for certification: (NIL)		
AN11.1	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN11.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN11.3	Describe the anatomical basis of Venipuncture of cubital veins	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN11.4	Describe the anatomical basis of Saturday night paralysis	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN11.5	Identify & describe boundaries and contents of cubital fossa	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN11.6	Describe the anastomosis around the elbow joint	K	KH	N	LGT	Written	
Topic 12: Forearm & hand							
		Number of Competencies (15)			Number of competencies for certification: (NIL)		
AN12.1	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN12.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify to certify p
AN12.3	Identify & describe flexor retinaculum with its attachments	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN12.4	Explain anatomical basis of carpal tunnel syndrome	K	KH	Y	LGT, Demonstration	Written/Viva voce	
AN12.5	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN12.6	Describe & demonstrate movements of thumb and muscles involved	K,S	SH	Y	Practical, Demonstration	Written/Viva voce/ skill assessment	
AN12.7	Identify & describe course and branches of important blood vessels and nerves in hand	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN12.8	Describe anatomical basis of Claw hand	K	KH	Y	LGT, Demonstration, Practical	Written/Viva voce	
AN12.9	Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce	
AN12.10	Explain infection of fascial spaces of palm	K	KH	N	LGT	Written	
AN12.11	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN12.12	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN12.13	Describe the anatomical basis of Wrist drop	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN12.14	Identify & describe compartments deep to extensor retinaculum and describe the boundaries and contents of anatomical snuff box.	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN12.15	Identify & describe extensor expansion formation	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
Topic 13: General Features, Joints, radiographs & surface marking							
Number of competencies: (8)					Number of competencies for certification: (NIL)		
AN13.1	Describe and explain Fascia of upper limb and compartments, veins of upper limb and its lymphatic drainage	K	KH	Y	LGT, demonstration	Written/ Viva voce	
AN13.2	Describe dermatomes of upper limb	K	KH	N	LGT	Written/ Viva voce	
AN13.3	Identify & describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radio-ulnar joints, wrist joint & first carpometacarpal joint	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN13.4	Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal joint	K	KH	N	LGT, Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN13.5	Identify the bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand	K,S	SH	Y	LGT, Practical, Demonstration	Viva voce/ skill assessment	
AN13.6	Identify & demonstrate important bony landmarks of upper limb: Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end and Inferior angle of the scapula	K,S	SH	Y	Practical, Demonstration	Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify p
AN13.7	Identify & demonstrate surface projection of: Cephalic and basilic vein, Palpation of Brachial artery, Radial artery, Testing of muscles: Trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis	K,S	SH	Y	Practical, Demonstration	Viva voce/ skill assessment	
AN13.8	Describe development of upper limb	K	KH	N	LGT	Written	
Topic 14: Features of individual bones (Lower Limb)		Number of Competencies (4)		Number of competencies for certification: (NIL)			
AN14.1	Identify the given bone, its side, anatomical position, joint formation, important features and clinical anatomy (hip bone, femur, tibia fibula, tarsal bones)	K,S	SH	Y	Demonstration	Viva voce	
AN14.2	Identify & describe joints formed by the given bone	K,S	SH	Y	LGT, Demonstration	Viva voce	
AN14.3	Describe the importance of ossification of lower end of femur & upper end of tibia, and explain violation of law of ossification in fibula	K	KH	Y	LGT, Demonstration	Viva voce	
AN14.4	Identify and name various bones in the articulated foot with individual muscle attachment	K,S	SH	N	LGT, Demonstration	Viva voce	
Topic 15: Front & Medial side of thigh		Number of Competencies (5)		Number of competencies for certification: (NIL)			
AN15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN15.4	Explain anatomical basis of Psoas abscess & Femoral hernia	K	KH	N	LGT, Demonstration	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN15.5	Describe and demonstrate adductor canal with its contents	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce/ skill assessment	
Topic 16: Gluteal region & back of thigh							
Number of Competencies (6)							
AN16.1	Describe and demonstrate major muscles with their attachment, nerve supply and actions.	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN16.2	Describe and demonstrate structures under the cover of gluteus maximus. Also explain the anatomical basis of sciatic nerve injury during gluteal intramuscular injections	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN16.3	Explain the anatomical basis of Trendelenburg sign	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN16.4	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN16.5	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa with its clinical anatomy	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
Topic 17: Hip Joint							
Number of Competencies (3)							
AN17.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify p
AN17.2	Describe anatomical basis of complications of fracture neck of femur	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN17.3	Describe dislocation of hip joint and surgical hip replacement	K	KH	N	LGT, Demonstration	Written/ Viva voce	
Topic 18: Knee joint, Anterior compartment of leg & dorsum of foot							
Number of competencies for certification: (NIL)							
AN18.1	Describe and demonstrate major muscles of anterior compartment of leg with their attachment, nerve supply and actions	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN18.2	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior compartment of leg	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN18.3	Explain the anatomical basis of foot drop	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN18.4	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, nerve supply, bursae around the knee joint along with anastomosis around the knee joint	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	
AN18.5	Explain the anatomical basis of locking and unlocking of the knee joint	K	KH	Y	LGT, Demonstration, Practical	Written/ Viva voce	
AN18.6	Describe knee joint injuries with its applied anatomy	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN18.7	Explain anatomical basis of Osteoarthritis	K	KH	N	LGT	Written/ Viva voce	
Topic 19: Back of Leg & Sole							
Number of competencies for certification: (NIL)							
AN19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	K,S	SH	Y	Dissection, LGT, SGT, Demonstration	Written/Viva voce/ skill assessment	
AN19.3	Explain the concept of "Peripheral heart"	K	KH	Y	LGT	Written/ Viva voce	
AN19.4	Explain the anatomical basis of rupture of calcaneal tendon	K	KH	N	LGT	Written/Viva voce	
AN19.5	Describe factors maintaining importance arches of the foot with its importance	K	KH	Y	LGT	Written/Viva voce	
AN19.6	Explain the anatomical basis of Flat foot & Club foot	K	KH	N	LGT	Written/ Viva voce	
AN19.7	Explain the anatomical basis of Metatarsalgia & Plantar fasciitis	K	KH	N	LGT	Written/ Viva voce	
Topic 20: General Features, Joints, radiographs & surface marking							
Number of competencies for certification: (NIL)							
AN20.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of tibiofibular and ankle joint	K,S	SH	Y	Dissection, LGT, SGT, Demonstration, Practical	Written/ Viva voce/ skill assessment	
AN20.2	Describe the subtalar and transverse tarsal joints	K	KH	N	LGT, Demonstration	Written/ Viva voce	
AN20.3	Describe and demonstrate Fascia lata, Venous drainage, Lymphatic drainage, Retinacula & Dermatomes of lower limb	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/Viva voce/ skill assessment	
AN20.4	Explain anatomical basis of enlarged inguinal lymph nodes	K	KH	N	LGT	Written/ Viva voce	
AN20.5	Explain anatomical basis of varicose veins and deep vein thrombosis	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN20.6	Identify the bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb	K/S	SH	Y	LGT, SGT, Demonstration	Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN20.7	Identify & demonstrate important bony landmarks of lower limb: - Vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, -Tibial tuberosity, head of fibula, -Medial and lateral malleoli, Condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal, tuberosity of the navicular	K,S	SH	Y	Practical, LGT, SGT, Demonstration	Viva voce/ skill assessment	
AN20.8	Identify & demonstrate palpation of femoral, popliteal, posterior tibial, anterior tibial & dorsalis pedis arteries in a simulated environment	K,S	SH	Y	Practical, LGT, SGT, Demonstration	Viva voce/ skill assessment	
AN20.9	Demonstrate surface projection of: femoral, popliteal, dorsalis pedis, post tibial arteries, Mid inguinal point, femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins	K,S	SH	Y	Practical, LGT, SGT, Demonstration	Viva voce/ skill assessment	
AN20.10	Describe basic concept of development of lower limb	K	KH	N	LGT	Viva voce	
Topic 21: Thoracic cage		Number of Competencies (11)			Number of competencies for certification: (NIL)		
AN21.1	Identify and describe the salient features of sternum, typical rib and typical thoracic vertebrae.	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Viva voce/ skill assessment	
AN21.2	Identify & describe the features of atypical ribs and atypical thoracic vertebrae.	K,S	SH	N	LGT, Dissection, Practical, Demonstration	Viva voce/ skill assessment	
AN21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet along with its applied aspect. (Thoracic inlet Syndrome)	K/S	SH	Y	LGT, Demonstration	Written/Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN21.4	Describe & demonstrate extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN21.6	Mention origin, course and branches/ tributaries of: 1) anterior & posterior intercostal vessels 2) internal thoracic vessels	K	KH	Y	LGT, Dissection, Practical, Demonstration	Written/ Viva voce	
AN21.7	Mention the origin, course, relations and branches of 1) atypical intercostal nerve 2) superior intercostal artery, subcostal artery	K	KH	N	LGT, Dissection, Practical, Demonstration	Written	
AN21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	K,S	SH	N	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN21.9	Describe & demonstrate mechanics and types of respiration	K,S	SH	Y	Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN21.10	Describe costochondral and interchondral joints	K	KH	N	LGT, Demonstration, Dissection, Practical	Written/ Viva voce	
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	K	KH	Y	LGT, Demonstration, Dissection	Written/ Viva voce	
Topic 22: Heart & Pericardium		Number of Competencies (7)			Number of competencies for certification: (NIL)		
AN22.1	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN22.2	Describe & demonstrate external and internal features of each chamber of heart	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN22.4	Describe anatomical basis of ischaemic heart disease	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce/ skill assessment	
AN22.6	Describe the fibrous skeleton of heart	K	KH	Y	LGT	Written	
AN22.7	Mention the parts, position and arterial supply of the conducting system of heart	K	KH	Y	LGT	Written/ Viva voce	
Topic 23: Mediastinum		Number of Competencies (6)			Number of competencies for certification: (NIL)		
AN23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply, lymphatic drainage and applied anatomy of oesophagus	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce/ skill assessment	
AN23.2	Describe & demonstrate the extent, relations and tributaries of thoracic duct and enumerate its applied anatomy.	K,S	SH	Y	LGT	Written/ Viva voce/ skill assessment	
AN23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior vena cava, azygos, hemiazygos and accessory hemiazygos veins	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	K	KH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN23.5	Identify & Mention the location and extent of thoracic sympathetic chain	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN23.6	Describe the splanchnic nerves	K	KH	N	LGT	Written	
Topic 24: Lungs & Trachea							
Number of Competencies (6)							
AN24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	K	KH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce	
AN24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	K,S	SH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce/ skill assessment	
AN24.3	Describe a bronchopulmonary segment with its clinical anatomy	K	KH	Y	LGT, Demonstration	Written/ Viva voce	
AN24.4	Identify phrenic nerve & describe its formation & distribution	K,S	SH	Y	LGT, Demonstration	Written/ Viva voce	
AN24.5	Mention the blood supply, lymphatic drainage and nerve supply of lungs	K	KH	Y	LGT, Demonstration, Dissection, Practical	Written/ Viva voce	
AN24.6	Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	K	KH	N	LGT, Demonstration	Written	
Topic 25: Thorax							
Number of Competencies (9)							
AN25.1	Identify, draw and label a slide of trachea and lung	K,S	SH	Y	LGT, Demonstration, Practical	Written/ skill assessment	
AN25.2	Describe development of pleura, lung & heart	K	KH	Y	LGT	Written	
AN25.3	Describe fetal circulation and changes occurring at birth	K	KH	Y	LGT, Demonstration	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify p
AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheoesophageal fistula	K	KH	Y	LGT	Written/ Viva voce	
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	K	KH	Y	LGT	Written/ Viva voce	
AN25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	K	KH	N	LGT	Written/ Viva voce	
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	K,S	SH	Y	LGT, Demonstration, Practical	Written/ Viva voce	
AN25.8	Identify and describe in brief a barium swallow	K,S	SH	N	LGT, Demonstration, Practical	Written/ Viva voce	
AN25.9	Demonstrate surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart borders, apex beat & surface projection of valves of heart	K,S	SH	Y	Demonstration, Practical	Viva voce/ skill assessment	
Topic 26: Skull osteology		Number of Competencies (7)			Number of competencies for certification: (NIL)		
AN26.1	Describe & demonstrate anatomical position of skull, identify and locate individual skull bones in skull	K,S	SH	Y	LGT, Demonstration	Viva voce/ skill assessment	
AN26.2	Describe & demonstrate the features of norma frontalis, verticalis, occipitalis, lateralis and basalis	K,S	SH	Y	LGT, Demonstration	Viva voce/ skill assessment	
AN26.3	Describe & demonstrate cranial cavity, its subdivisions, foramina and structures passing through them	K,S	SH	Y	LGT, Demonstration	Viva voce/ skill assessment	
AN26.4	Describe & demonstrate morphological features of mandible	K,S	SH	Y	LGT, Demonstration	Viva voce/ skill assessment	
AN26.5	Describe & demonstrate features of typical and atypical cervical vertebrae (atlas and axis)	K,S	SH	Y	LGT, Demonstration	Viva voce/ skill assessment	
AN26.6	Explain the concept of bones that ossify in membrane	K	KH	N	LGT	Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN26.7	Describe & demonstrate the features of the 7th cervical vertebra	K,S	SH	N	LGT, Demonstration	Viva voce	
Topic 27: Scalp							
Number of Competencies (2)							
AN27.1	Describe & demonstrate the layers of scalp, its blood supply, nerve supply and surgical importance.	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN27.2	Describe emissary veins with its role in the spread of infection from extracranial route to intracranial venous sinuses	K	KH	Y	LGT, Practical, Demonstration, Dissection	Written	
Topic 28: Face & parotid region							
Number of Competencies (10)							
AN28.1	Describe & demonstrate muscles of facial expression and their nerve supply	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN28.2	Describe sensory innervation of face	K	KH	Y	LGT, Demonstration	Written/Viva voce	
AN28.3	Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN28.4	Describe & demonstrate branches of facial nerve with distribution	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN28.5	Describe cervical lymph nodes and lymphatic drainage of head, face and neck	K	KH	Y	LGT	Written/Viva voce	
AN28.6	Identify superficial muscles of face, their nerve supply and actions	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN28.7	Explain the anatomical basis of facial nerve palsy	K	KH	Y	LGT	Written	
AN28.8	Explain surgical importance of deep facial vein	K	KH	Y	LGT	Written	
AN28.9	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN28.10	Explain the anatomical basis of Frey's syndrome	K	KH	N	LGT	Written	
Topic 29: Posterior triangle of neck							
Number of Competencies (5)							
AN29.1	Describe and demonstrate the boundaries, subdivisions and contents of posterior triangle of neck	K, S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN29.2	Describe & demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN29.3	Explain anatomical basis of Erb's & Klumpke's palsy	K	KH	Y	LGT, Demonstration	Written	
AN29.4	Explain anatomical basis of wry neck	K	KH	N	LGT, Demonstration	Written	
AN29.5	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2) scalenus anterior, 3) scalenus medius & 4) levator scapulae	K,S	SH	N	LGT, Practical, Demonstration, Dissection	Written/Viva voce	
Topic: 30 Cranial cavity							
Number of Competencies (5)							
AN30.1	Describe the cranial fossae & identify related structures	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN30.2	Describe & identify major foramina with structures passing through them	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN30.3	Describe & identify dural folds & dural venous sinuses	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN30.4	Describe clinical importance of dural venous sinuses	K	KH	Y	LGT	Written	
AN30.5	Explain effect of pituitary tumours on visual pathway	K	KH	N	LGT	Written	
Topic 31: Orbit							
Number of Competencies (5)							
AN31.1	Describe & identify extra ocular muscles of eyeball, along with a note on its attachment, action and clinical anatomy	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN31.2	Describe & demonstrate nerves and vessels in the orbit	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN31.3	Describe anatomical basis of Horner's syndrome	K	KH	N	LGT	Written	
AN31.4	Describe the components of lacrimal apparatus	K	KH	Y	LGT	Written	
AN31.5	Explain the anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus	K	KH	Y	LGT	Written	
Topic 32: Anterior Triangle							
Number of Competencies (2)							
AN32.1	Describe boundaries and subdivisions of anterior triangle	K	KH	Y	LGT	Written/Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify to certify P
AN32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
Topic 33: Temporal and Infratemporal regions							
Number of Competencies (5)							
AN33.1	Describe & demonstrate extent, boundaries and contents of temporal and infratemporal fossae	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN33.2	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN33.4	Explain the clinical significance of pterygoid venous plexus	K	KH	Y	LGT	Written	
AN33.5	Describe the features of dislocation of temporomandibular joint	K	KH	N	LGT	Written	
Topic 34: Submandibular region							
Number of Competencies (3)							
AN34.1	Describe and demonstrate the superficial and deep structures, muscles, nerves, vessels, and glands in the submandibular region	K,S	SH	Y	LGT, Dissection, Practical, Demonstration	Written/Viva/ Skill Assessment	
AN34.2	Describe & demonstrate the morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN34.3	Describe the basis of formation of submandibular stones	K	KH	N	LGT	Written	
Topic 35: Deep structures in the neck							
Number of Competencies (10)							
AN35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	K	KH	Y	LGT	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN35.2	Describe & demonstrate location, parts, borders, surfaces, relations, blood supply & applied anatomy of thyroid gland. Also describe the parathyroid glands in brief.	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN35.3	Demonstrate & describe the origin, parts, course & branches subclavian artery	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN35.4	Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN35.6	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN35.7	Describe the course and branches of IX, X, XI & XII nerve in the neck	K	KH	Y	LGT	Written	
AN35.8	Describe the anatomically relevant clinical features of Thyroid swellings	K	KH	N	LGT, Demonstration	Written	
AN35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib	K	KH	N	LGT	Written	
AN35.10	Describe the fascial spaces of neck	K	KH	N	LGT	Written	
Topic 36: Mouth, Pharynx & Palate		Number of Competencies (7)			Number of competencies for certification: (NIL)		
AN36.1	Describe and demonstrate the structures of the vestibule of the mouth and oral cavity proper.	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN36.2	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate	K	KH	Y	LGT, Practical, Demonstration, Dissection	Written	
AN36.3	Describe and demonstrate the muscles, nerve supply, blood supply and lymphatic drainage of the pharynx	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN36.4	Describe the components and functions of Waldeyer's lymphatic ring	K	KH	Y	LGT	Written	
AN36.5	Describe the pharyngeal spaces. Also describe the boundaries and clinical significance of pyriform fossa	K	KH	N	LGT	Written	
AN36.6	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	K	KH	N	LGT	Written	
AN36.7	Describe the clinical significance of Killian's dehiscence	K	KH	N	LGT	Written	
Topic 37: Cavity of Nose		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN37.2	Describe location and functional anatomy of paranasal sinuses	K	KH	Y	LGT, Practical, Demonstration	Written	
AN37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours	K	KH	N	LGT	Written	
Topic 38: Larynx		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN38.1	Describe & demonstrate the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN38.2	Describe the anatomical aspects of laryngitis	K	KH	N	LGT	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN38.3	Describe anatomical basis of recurrent laryngeal nerve injury	K	KH	N	LGT	Written	
Topic 39: Tongue							
		Number of Competencies (2)		Number of competencies for certification: (NIL)			
AN39.1	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN39.2	Explain the anatomical basis of hypoglossal nerve palsy	K	KH	N	LGT	Written	
Topic 40: Organs of hearing and equilibrium							
		Number of Competencies (5)		Number of competencies for certification: (NIL)			
AN40.1	Describe & identify the parts, blood supply and nerve supply of external ear	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN40.3	Describe the features of internal ear	K	KH	N	LGT	Written	
AN40.4	Explain anatomical basis of otitis externa and otitis media	K	KH	N	LGT	Written	
AN40.5	Explain anatomical basis of myringotomy	K	KH	N	LGT	Written	
Topic 41: Eyeball							
		Number of Competencies (3)		Number of competencies for certification: (NIL)			
AN41.1	Describe & demonstrate parts and layers of eyeball	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion	K	KH	N	LGT	Written	
AN41.3	Describe the position, nerve supply and actions of intraocular muscles	K	KH	N	LGT, Practical, Demonstration	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
Topic 42: Back Region		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN42.1	Describe and demonstrate the contents of the vertebral canal	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN42.2	Describe & demonstrate the boundaries and contents of Suboccipital triangle	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN42.3	Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis	K	KH	N	LGT	Written	
Topic 43: Head & neck Joints, Histology, Development, Radiography & Surface marking		Number of Competencies (9)			Number of competencies for certification: (NIL)		
AN43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN43.2	Identify, describe and draw the microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland	K,S	SH	N	LGT, Practical	Written/ skill assessment	
AN43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland & eye	K	KH	Y	LGT	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN43.5	Demonstrate- 1) Testing of muscles of facial expression, extraocular muscles, muscles of mastication, 2) Palpation of carotid arteries, facial artery, superficial temporal artery, 3) Location of internal and external jugular veins, 4) Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	K,S	SH	Y	Practical, Demonstration	Viva voce/ skill assessment	
AN43.6	Demonstrate surface projection of- Thyroid gland, Parotid gland and duct, Pterion, Common carotid artery, Internal jugular vein, Subclavian vein, External jugular vein, Facial artery in the face & accessory nerve	K,S	SH	N	Practical, Demonstration	Viva voce/ skill assessment	
AN43.7	Identify the anatomical structures in 1) Plain x-ray skull, 2) AP view and lateral view 3) Plain x-ray cervical spine-AP and lateral view 4) Plain x-ray of paranasal sinuses	K,S	SH	Y	Practical, Demonstration	Viva voce/ skill assessment	
AN43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram	K	KH	N	LGT	Viva voce/ skill assessment	
AN43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram	K,S	SH	N	Practical, Demonstration	Viva voce/ skill assessment	
Topic 44: Anterior abdominal wall					Number of competencies for certification: (NIL)		
AN44.1	Describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN44.2	Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN44.3	Describe the formation of rectus sheath and its contents	K	KH	Y	LGT, Practical, Demonstration,	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN44.5	Explain the anatomical basis of inguinal hernia.	K	KH	Y	LGT	Written/ Viva voce	
AN44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN44.7	Describe common abdominal incisions with example and their clinical importance	K	KH	N	LGT	Written	
Topic 45: Posterior abdominal wall		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN45.1	Describe Thoracolumbar fascia, its different layers, their attachments and extents	K	KH	Y	LGT	Written	
AN45.2	Describe & demonstrate Lumbar plexus, its root value, formation, branches and clinical anatomy (compression/ injury to the rootlets of lumbar plexus)	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN45.3	Describe and demonstrate back muscles, nerve supply and action	K	KH	N	LGT	Written	
Topic 46: Male external genitalia		Number of Competencies (5)			Number of competencies for certification: (NIL)		
AN46.1	Describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage & descent of testis with its applied anatomy	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN46.2	Describe parts of Epididymis	K	KH	Y	LGT, Dissection	Written/ Viva voce	
AN46.3	Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)	K	KH	Y	LGT, Dissection	Written/ Viva voce	
AN46.4	Explain the anatomical basis of Varicocele	K	KH	N	LGT	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN46.5	Explain the anatomical basis of Phimosis & Circumcision	K	KH	N	LGT	Written	
Topic 47: Abdominal cavity							
		Number of Competencies (14)			Number of competencies for certification: (NIL)(NIL)		
AN47.1	Describe & demonstrate horizontal and vertical tracing of peritoneum. Also describe boundaries and recesses of Lesser & Greater sac.	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN47.2	Name & identify various peritoneal folds & pouches with its explanation	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN47.3	Explain anatomical basis of Ascites & Peritonitis	K	KH	N	LGT	Written	
AN47.4	Explain anatomical basis of Subphrenic abscess	K	KH	N	LGT	Written	
AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN47.6	Explain the anatomical basis of Splenic notch, Accessory spleens, Kehr's sign, Different types of vagotomy, Liver biopsy (site of needle puncture), Referred pain in cholecystitis, Obstructive jaundice, Referred pain around umbilicus, Radiating pain of kidney to groin & Lymphatic spread in carcinoma stomach	K	KH	N	LGT	Written	
AN47.7	Demonstrate boundaries of Calot's triangle and mention its clinical importance	K	KH	N	LGT	Written	
AN47.8	Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify to certify p
AN47.9	Describe & identify the origin, course, important relations and branches of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric & Common iliac artery	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/Viva voce/ skill assessment	
AN47.10	Describe sites of portosystemic anastomosis, describe its applied anatomy and anatomical correlations	K	KH	Y	LGT	Written	
AN47.11	Explain the anatomic basis of hematemesis & caput medusae in portal hypertension	K	KH	Y	LGT,	Written/ Viva voce	
AN47.12	Describe important nerve plexuses of posterior abdominal wall	K	KH	N	LGT	Written	
AN47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/Viva voce/ skill assessment	
AN47.14	Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	K	KH	N	LGT	Written	
Topic 48: Pelvic wall and viscera							
Number of Competencies (8)				Number of competencies for certification: (NIL)			
AN48.1	Describe & demonstrate the position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of important male & female pelvic viscera.	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/Viva voce/ skill assessment	
AN48.2	Describe & identify the muscles of Pelvic diaphragm.	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/Viva voce/ skill assessment	
AN48.3	Describe & demonstrate the origin, course, important relations and branches of internal iliac artery	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/Viva voce/ skill assessment	
AN48.4	Describe the branches of sacral plexus	K	KH	Y	LGT	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN48.5	Explain the anatomical basis of suprapubic cystostomy, Urinary obstruction in benign prostatic hypertrophy, Retroverted uterus, Prolapse uterus, Internal and external haemorrhoids, Anal fistula, Vasectomy, Tubal pregnancy & Tubal ligation	K	KH	N	LGT	Written	
AN48.6	Describe the neurological basis of Automatic bladder	K	KH	Y	LGT	Written	
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	K	KH	N	LGT	Written	
AN48.8	Mention the structures palpable during vaginal & rectal examination	K	KH	N	LGT	Written	
Topic 49: Perineum							
		Number of Competencies (5)			Number of competencies for certification: (NIL)		
AN49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill	
AN49.2	Describe & identify Perineal body	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN49.3	Describe & demonstrate Perineal membrane in male & female	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN49.4	Describe & demonstrate boundaries, content & applied anatomy of Ischiorectal fossa	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN49.5	Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	K	KH	N	LGT	Written	
Topic 50: Vertebral column							
		Number of Competencies (4)			Number of competencies for certification: (NIL)		
AN50.1	Describe the curvatures of the vertebral column	K	KH	Y	LGT	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN50.2	Describe & demonstrate the type, articular ends, ligaments and movements of intervertebral joints, Sacroiliac joints & Pubic symphysis	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	K	KH	Y	LGT	Written/ Viva voce	
AN50.4	Explain the anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	K	KH	N	LGT	Written	
Topic 51: Sectional Anatomy							
		Number of Competencies (2)		Number of competencies for certification: (NIL)			
AN51.1	Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
AN51.2	Describe & identify the midsagittal section of male and female pelvis	K	SH	Y	Dissection, LGT, SGT, DOAP	Written/ Viva voce/ skill assessment	
Topic 52: Histology & Embryology							
		Number of Competencies (8)		Number of competencies for certification: (NIL)			
AN52.1	Describe & identify the microanatomical features of Gastro-intestina system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	K,S	SH	Y	LGT, Demonstration, Practical	Written/ skill assessment	
AN52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis, Vas deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	K,S	SH	Y	LGT, Demonstration, Practical	Written/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN52.3	Describe & identify the microanatomical features of Cardioesophageal junction, Corpus luteum	K,S	SH	N	LGT, Demonstration, Practical	Written/ skill assessment	
AN52.4	Describe the development of anterior abdominal wall	K	KH	N	LGT	Written/ Viva voce	
AN52.5	Describe the development and congenital anomalies of Diaphragm	K	KH	Y	LGT	Written/ Viva voce	
AN52.6	Describe the development and congenital anomalies of: Foregut, Midgut & Hindgut	K	KH	Y	LGT	Written/ Viva voce	
AN52.7	Describe the development of Urinary system	K	KH	Y	LGT	Written/ Viva voce	
AN52.8	Describe the development of male & female reproductive system	K	KH	Y	LGT	Written/ Viva voce	
Topic 53: Osteology		Number of Competencies (4)			Number of competencies for certification: (NIL)		
AN53.1	Identify & hold the bone in the anatomical position, Describe the salient features, articulations & demonstrate the attachments of muscle groups	K,S	SH	Y	LGT, Demonstration, Practical	Viva voce/ skill assessment	
AN53.2	Demonstrate the anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet	K,S	SH	Y	LGT, DOAP	Viva voce/ skill assessment	
AN53.3	Define true pelvis and false pelvis and demonstrate sex determination in male & female bony pelvis	K,S	SH	Y	LGT, DOAP	Viva voce/ skill assessment	
AN53.4	Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx)	K,S	SH	N	LGT, DOAP	Viva voce/ skill assessment	
Topic 54: Radiodiagnosis		Number of Competencies (4)			Number of competencies for certification: (NIL)		
AN54.1	Describe the principles of Plain and contrast radiography, Computed Tomography, Magnetic Resonance Imaging, Positron Emission Tomography scan and Digital subtraction angiography	K	KH	Y	LGT	Viva voce/ skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify p
AN54.2	Describe & identify features of plain X ray abdomen	K,S	SH	Y	LGT, DOAP	Viva voce/ skill assessment	
AN54.3	Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography)	K,S	SH	Y	LGT, DOAP	Viva voce/ skill assessment	
AN54.4	Describe role of ERCP, CT abdomen, MRI, Arteriography in radiodiagnosis of abdomen	K	KH	N	LGT	Viva voce	
Topic 55: Surface marking							
		Number of Competencies (2)			Number of competencies for certification: (NIL)		
AN55.1	Demonstrate the surface marking of Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring, McBurney's point, Renal Angle & Murphy's point	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Viva voce/ skill assessment	
AN55.2	Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery	K,S	SH	Y	Dissection, LGT, SGT, DOAP	Viva voce/ skill assessment	
Topic 56: Meninges & CSF							
		Number of Competencies (2)			Number of competencies for certification: (NIL)		
AN56.1	Describe & identify various layers of meninges with its extent & modifications	K,S	SH	Y	LGT, Practical, Demonstration, Dissection	Written/ Viva voce/ skill assessment	
AN56.2	Describe formation, circulation and absorption of CSF with its applied anatomy.	K	KH	Y	LGT	Written/ Viva voce	
Topic 57 : Spinal Cord							
		Number of Competencies (5)			Number of competencies for certification: (NIL)		
AN57.1	Identify external features of spinal cord	K,S	SH	Y	Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN57.2	Describe extent of spinal cord in child & adult with its clinical implication	K	KH	Y	LGT, Demonstration	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN57.3	Draw & label transverse section of spinal cord at mid-cervical & mid-thoracic level	K	KH	Y	LGT	Written/ Viva voce	
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord	K	KH	Y	LGT	Written/ Viva voce	
AN57.5	Describe the anatomical basis of clinical conditions affecting the grey and white matter of spinal cord (Brown-Sequard Syndrome, Poliomyelitis, Amyotrophic lateral sclerosis or motor neuron disease, Syringomyelia, Hereditary sensory neuropathy, Subacute Combined degeneration, Transversemyelitis, paraplegia)	K	KH	Y	LGT	Written/ Viva voce	
Topic 58 : Medulla Oblongata							
Number of Competencies (4)				Number of competencies for certification: (NIL)			
AN58.1	Identify external features of medulla oblongata	K,S	SH	Y	Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN58.2	Describe transverse section of medulla oblongata at the level of 1) pyramidal decussation, 2) sensory decussation 3) Inferior Olivary Nucleus	K	KH	Y	LGT	Written/ Viva voce	
AN58.3	Describe cranial nerve nuclei in medulla oblongata with their functional group	K	KH	Y	LGT	Written/ Viva voce	
AN58.4	Describe the anatomical basis of clinical conditions affecting the medulla oblongata (Medial and lateral medullary syndromes, Crossed Diplegia)	K	KH	Y	LGT	Written/ Viva voce	
Topic 59: Pons							
Number of Competencies (4)				Number of competencies for certification: (NIL)			
AN59.1	Identify external features of pons	K,S	SH	Y	Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN59.2	Draw & label transverse section of pons at the upper and lower level	K	KH	Y	LGT	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN59.3	Describe cranial nerve nuclei in pons with their functional group	K	KH	Y	LGT	Written/ Viva voce	
AN59.4	Describe the anatomical basis of clinical conditions affecting the pons (Locked-in syndrome, Pontine haemorrhage, Foville syndrome, Raymond syndrome, Millard-Gubler syndrome)	K	KH	Y	LGT	Written/ Viva voce	
Topic 60: Cerebellum							
		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN60.1	Describe & demonstrate external & internal features of cerebellum	K,S	SH	Y	Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN60.2	Describe connections of cerebellar cortex and intracerebellar nuclei	K	KH	Y	LGT	Written/ Viva voce	
AN60.3	Describe anatomical basis of cerebellar dysfunction	K	KH	N	LGT	Written	
Topic 61: Midbrain							
		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN61.1	Identify external & internal features of midbrain	K,S	SH	Y	Practical, Demonstration	Written/ Viva voce/ skill assessment	
AN61.2	Describe internal features of midbrain at the level of superior & inferior colliculus	K	KH	Y	LGT	Written/ Viva voce	
AN61.3	Describe the anatomical basis of clinical conditions affecting the midbrain (Weber syndrome, Benedikt syndrome, Parinaud syndrome)	K	KH	Y	LGT	Written/ Viva voce	
Topic 62: Cranial nerve nuclei & Cerebral hemispheres							
		Number of Competencies (6)			Number of competencies for certification: (NIL)		
AN62.1	Describe the cranial nerve nuclei with its functional components	K	KH	Y	LGT	Written/ Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere. Also describe the effects of damage to various functional areas of cerebral cortex	K,S	SH	Y	LGT, Practical, Demonstration	Written/Viva voce/ skill assessment	
AN62.3	Describe the white matter of cerebrum. Also describe the effects of damage to corpus callosum and different parts of internal capsule	K	KH	Y	LGT	Written/Viva voce	
AN62.4	Describe the parts & major connections of basal ganglia & limbic lobe. Also explain the anatomical basis of Parkinson's disease, chorea, athetosis and ballismus	K	KH	Y	LGT	Written/Viva voce	
AN62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus	K	KH	Y	LGT	Written/Viva voce	
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	K/S	SH	Y	LGT, Practical, Demonstration	Written/Viva voce/ skill assessment	
Topic 63: Ventricular System & Special sensory pathways					Number of competencies for certification: (NIL)		
AN63.1	Describe & demonstrate parts, boundaries & features of 3rd, 4th & lateral ventricle	K,S	SH	Y	LGT, Practical, Demonstration	Written/Viva voce/ skill assessment	
AN63.2	Describe anatomical basis of congenital hydrocephalus	K	KH	N	LGT	Written	
AN63.3	Describe the olfactory, visual, auditory and gustatory pathways	K	KH	Y	LGT	Written/Viva voce	
Topic 64: Histology & Embryology					Number of competencies for certification: (NIL)		
AN64.1	Describe & identify the microanatomical features of Spinal cord, Cerebellum & Cerebrum	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN64.2	Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum	K	KH	Y	LGT	Written/Viva voce	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN64.3	Describe various types of open neural tube defects with its embryological basis	K	KH	N	LGT	Written/ Viva voce	
Topic 65: Epithelium histology							
		Number of Competencies (2)		Number of competencies for certification: (01)			
AN65.1	Identify epithelium under the microscope & describe the various types that correlate to its function	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN65.2	Describe the ultrastructure of epithelium	K	KH	N	LGT, Practical	Written	
Topic 66: Connective tissue histology							
		Number of Competencies (2)		Number of competencies for certification: (NIL)			
AN66.1	Describe & identify various types of connective tissue with functional correlation	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN66.2	Describe the ultrastructure of connective tissue	K	KH	N	LGT, Practical	Written	
Topic 67: Muscle histology							
		Number of Competencies (3)		Number of competencies for certification: (NIL)			
AN67.1	Describe & identify various types of muscle under the microscope	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN67.2	Classify muscle and describe the structure-function correlation of the same	K	KH	Y	LGT	Written	
AN67.3	Describe the ultrastructure of muscular tissue	K	KH	N	LGT	Written	
Topic 68: Nervous tissue histology							
		Number of Competencies (3)		Number of competencies for certification: (NIL)			
AN68.1	Describe & identify multipolar & unipolar neuron, ganglia, peripheral nerve under the microscope	K/S	SH	Y	LGT, Practical	Written/ skill assessment	
AN68.2	Describe the structure-function correlation of neuron	K	KH	Y	LGT	Written	
AN68.3	Describe the ultrastructure of nervous tissue	K	KH	N	LGT	Written	
Topic 69: Blood Vessels							
		Number of Competencies (3)		Number of competencies for certification: (NIL)			
AN69.1	Identify elastic & muscular blood vessels, capillaries under the microscope	K,S	SH	Y	LGT, Practical	Skill assessment	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN69.2	Describe the various types and structure-function correlation of blood vessel	K	KH	Y	LGT	Written	
AN69.3	Describe the ultrastructure of blood vessels	K	KH	Y	LGT	Written	
Topic 70: Glands & Lymphoid tissue							
		Number of Competencies (2)			Number of competencies for certification: (NIL)		
AN70.1	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN70.2	Identify the lymphoid tissue under the microscope & describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the structure with function	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
Topic: Bone & Cartilage - Number of Competencies (2)							
AN71.1	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
AN71.2	Identify cartilage under the microscope & describe various types and structure-function correlation of the same	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
Topic 72: Integumentary System							
		Number of Competencies (1)			Number of competencies for certification: (NIL)		
AN72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	K,S	SH	Y	LGT, Practical	Written/ skill assessment	
Topic: 73 Chromosomes							
		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN73.1	Describe the structure of chromosomes with classification	K	KH	Y	LGT, Practical	Written	
AN73.2	Describe technique of karyotyping with its applications	K	KH	Y	LGT, Practical	Written	
AN73.3	Describe the Lyon's hypothesis	K	KH	Y	LGT, Practical	Written	
Topic 74: Patterns of inheritance							
		Number of Competencies (4)			Number of competencies for certification: (NIL)		
AN74.1	Describe Mendelian and non-Mendelian inheritance. Explain various modes of inheritance with examples.	K	KH	Y	LGT, Practical	Written	
AN74.2	Draw pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance	K	KH	Y	LGT, Practical	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN74.3	Describe multifactorial inheritance with examples	K	KH	Y	LGT, Practical	Written	
AN74.4	Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant	K	KH	N	LGT, Practical	Written	
Topic 75: Principles of Genetics, Chromosomal Aberrations & Clinical Genetics							
Number of Competencies (5)				Number of competencies for certification: (NIL)			
AN75.1	Describe the structural and numerical chromosomal aberrations	K	KH	Y	LGT, Practical	Written	
AN75.2	Explain the terms mosaics and chimeras with example	K	KH	N	LGT	Written	
AN75.3	Describe the genetic basis & clinical features of: Prader Willi syndrome, Edward syndrome, Patau syndrome, Down syndrome, Turner Syndrome & Klinefelter syndrome	K	KH	N	LGT	Written	
AN75.4	Describe genetic basis of variation: polymorphism and mutation	K	KH	Y	LGT	Written	
AN75.5	Describe in brief: genetic counseling, karyotyping, FISH, PCR and genetic sequencing	K	KH	Y	LGT	Written	
Topic 76: Introduction to embryology							
Number of Competencies (2)				Number of competencies for certification: (NIL)			
AN76.1	Describe the stages of human life	K	KH	Y	LGT	Written	
AN76.2	Explain the terms- phylogeny, ontogeny, trimester, viability	K	KH	Y	LGT	written	
Topic 77: Gametogenesis and fertilization							
Number of Competencies (6)				Number of competencies for certification: (NIL)			
AN77.1	Describe the uterine changes occurring during the menstrual cycle	K	KH	Y	LGT	Written	
AN77.2	Describe the synchrony between the ovarian and menstrual cycles	K	KH	Y	LGT	Written	
AN77.3	Describe spermatogenesis and oogenesis along with diagrams	K	KH	Y	LGT	Written	
AN77.4	Describe the stages and consequences of fertilisation	K	KH	Y	LGT	Written	
AN77.5	Describe the anatomical principles underlying contraception	K	KH	Y	LGT	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN77.6	Describe teratogenic influences: fertility and sterility, surrogate motherhood, social significance of "sex-ratio".	K	KH	N	LGT	Written	
Topic 78 : Second week of development		Number of Competencies (5)			Number of competencies for certification: (NIL)		
AN78.1	Describe cleavage and formation of blastocyst	K	KH	Y	LGT	Written	
AN78.2	Describe the development of trophoblast	K	KH	Y	LGT	Written	
AN78.3	Describe the process of implantation & common abnormal sites of implantation	K	KH	Y	LGT	Written	
AN78.4	Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate	K	KH	Y	LGT	Written	
AN78.5	Describe abortion, decidual reaction, pregnancy test	K	KH	Y	LGT	Written	
Topic 79: 3rd to 8th week of development		Number of Competencies (6)			Number of competencies for certification: (NIL)		
AN79.1	Describe the formation & fate of the primitive streak	K	KH	Y	LGT	Written	
AN79.2	Describe formation & fate of notochord	K	KH	Y	LGT	Written	
AN79.3	Describe the process of neurulation	K	KH	Y	LGT	Written	
AN79.4	Describe the development of somites and intra-embryonic coelom	K	KH	Y	LGT	Written	
AN79.5	Explain embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects	K	KH	N	LGT	Written	
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein	K	KH	N	LGT	Written	
Topic 80: Fetal membranes		Number of Competencies (7)			Number of competencies for certification: (NIL)		
AN80.1	Describe formation, functions & fate of chorion, amnion, yolk sac, allantois & decidua	K	KH	Y	LGT	Written	
AN80.2	Describe formation & structure of umbilical cord	K	KH	Y	LGT	Written	

Number	COMPETENCY The student should be able to	Predominant Domain K/S/A/C	Level K/KH/S H/P	Core (Y/N)	Suggested Teaching Learning method	Suggested Assessment method	Number required to certify P
AN80.3	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier	K	KH	Y	LGT	Written	
AN80.4	Describe embryological basis of twinning in monozygotic & dizygotic twins	K	KH	Y	LGT	Written	
AN80.5	Describe role of placental hormones in uterine growth & parturition	K	KH	Y	LGT	Written	
AN80.6	Explain embryological basis of estimation of fetal age.	K	KH	N	LGT	Written	
AN80.7	Describe various types of umbilical cord attachments	K	KH	N	LGT	Written	
Topic 81: Prenatal Diagnosis		Number of Competencies (3)			Number of competencies for certification: (NIL)		
AN81.1	Describe various invasive & non-invasive methods of prenatal diagnosis	K	KH	Y	LGT	Written	
AN81.2	Describe indications, process and disadvantages of amniocentesis	K	KH	Y	LGT	Written	
AN81.3	Describe indications, process and disadvantages of chorion villus biopsy	K	KH	Y	LGT	Written	
Topic 82: Ethics in Anatomy		Number of Competencies (1)			Number of competencies for certification: (NIL)		
AN 82.1	Demonstrate respect, and follow the correct procedure when handling cadavers and other biologic tissue	A	SH	Y	SGT	NIL	