SUMANDEEP VIDYAPEETH

(Declared as Deemed to be University under Section 3 of the UGC Act 1956)

Accredited by NAAC with a CGPA of 3.53 out of four-point scale at 'A' Grade

Category – I deemed to be university under UGC Act - 2018

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CURRICULUM

BACHELOR OF MEDICINE & BACHELOR OF SURGERY (M.B.B.S.)

Attested CTC

15/2/2021

Vice-Chancellor
Sumandeep Vidyapeeth
An Institution Deemed to be University
Vill. Piparia, Taluka: Waghodia.
Dist. Vadodara-391 760. (Gujarat)

Dean

AMENDED UP TO DECEMBER -2020

COMPETENCY BASED MEDICAL EDUCATION
FOR
UNDERGRADUATE MEDICAL EDUCATION

CURRICULUM
ADOPTED
BY
SHRI B K SHAH MEDICAL INSTITUE & RESEARCH
SUMANDEEP VIDYAPEETH
DEEMED TO BE UNIVERSITY
(From the year 2019-20)

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

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Section 1

Competencies for the Indian Medical Graduate

National Goals

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

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

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.
- be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems.
- appreciate rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.
- be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

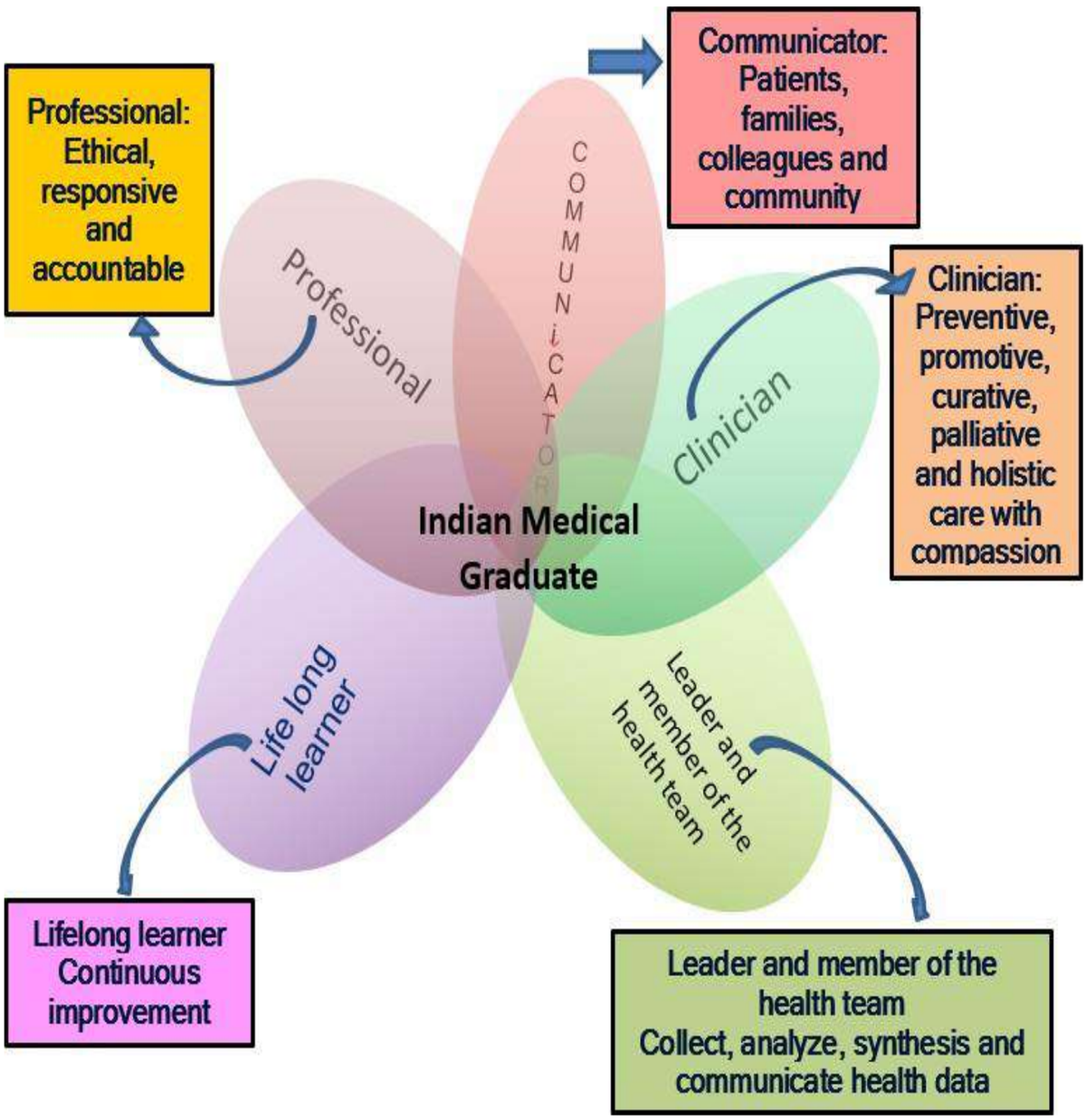
- possess the attitude for continued self-learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.
- be familiar with the basic factors which are essential for the implementation of the National Health Programs including practical aspects of the following:
    - Family Welfare and Maternal and Child Health (MCH);
    - Sanitation and water supply;
    - Prevention and control of communicable and non-communicable diseases;
    - Immunization;
    - Health Education;
    - Indian Public Health Standards (IPHS) at various level of service delivery;
    - Bio-medical waste disposal; and
    - Organizational and or institutional arrangements.
- 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.
- 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.
- be able to work as a leading partner in health care teams and acquire proficiency in communication skills.
- be competent to work in a variety of health care settings.
- have personal characteristics and attitudes required for professional life including personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.
- All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate, as given in the Graduate Medical Education Regulations, 2018

3. Goals for the Learner

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

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

- **Leader** and member of the health care team and system with capabilities to collect, analyze, synthesize and communicate health data appropriately.
- **Communicator** with patients, families, colleagues and community.
- Lifelong learner committed to continuous improvement of skills and knowledge.
- **Professional,** who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.



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Competency Based Training Programme of the Indian Medical Graduate

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

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, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- 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 conform to established national and regional health programmes 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 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.

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.

Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- Demonstrate ability to communicate with patients 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 amanner that encourages participation and shared decision- making.

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 revaluate the medical literature and apply the information in the care of thepatient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

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

- 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 a commitment to the growth of the medical profession as a whole.
- Section 2 Subject wise outcomes

Section 2 contains subject-wise outcomes so called “sub-competencies” that must be achieved at the end of instruction in that subject.

These are organized in tables and have two parts. The core subject outcomes are in first part.

The second part in the same document (titled Integration) contains outcomes/competencies in other subjects which have been identified by experts in those subjects as requiring alignment or integration with the core subject.

Outcomes (competencies) in each subject are grouped according to topics number-wise. It is important to review the individual outcomes (competencies) in the light of the topic outcomes as a whole.

For each competency outlined –

the learning domains (Knowledge, Skill, Attitude, 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 outcome 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 & outcomes in Pre-clinical & Para-clinical subjects

Sr. No.	Subjects	Topics	Number of outcomes
1.	**Human Anatomy**	82	409
2.	**Physiology**	11	137
3.	**Biochemistry**	11	89
Total		104	635

The concept of integration

***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*.**

The GMR 2018 applies these principles to the extent that will retain the strengths of ***silo - based education and assessment*** while providing experiences that will ***allow learners to integrate concepts.***

Keeping this in mind, the **Regulations recommend temporal coordination as described by Harden *(called alignment in this document)*** as the major method to be followed allowing similar topics in different subjects to be thought separately but during the same time frame

Share topics or Correlate topics by using an integration session.
The integration session most preferred will be **a case based discussion** in an appropriate format ensuring that elements in the same phase (horizontal) and from other phases are addressed.
Care must be taken to ensure that **achievement phase - based objectives are given primacy** - **the integrative elements from other phases are used only to provide adequate recall and understand the clinical application of concepts**.

It must be emphasized that integration does not necessarily require multiple teachers in each class. Experts from each phase and subject may be involved in the lesson planning but not it in its delivery unless deemed necessary.
As much as possible the necessary correlates from other phases must also be introduced while discussing a topic in a given subject - Nesting

Topics that cannot be aligned and integrated must be provided adequate time in the curriculum throughout the year.

Assessment will continue to be subject based. However, efforts must be made to ensure that phase appropriate correlates are tested to determine if the learner has internalized and integrated the concept and its application.

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

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.

Most tasks that require performance during undergraduate years will be performed under supervision.

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

Lecture	Any instructional large group method including traditional lecture and interactive lecture
Small group discussion	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	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
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
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 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:
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.

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 identifie

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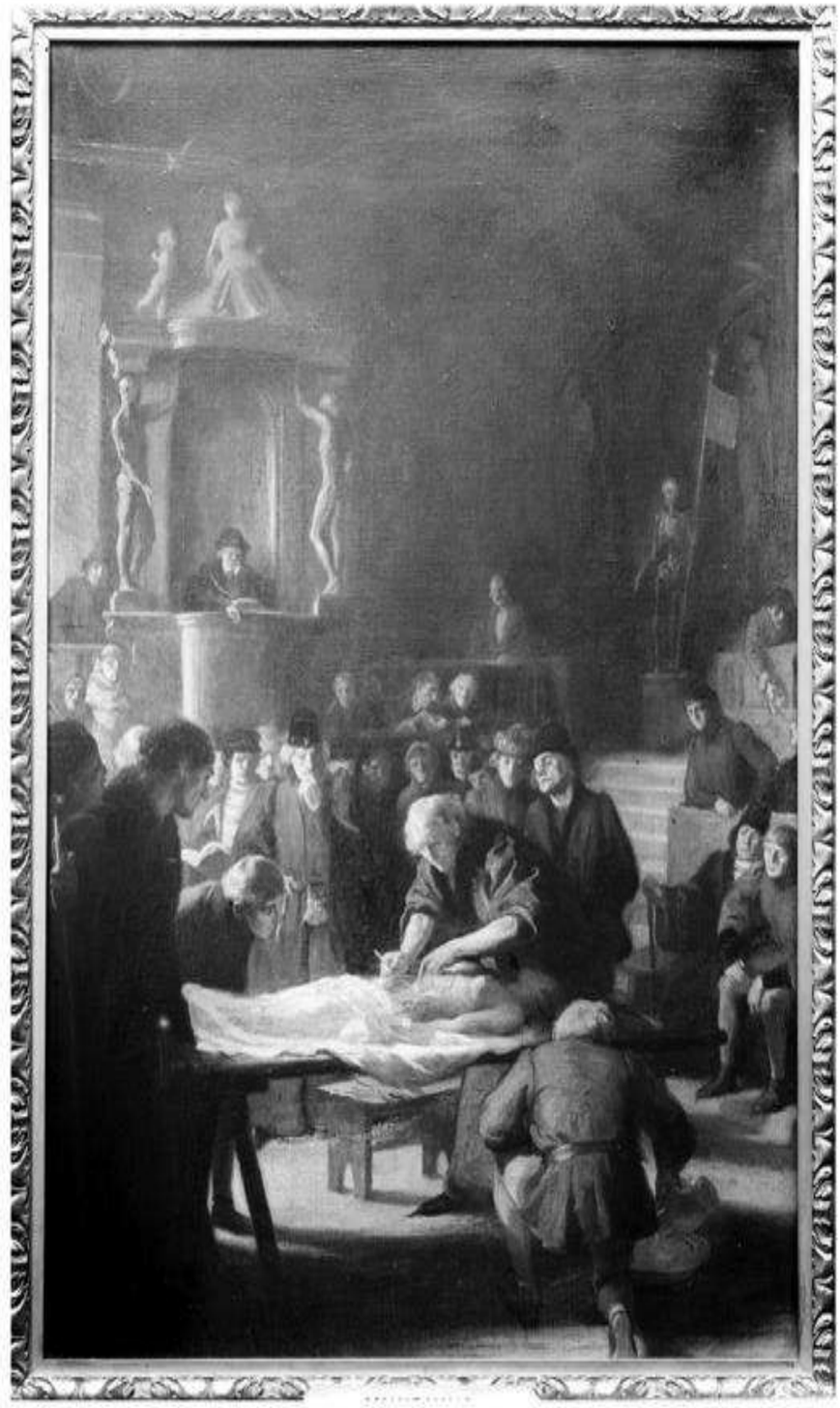

MUNDINUS, THE ITALIAN ANATOMIST, MAKING HIS FIRST DISSECTION IN THE ANATOMY THEATRE AT BOLOGNA, 1318 (oil painting by Earnest Board Circa 1910. (Credit. Wellcome Library)

"Anatomy is to physiology as geography is to history; it describes the theatre of events" – De Natural

Topic: Anatomical terminology		Number of competencies: (2)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN1.1	Demonstrate normal anatomical position, various planes, relation, comparison, laterality & movement in our body	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/skills assessment
AN1.2	Describe composition of bone and bone marrow	K	KH		Lecture	Written/ Viva voce

Topic: General features of bones & Joints		Number of competencies: (6)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN2.1	Describe parts, blood and nerve supply of a long bone	K	KH	Y	Lecture, DOAP session	Written/ Viva voce
AN2.2	Enumerate laws of ossification			N	Lecture	Written
AN2.3	Enumerate special features of a sesamoid bone					
AN2.4	Describe various types of cartilage with its structure & distribution in body			Y		Written/ Viva voce
AN2.5	Describe various joints with subtypes and examples					
AN2.6	Explain the concept of nerve supply of joints & Hilton's law					

Topic: General features of Muscle		Number of competencies: (3)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN3.1	Classify muscle tissue according to structure & action	K		Y	Lecture	Written/ Viva voce
AN3.2	Enumerate parts of skeletal muscle and differentiate between tendons and aponeuroses with examples				Lecture	
AN3.3	Explain Shunt and spurt muscles			N	Lecture	Written

Topic: General features of skin and fascia	Number of competencies: (5)

No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN4.1	Describe different types of skin & dermatomes in body	K	KH	N	Lecture, DOAP session	Written
AN4.2	Describe structure & function of skin with its appendages			Y		Written/ Viva voce
AN4.3	Describe superficial fascia along with fat distribution in body					
AN4.4	Describe modifications of deep fascia with its functions					
AN4.5	Explain principles of skin incisions			N	Lecture	Written

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Topic: General features of the cardiovascular system **Number of competencies: (8)**

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods	
					T/L	Assessment
AN5.1	Differentiate between blood vascular and lymphatic system	K	KH	Y	Lecture	Written/ Viva voce
AN5.2	Differentiate between pulmonary and systemic circulation					
AN5.3	List general differences between arteries & veins					
AN5.4	Explain functional difference between elastic, muscular arteries and arterioles					
AN5.5	Describe portal system giving examples					
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries					
AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses			N		Written
AN5.8	Define thrombosis, infarction & aneurysm					

Topic: General Features of lymphatic system **Number of competencies: (3)**

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods	
					T/L	Assessment
AN6.1	List the components and functions of the lymphatic system	K	KH	N	Lecture	Written
AN6.2	Describe structure of lymph capillaries & mechanism of lymph circulation					
AN6.3	Explain the concept of lymphoedema and spread of tumors via lymphatics and venous system					

Topic: Introduction to the nervous system **Number of competencies: (8)**

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods	
					TL	Assessment
AN7.1	Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems	K	KH	Y	Lecture	Written
AN7.2	List components of nervous tissue and their functions					Written/ Viva voce
AN7.3	Describe parts of a neuron and classify them based on number of neurites, size & function					
AN7.4	Describe structure of a typical spinal nerve			Y		
AN7.5	Describe principles of sensory and motor innervation of muscles			N		Written
AN7.6	Describe concept of loss of innervation of a muscle with its applied anatomy			Y		Written/ Viva voce
AN7.7	Describe various type of synapse			N		Written
AN7.8	Describe differences between sympathetic and spinal ganglia					

Topic: Features of individual bones (Upper Limb) **Number of competencies: (6)**

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core ((Y/N)	Methods	
					TL	Assessment
AN8.1	Identify the given bone, its side, important features & keep it in anatomical position	K/S	SH	Y	DOAP session Lecture,	Viva voce/ Practicals/ OSPE
AN8.2	Identify & describe joints formed by the given bone					Viva voce
AN8.3	Enumerate peculiarities of clavicle	K	KH		DOAP session	Viva voce

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No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods	
					T/L	Assessment
AN8.4	Demonstrate important muscle attachment on the given bone	K/S	SH	Y	Practical DOAP session, Small group teaching	Viva voce Practicals
AN8.5	Identify and name various bones in articulated hand, Specify the parts of metacarpals and phalanges and enumerate the peculiarities of pisiform					
AN8.6	Describe scaphoid fracture and explain the anatomical basis of avascular necrosis	K	KH	N	DOAP session	Viva voce

Topic: Pectoral region		Number of competencies: (3)				
No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods	
					T/L	Assessment
AN9.1	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor	K	KH	Y	Lecture, Practical	Written
AN9.2	Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast				Practical, Lecture	Written/ Viva voce
AN9.3	Describe development of breast			N	Lecture	Written

Topic: Axilla, Shoulder and Scapular region		Number of competencies: (13)				
No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods	
					T/L	Assessment
AN10.1	Identify & describe boundaries and contents of axilla	K/S	SH	Y	Practical, Lecture, Small group discussion	Written/ Viva voce/ skill assessment
AN10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein		SH	Y		
AN10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus		SH	Y		
AN10.4	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN10.5	Explain variations in formation of brachial plexus					
AN10.6	Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis			N	Lecture	Written
AN10.7	Explain anatomical basis of enlarged axillary lymph nodes				Lecture	Written
AN10.8	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	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	Lecture	Written
AN10.10	Describe and identify the deltoid and rotator cuff muscles	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN10.11	Describe & demonstrate attachment of serratus anterior with its action					
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					Written/ Viva voce/ skill assessment
AN10.13	Explain anatomical basis of Injury to axillary nerve during intramuscular injections	K	KH	N	Lecture	Viva voce

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Topic: Arm & Cubital fossa		Number of competencies: (6)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN11.1	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN11.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm					
AN11.3	Describe the anatomical basis of Venepuncture of cubital veins	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN11.4	Describe the anatomical basis of Saturday night paralysis					
AN11.5	Identify & describe boundaries and contents of cubital fossa	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN11.6	Describe the anastomosis around the elbow joint	K	KH	N	Lecture	Written

Topic: Forearm & hand		Number of competencies: (15)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN12.1	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN12.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm					
AN12.3	Identify & describe flexor retinaculum with its attachments					
AN12.4	Explain anatomical basis of carpal tunnel syndrome	K	KH	Y	Lecture	Written/ Viva voce
AN12.5	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN12.6	Describe & demonstrate movements of thumb and muscles involved					
AN12.7	Identify & describe course and branches of important blood vessels and nerves in hand					
AN12.8	Describe anatomical basis of Claw hand	K	KH	Y	Lecture	Written/ Viva voce
AN12.9	Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN12.10	Explain infection of fascial spaces of palm	K	KH	N	Lecture	Written
AN12.11	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	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					
AN12.13	Describe the anatomical basis of Wrist drop	K	KH		Lecture	Written/ Viva voce
AN12.14	Identify & describe compartments deep to extensor retinaculum	K/S	SH		Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN12.15	Identify & describe extensor expansion formation					

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Topic: General Features, Joints, radiographs & surface marking				Number of competencies: (8)		
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN13.1	Describe and explain Fascia of upper limb and compartments, veins of upper limb and its lymphatic drainage	K	KH	Y	Lecture	Written/ Viva voce
AN13.2	Describe dermatomes of upper limb			N		
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	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN13.4	Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal joint	K	KH	N	Lecture	Written
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	Practical, Small group discussion, DOAP session	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, Inferior angle of the scapula					
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					
AN13.8	Describe development of upper limb	K	KH	N	Lecture	Written

Features of individual bones (Lower Limb)				Number of competencies: (4)		
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN14.1	Identify the given bone, its side, important features & keep it in anatomical position	K/S	SH	Y	DOAP session	Viva voce
AN14.2	Identify & describe joints formed by the given bone				Lecture, DOAP session	
AN14.3	Describe the importance of ossification of lower end of femur & upper end of tibia	K	KH	Y	Lecture	Viva voce/ Practicals
AN14.4	Identify and name various bones in the articulated foot with individual muscle attachment	K/S	SH	N	Practical, DOAP session, Small group teaching	Viva voce/ Practicals

Topic: Front & Medial side of thigh				Number of competencies: (5)		
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions					
AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle					
AN15.4	Explain anatomical basis of Psoas abscess & Femoral hernia	K	KH	N	Lecture, DOAP session	Written/ Viva voce
AN15.5	Describe and demonstrate adductor canal with its content	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment

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Topic: Gluteal region & back of thigh Number of competencies: (6)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN16.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN16.2	Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections	K	KH	Y	Lecture, DOAP session	Written/ Viva voce
AN16.3	Explain the anatomical basis of Trendelenburg sign			Y	Lecture, DOAP session	Written/ Viva voce
AN16.4	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	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					
AN16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa					

Topic: Hip Joint Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core ((Y/N)	Methods T/L	Assessment
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	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN17.2	Describe anatomical basis of complications of fracture neck of femur	K	KH	N	Lecture	Written/ Viva voce
AN17.3	Describe dislocation of hip joint and surgical hip replacement					

Topic: Knee joint, Anterolateral compartment of leg & dorsum of foot Number of competencies: (7)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN18.1	Describe and demonstrate major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	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					
AN18.3	Explain the anatomical basis of foot drop	K	KH	Y	Lecture, DOAP	Written/ Viva voce
AN18.4	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint	K/S	SH	Y	Practical, Lecture, Small group discussion DOAP	Written/ Viva voce/ skill assessment
AN18.5	Explain the anatomical basis of locking and unlocking of the knee joint	K	KH	Y	Small group teaching	Written/ Viva voce
AN18.6	Describe knee joint injuries with its applied anatomy			N	Lecture	Written/ Viva voce
AN18.7	Explain anatomical basis of Osteoarthritis			N		

Topic: Back of Leg & Sole Number of competencies: (7)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods T/L	Assessment
AN19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg					
AN19.3	Explain the concept of "Peripheral heart"	K	KH	Y	Lecture	Written/ Viva voce
AN19.4	Explain the anatomical basis of rupture of calcaneal tendon			N		
AN19.5	Describe factors maintaining importance arches of the foot with its importance			Y		
AN19.6	Explain the anatomical basis of Flat foot & Club foot			N		
AN19.7	Explain the anatomical basis of Metatarsalgia & Plantar fasciitis					

Topic: General Features, Joints, radiographs & surface marking			Number of competencies: (10)			
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
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	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN20.2	Describe the subtalar and transverse tarsal joints	K	KH	N	Lecture, DOAP	Written/ Viva voce
AN20.3	Describe and demonstrate Fascia lata, Venous drainage, Lymphatic drainage, Retinacula & Dermatomes of lower limb	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN20.4	Explain anatomical basis of enlarged inguinal lymph nodes	K	KH	N	Lecture	Written/ Viva voce
AN20.5	Explain anatomical basis of varicose veins and deep vein thrombosis			Y		
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	Lecture, Small group discussion, DOAP	Viva voce/ skill assessment
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				Practical, Lecture, Small group discussion, DOAP session	
AN20.8	Identify & demonstrate palpation of femoral, popliteal, post tibial, anti tibial & dorsalis pedis blood vessels in a simulated environment					
AN20.9	Identify & demonstrate Palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins					
AN20.10	Describe basic concept of development of lower limb	K	KH	N	Lecture	Viva voce
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, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment
AN20.8	Identify & demonstrate palpation of femoral, popliteal, post tibial, anti tibial & dorsalis pedis blood vessels in a simulated environment					
AN20.9	Identify & demonstrate Palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins					
AN20.10	Describe basic concept of development of lower limb	K	KH	N	Lecture	Viva voce

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Topic: Thoracic cage Number of competencies: (11)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN21.1	Identify and describe the salient features of sternum, typical rib, Ist rib and typical thoracic vertebra	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment
AN21.2	Identify & describe the features of 2nd, 11th and 12th ribs, 1st, 11th and 12th thoracic vertebrae			N		
AN21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet			Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN21.4	Describe & demonstrate extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles					
AN21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve					
AN21.6	Mention origin, course and branches/ tributaries of: anterior & posterior intercostal vessels internal thoracic vessels	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN21.7	Mention the origin, course, relations and branches of atypical intercostal nerve superior intercostal artery, subcostal artery			N	Lecture	Written
AN21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN21.9	Describe & demonstrate mechanics and types of respiration	K/S	SH	Y		
AN21.10	Describe costochondral and interchondral joints	K	KH	N	Lecture	Written
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	K	KH	Y	Practical, Lecture	Written/ Viva voce

Topic: Heart & Pericardium Number of competencies: (7)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core ((Y/N)	Methods T/L	Assessment
AN22.1	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium	K/S	SH	Y	Practical, Lecture, Small group discussionDOAP session	Written/ Viva voce/ skill assessment
AN22.2	Describe & demonstrate external and internal features of each chamber of heart					
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries					
AN22.4	Describe anatomical basis of ischaemic heart disease	K	KH	Y	Lecture	Written/ Viva voce
AN22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN22.6	Describe the fibrous skeleton of heart	K	KH	Y	Lecture	Written
AN22.7	Mention the parts, position and arterial supply of the conducting system of heart					

Topic: Mediastinum Number of competencies: (7)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core ((Y/N)	Methods T/L	Assessment
AN23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply,lymphatic drainage and applied anatomy of oesophagus	K/S	SH	Y	Practical, Lecture, DOAP session	Written/ Viva voce/ skill assessment
AN23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy					
AN23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins				Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN23.5	Identify & Mention the location and extent of thoracic sympathetic chain	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN23.6	Describe the splanchnic nerves	K	KH	N	Lecture	Written
AN23.7	Mention the extent, relations and applied anatomy of lymphatic duct			Y		Written/ Viva voce

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Topic: Lungs & Trachea Number of competencies: (6)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
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	Practical, Lecture	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	Practical, Lecture, Small group discussion DOAP session	Written/ Viva voce/ skill assessment
AN24.3	Describe a bronchopulmonary segment	K	KH	Y	Lecture	Written/ Viva voce
AN24.4	Identify phrenic nerve & describe its formation & distribution	K/S	SH	Y	Lecture, Practical	Written/ Viva voce
AN24.5	Mention the blood supply, lymphatic drainage and nerve supply of lungs	K	KH	Y	Lecture	Written/ Viva voce
AN24.6	Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea			N	Lecture	Written

Topic: Thorax Number of competencies: (9)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods T/L**	**Assessment**
AN25.1	Identify, draw and label a slide of trachea and lung	K/S	SH	Y	Lecture, Practical	Written/ skill assessment
AN25.2	Describe development of pleura, lung & heart	K	KH	Y	Lecture	Written
AN25.3	Describe fetal circulation and changes occurring at birth	K				
AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	K			Lecture	Written/ Viva voce
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta					
AN25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus			N		
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	K/S	SH	Y	Practical, DOAP session	
AN25.8	Identify and describe in brief a barium swallow			N		
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			Y	Practical	Viva voce/ skill assessment

Topic: Skull osteology Number of competencies: (7)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN26.1	Demonstrate anatomical position of skull, Identify and locate individual skull bones in skull	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment
AN26.2	Describe the features of norma frontalis, verticalis, occipitalis, lateralis and basalis					
AN26.3	Describe cranial cavity, its subdivisions, foramina and structures passing through them					
AN26.4	Describe morphological features of mandible					
AN26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)					
AN26.6	Explain the concept of bones that ossify in membrane	K	KH	N	Lecture	Viva voce
AN26.7	Describe the features of the 7th cervical vertebra	K/S	SH	N	DOAP session	Viva voce

Topic: Scalp Number of competencies: (2)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN27.2	Describe emissary veins with its role in spread of infection from extracranial route to intracranial venous sinuses				Lecture	Written

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Topic: Face & parotid region	Number of competencies: (10)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN28.1	Describe & demonstrate muscles of facial expression and their nerve supply	K/S	SH	Y	Practical, Lecture, Small group discussion session	Written/ Viva voce/ skill assessment
AN28.2	Describe sensory innervation of face	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN28.3	Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels	K/S	SH	Y	Practical, Lecture, Small group discussion DOAP session	Written/ Viva voce/ skill assessment
AN28.4	Describe & demonstrate branches of facial nerve with distribution					
AN28.5	Describe cervical lymph nodes and lymphatic drainage of head, face and neck	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN28.6	Identify superficial muscles of face, their nerve supply and actions	K/S	SH	Y	Practical, Lecture, Small group discussion DOAP session	Written/ Viva voce/ skill assessment
AN28.7	Explain the anatomical basis of facial nerve palsy	K	KH	Y	Lecture	Written
AN28.8	Explain surgical importance of deep facial vein					
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	Practical, Lecture, Small group discussion session	Written/ Viva voce/ skill assessment
AN28.10	Explain the anatomical basis of Frey's syndrome	K	KH	N	Lecture	Written

Topic: Posterior triangle of neck	Number of competencies: (4)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN29.1	Describe & demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	K/S	SH	Y	Practical, Lecture, Small group discussionDOAP session	Written/ Viva voce/ skill assessment
AN29.2	Explain anatomical basis of Erb's & Klumpke's palsy	K	KH	Y	Lecture	Written
AN29.3	Explain anatomical basis of wry neck			N		
AN29.4	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2)scalenus anterior, 3) scalenus medius & 4) levator scapulae	K/S	SH	N	Lecture, Practical	Written/ Viva voce

Topic: Cranial cavity	Number of competencies: (5)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN30.1	Describe the cranial fossae & identify related structures	K/S	SH	Y	Practical, Lecture, Small group discussion DOAP session	Written/ Viva voce/ skill assessment
AN30.2	Describe & identify major foramina with structures passing through them					Written/ Viva voce/ skill assessment
AN30.3	Describe & identify dural folds & dural venous sinuses					Written/ Viva voce/ skill assessment
AN30.4	Describe clinical importance of dural venous sinuses	K	KH	Y	Lecture	Written
AN30.5	Explain effect of pituitary tumours on visual pathway			N		

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Topic: Orbit Number of competencies: (5)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN31.1	Describe & identify extra ocular muscles of eyeball	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN31.2	Describe & demonstrate nerves and vessels in the orbit					
AN31.3	Describe anatomical basis of Horner's syndrome	K	KH	N	Lecture	Written
AN31.4	Enumerate components of lacrimal apparatus			Y	Lecture	Written
AN31.5	Explain the anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus			Y	Lecture	Written

Topic: Anterior Triangle Number of competencies: (2)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN32.1	Describe boundaries and subdivisions of anterior triangle	K	KH	Y	Practical, Lecture	Written/ Viva voce
AN32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	K/S	SH	Y	Practical, Lecture, Small group discussion DOAP	Written/ Viva voce/ skill assessment

Topic: Temporal and Infratemporal regions Number of competencies: (5)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN33.1	Describe & demonstrate extent, boundaries and contents of temporal and infratemporal fossae	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN33.2	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication					
AN33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint					
AN33.4	Explain the clinical significance of pterygoid venous plexus	K	KH		Lecture	Written
AN33.5	Describe the features of dislocation of temporomandibular joint			N	Lecture	Written

Topic: Submandibular region Number of competencies: (2)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN34.1	Describe & demonstrate the morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN34.2	Describe the basis of formation of submandibular stones	K	KH	N	Lecture	Written

Topic: Deep structures in the neck Number of competencies: (10)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	K	KH	Y	Lecture	Written
AN35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	K/S	SH		Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN35.3	Demonstrate & describe the origin, parts, course & branches subclavian artery					
AN35.4	Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins					
AN35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes					
AN35.6	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain					
AN35.7	Describe the course and branches of IX, X, XI & XII nerve in the neck	K	KH	Y	Lecture	Written
AN35.8	Describe the anatomically relevant clinical features of Thyroid swellings			N		
AN35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib					
AN35.10	Describe the fascial spaces of neck					

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Topic: Mouth, Pharynx & PalateNumber of competencies: (5)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN36.1	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate	K	KH	Y	Lecture	Written
AN36.2	Describe the components and functions of Waldeyer's lymphatic ring					
AN36.3	Describe the boundaries and clinical significance of pyriform fossa			N		
AN36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess					
AN36.5	Describe the clinical significance of Killian's dehiscence					

Topic: Cavity of Nose Number of competencies: (3)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN37.2	Describe location and functional anatomy of paranasal sinuses	K	KH	Y	Lecture	Written
AN37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours			N		

Topic: Larynx Number of competencies: (3)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN38.1	Describe 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	Practical, Lecture, Small group discussion DOAP session	Written/ Viva voce/ skill assessment
AN38.2	Describe the anatomical aspects of laryngitis	K	KH	N	Lecture	Written
AN38.3	Describe anatomical basis of recurrent laryngeal nerve injury					

Topic: Tongue Number of competencies: (2)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
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	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN39.2	Explain the anatomical basis of hypoglossal nerve palsy	K	KH	N	Lecture	Written

Topic: Organs of hearing and equilibrium Number of competencies: (5)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN40.1	Describe & identify the parts, blood supply and nerve supply of external ear	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube			Y		
AN40.3	Describe the features of internal ear	K	KH	N	Lecture	Written
AN40.4	Explain anatomical basis of otitis externa and otitis media					
AN40.5	Explain anatomical basis of myringotomy					

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Topic: Eyeball Number of competencies: (3)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN41.1	Describe & demonstrate parts and layers of eyeball	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion	K	KH	N	Lecture	Written
AN41.3	Describe the position, nerve supply and actions of intraocular muscles					

Topic: Back Region Number of competencies: (3)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN42.1	Describe the contents of the vertebral canal	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN42.2	Describe & demonstrate the boundaries and contents of Suboccipital triangle					
AN42.3	Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis	K	KH	N	Lecture	Written

Topic: Head & neck Joints, Histology, Development, Radiography & Surface marking Number of competencies: (9)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	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				Lecture, 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			N		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	Lecture	Written/ Viva voce
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	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			N		
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			Y		
AN43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram			N		
AN43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram					

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Topic: Anterior abdominal wall Number of competencies: (7)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN44.1	Describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN44.2	Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall					
AN44.3	Describe the formation of rectus sheath and its contents	K	KH	Y	Lecture	Written/ Viva voce
AN44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN44.5	Explain the anatomical basis of inguinal hernia.	K	KH	Y	Lecture	Written/ Viva voce
AN44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment
AN44.7	Enumerate common Abdominal incisions	K	KH	N	Lecture	Written

Topic: Posterior abdominal wall Number of competencies: (3)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN45.1	Describe Thoracolumbar fascia	K	KH	Y	Lecture	Written
AN45.2	Describe & demonstrate Lumbar plexus for its root value, formation & branches	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN45.3	Mention the major subgroups of back muscles, nerve supply and action	K	KH	N	Lecture	Written

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Topic: Male external genitalia
Number of competencies: (5)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SHP	Core (Y/N)	Methods T/L	 Assessment
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	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN46.2	Describe parts of Epididymis	**K**	**KH**	Y	Lecture, Practical	Written/ Viva voce
AN46.3	Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)					
AN46.4	Explain the anatomical basis of Varicocoele			N	Lecture	Written
AN46.5	Explain the anatomical basis of Phimosis & Circumcision					

Topic Abdominal cavity **Number of competencies: (14)**

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	 Assessment
AN47.1	Describe & identify boundaries and recesses of Lesser & Greater sac	K/S K/S	SH SH	Y Y	Practical, Lecture, Small group discussion,	Written/ Viva voce/ skill assessment
AN47.2	Name & identify various peritoneal folds & pouches with its explanation					
AN47.3	Explain anatomical basis of Ascites & Peritonitis	K	KH	N	Lecture	Written
AN47.4	Explain anatomical basis of Subphrenic abscess	K	KH	N	Lecture	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	Practical, Lecture, Small group discussion, DOAP session	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	Lecture	Written
AN47.7	Mention the clinical importance of Calot's triangle	K	KH	N	Lecture	Written
AN47.8	Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN47.9	Describe & identify the origin, course, important relations and branches of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric & Common iliac artery					
AN47.10	Enumerate the sites of portosystemic anastomosis	K	KH	Y	Lecture	Written
AN47.11	Explain the anatomic basis of hematemesis& caput medusae in portal hypertension					Written/ Viva voce
AN47.12	Describe important nerve plexuses of posterior abdominal wall			N		Written
AN47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN47.14	Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	K	KH	N	Lecture	Written

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Topic: Pelvic wall and viscera Number of competencies: (8)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN48.1	Describe & identify the muscles of Pelvic diaphragm	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN48.2	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					Written/ Viva voce/ skill assessment
AN48.3	Describe & demonstrate the origin, course, important relations and branches of internal iliac artery					Written/ Viva voce/ skill assessment
AN48.4	Describe the branches of sacral plexus	K	KH	Y	Lecture	Written
AN48.5	Explain the anatomical basis of suprapubic cystostomy, Urinary obstruction in benign prostatic hypertrophy, Retroverted uterus, Prolapse uterus, Internal and external hemorrhoids, Anal fistula, Vasectomy, Tubal pregnancy & Tubal ligation	K	KH	N	Lecture	Written
AN48.6	Describe the neurological basis of Automatic bladder	K	KH	N	Lecture	Written
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	K	KH	N	Lecture	Written
AN48.8	Mention the structures palpable during vaginal & rectal examination	K	KH	N	Lecture	Written

Topic: Perineum Number of competencies: (5)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN49.2	Describe & identify Perineal body					
AN49.3	Describe & demonstrate Perineal membrane in male & female					
AN49.4	Describe & demonstrate boundaries, content & applied anatomy of Ischiorectal fossa					
AN49.5	Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	K	KH	N	Lecture	Written

Topic: Vertebral column Number of competencies: (4)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN50.1	Describe the curvatures of the vertebral column	K	KH	Y	Lecture	Written/ Viva voce
AN50.2	Describe & demonstrate the type, articular ends, ligaments and movements of Intervertebral joints, Sacroiliac joints & Pubic symphysis	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	K	KH	Y	Lecture	Written/ Viva voce
AN50.4	Explain the anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	K	KH	N	Lecture	Written

Topic: Sectional Anatomy Number of competencies: (2)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN51.1	Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN51.2	Describe & identify the midsagittal section of male and female pelvis	K	SH	Y		

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Topic: Histology & Embryology Number of competencies: (8)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN52.1	Describe & identify the microanatomical features of Gastro-intestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	K/S	SH	Y	Lecture, 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	Lecture, Practical	Written/ skill assessment
AN52.3	Describe & identify the microanatomical features of Cardiooesophageal junction, Corpus luteum	K/S	SH	N	Lecture, Practical	Written/ skill assessment
AN52.4	Describe the development of anterior abdominal wall	K	KH	N	Lecture	Written/ Viva voce
AN52.5	Describe the development and congenital anomalies of Diaphragm			Y	Lecture	Written/ Viva voce
AN52.6	Describe the development and congenital anomalies of: Foregut, Midgut & Hindgut					
AN52.7	Describe the development of Urinary system					
AN52.8	Describe the development of male & female reproductive system					

Topic: Osteology Number of competencies: (4)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
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	Lecture, DOAP session	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	Lecture, DOAP session	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	Lecture, DOAP session	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	Lecture, DOAP session	Viva voce/ skill assessment

Topic: Radiodiagnosis Number of competencies: (3)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN54.1	Describe & identify features of plain X ray abdomen	K/S	SH	Y	Lecture, DOAP session	Viva voce/ skill assessment
AN54.2	Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography)			Y	Lecture, DOAP session	Viva voce/ skill assessment
AN54.3	Describe role of ERCP, CT abdomen, MRI, Arteriography in radiodiagnosis of abdomen	K	KH	N	Lecture	Viva voce

Topic: Surface marking Number of competencies: (2)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
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	Practical, Lecture, Small group discussion, DOAP session	Viva voce/ skill assessment
AN55.2	Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileo-caecal junction, Kidneys & Root of mesentery					Viva voce/ skill assessment

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Topic: Meninges & CSF Number of competencies: (2)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN56.1	Describe & identify various layers of meninges with its extent & modifications	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN56.2	Describe circulation of CSF with its applied anatomy	K	KH	Y	Lecture	Written/ Viva voce

Topic: Spinal Cord Number of competencies: (5)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN57.1	Identify external features of spinal cord	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN57.2	Describe extent of spinal cord in child & adult with its clinical implication	K	KH	Y	Lecture	Written/ Viva voce
AN57.3	Draw & label transverse section of spinal cord at mid-cervical & mid- thoracic level					
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord					
AN57.5	Describe anatomical basis of syringomyelia			N		Written

Topic: Medulla Oblongata Number of competencies: (4)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN58.1	Identify external features of medulla oblongata	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/ skill assessment
AN58.2	Describe transverse section of medulla oblongata at the level of 1) pyramidal decussation, 2) sensory decussation 3) ION	K	KH	Y	Lecture	Written/ Viva voce
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional group					
AN58.4	Describe anatomical basis & effects of medial & lateral medullary syndrome			N		Written

Topic: Pons Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN59.1	Identify external features of pons	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/ skill assessment
AN59.2	Draw & label transverse section of pons at the upper and lower level	K	KH	Y	Lecture	Written/ Viva voce
AN59.3	Enumerate cranial nerve nuclei in pons with their functional group	K	KH	Y	Lecture	Written/ Viva voce

Topic: Cerebellum Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN60.1	Describe & demonstrate external & internal features of cerebellum	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN60.2	Describe connections of cerebellar cortex and intracerebellar nuclei	K	KH	Y	Lecture	Written/ Viva voce
AN60.3	Describe anatomical basis of cerebellar dysfunction	K	KH	N	Lecture	Written

Topic: Midbrain Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN61.1	Identify external & internal features of midbrain	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN61.2	Describe internal features of midbrain at the level of superior & inferior colliculus	K	KH	Y	Lecture	Written/ Viva voce
AN61.3	Describe anatomical basis & effects of Benedikt's and Weber's syndrome	K	KH	N	Lecture	Written

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Topic: Cranial nerve nuclei & Cerebral hemispheres Number of competencies: (6)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN62.1	Enumerate cranial nerve nuclei with its functional component	K	KH	Y	Lecture	Written/ Viva voce
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN62.3	Describe the white matter of cerebrum	K	KH	Y	Lecture	Written/ Viva voce
AN62.4	Enumerate parts & major connections of basal ganglia & limbic lobe	K	KH	Y	Lecture	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	Lecture	Written/ Viva voce
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment

Topic: Ventricular System Number of competencies: (2) Number of procedures for certification: (NIL)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core ((Y/N)	Methods T/L	Assessment
AN63.1	Describe & demonstrate parts, boundaries & features of IIIrd, IVth & lateral ventricle	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment
AN63.2	Describe anatomical basis of congenital hydrocephalus	K	KH	N	Lecture	Written

Topic: Histology & Embryology Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN64.1	Describe & identify the microanatomical features of Spinal cord, Cerebellum & Cerebrum	K/S	SH	Y	Lecture, Practical	Written/ skill assessment
AN64.2	Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum	K	KH	Y	Lecture	Written/ Viva voce
AN64.3	Describe various types of open neural tube defects with its embryological basis	K	KH	N	Lecture	Written/ Viva voce

Topic: Epithelium histology Number of competencies: (2)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN65.1	Identify epithelium under the microscope & describe the various types that correlate to its function	K/S	P	Y	Lecture, Practical	Written/ skill assessment
AN65.2	Describe the ultrastructure of epithelium	K	KH	N	Lecture, Practical	Written

Topic: Connective tissue histology Number of competencies: (2)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN66.1	Describe & identify various types of connective tissue with functional correlation	K/S	SH	Y	Lecture, Practical	Written/ skill assessment
AN66.2	Describe the ultrastructure of connective tissue	K	KH	N	Lecture, Practical	Written

Topic: Muscle histology Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN67.1	Describe & identify various types of muscle under the microscope	K/S	SH	Y	Lecture, Practical	Written/ skill assessment
AN67.2	Classify muscle and describe the structure-function correlation of the sam	K	KH	Y	Lecture, Practical	Written
AN67.3	Describe the ultrastructure of muscular tissue			N		

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Topic: Nervous tissue histology Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN68.1	Describe & Identify multipolar & unipolar neuron, ganglia, peripheral nerve	K/S	SH	Y	Lecture, Practical	Written/ skill assessment
AN68.2	Describe the structure-function correlation of neuron	K	KH	Y	Lecture, Practical	Written
AN68.3	Describe the ultrastructure of nervous tissue			N		

Topic: Blood Vessels Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN69.1	Identify elastic & muscular blood vessels, capillaries under the microscope	K/S	SH	Y	Lecture, Practical	Skill assessment
AN69.2	Describe the various types and structure-function correlation of blood vessel	K	KH	Y	Lecture, Practical	Written
AN69.3	Describe the ultrastructure of blood vessels		KH			

Topic: Glands & Lymphoid tissue Number of competencies: (2)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN70.1	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini	K/S	SH	Y	Lecture, 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					

Topic: Bone & Cartilage Number of competencies: (2) Number of procedures for certification: (NIL)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN71.1	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same	K/S	SH	Y	Lecture, 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	Lecture, Practical	Written/ skill assessment

Topic: Integumentary System Number of competencies: (1)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	K/S	SH	Y	Lecture, Practical	Written/ skill assessment

Topic: Chromosomes Number of competencies: (3)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN73.1	Describe the structure of chromosomes with classification	K	KH	Y	Lecture	Written
AN73.2	Describe technique of karyotyping with its applications	K	KH	Y	Lecture	Written
AN73.3	Describe the Lyon's hypothesis	K	KH	Y	Lecture	Written

Topic: Patterns of Inheritance Number of competencies: (4)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
AN74.1	Describe the various modes of inheritance with examples	K	KH	Y	Lecture	Written
AN74.2	Draw pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance			Y		
AN74.3	Describe multifactorial inheritance with examples			Y		
AN74.4	Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia			N		

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Topic: Principle of Genetics, Chromosomal Aberrations & Clinical Genetics Number of competencies: (5)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN75.1	Describe the structural and numerical chromosomal aberrations	K	KH	Y	Lecture	Written
AN75.2	Explain the terms mosaics and chimeras with example			N		
AN75.3	Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome					
AN75.4	Describe genetic basis of variation: polymorphism and mutation			Y		
AN75.5	Describe the principles of genetic counselling					

Topic: Introduction to embryology Number of competencies: (2)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN76.1	Describe the stages of human life	K	KH	Y	Lecture	Written
AN76.2	Explain the terms- phylogeny, ontogeny, trimester, viability					

Topic: Gametogenesis and fertilization Number of competencies: (6)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN77.1	Describe the uterine changes occurring during the menstrual cycle	K	KH	Y	Lecture	Written
AN77.2	Describe the synchrony between the ovarian and menstrual cycles					
AN77.3	Describe spermatogenesis and oogenesis along with diagrams					
AN77.4	Describe the stages and consequences of fertilisation					
AN77.5	Enumerate and describe the anatomical principles underlying contraception					
AN77.6	Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”.			N		

Topic: Second week of development Number of competencies: (5)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
AN78.1	Describe cleavage and formation of blastocyst	K	KH	Y	Lecture	Written
AN78.2	Describe the development of trophoblast					
AN78.3	Describe the process of implantation & common abnormal sites of implantation					
AN78.4	Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate					
AN78.5	Describe in brief abortion; decidual reaction, pregnancy test					

Toic: 3rd to 8th week of development Number of competencies: (6)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
AN79.1	Describe the formation & fate of the primitive streak	K	KH	Y	Lecture	Written
AN79.2	Describe formation & fate of notochord					
AN79.3	Describe the process of neurulation					
AN79.4	Describe the development of somites and intra-embryonic coelom					
AN79.5	Explain embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects			N		
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein					

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Topic: Fetal membranes	Number of competencies: (7)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods T/L**	**Assessment**
AN80.1	Describe formation, functions & fate of-chorion: amnion; yolk sac; allantois & decidua	K	KH	Y	Lecture	Written
AN80.2	Describe formation & structure of umbilical cord					
AN80.3	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier					
AN80.4	Describe embryological basis of twinning in monozygotic & dizygotic twins					
AN80.5	Describe role of placental hormones in uterine growth & parturition					
AN80.6	Explain embryological basis of estimation of fetal age.			N		
AN80.7	Describe various types of umbilical cord attachments					

Topic: Prenatal Diagnosis	Number of competencies: (3)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN81.1	Describe various methods of prenatal diagnosis	K	KH	Y	Lecture	Written
AN81.2	Describe indications, process and disadvantages of amniocentesis					
AN81.3	Describe indications, process and disadvantages of chorion villus biopsy					

Topic: Ethics in Anatomy	Number of competencies: (1) Number of procedures for certification: (NIL)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
AN 82.1	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue AETCOM	S	SH	Y	Group Activity	NIL
	Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C- Communication. Column D: K – Knows, KH - Knows How, SH - Shows how, P- performs independently, Column F: DOAP session – Demonstrate, Observe, Assess, Perform. **Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation**					

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Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PY3.1	Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Human Anatomy
PY3.7	Describe the different types of muscle fibres and their structure							
PY3.13	Describe muscular dystrophy: myopathies						General Medicine	
PY4.1	Describe the structure and functions of digestive system							
PY5.1	Describe the functional Anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.							
PY5.6	Describe abnormal ECG, arrythmias, heart block and myocardial Infarction						General Medicine	
PY9.1	Describe and discuss sex determination; sex differentiation and their abnormities and outline psychiatry and practical implication of sex determination.							
PY10.1	Describe and discuss the organization of nervous system							

Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PY10.2	Describe and discuss the functions and properties of synapse, reflex, receptors	K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Human Anatomy
PY10.3	Describe and discuss somatic sensations & sensory tracts							
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus							
PY10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)							
PY10.6	Describe and discuss Spinal cord, its functions, lesion & sensory disturbances							
PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities						Psychiatry	
PY10.11	Demonstrate the correct clinical examination of the nervous system: Higher functions, Sensory system, motor system, reflexes, Cranial Nerves in a normal volunteer or simulated environment	S	P		DOAP sessions	Skill assessment / Viva voce / OSCE		
BI6.13	Describe the functions of the kidney, liver, thyroid and adrenal glands	K	KH		Lecture, Small group discussions	Written/ Viva voce	Pathology General Medicine	Physiology, Human Anatomy
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).							
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands							

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Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PA28.10	Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Human Anatomy, General Surgery	
PA31.1	Classify and describe the types, etiology, pathogenesis, pathology and hormonal dependency of benign breast disease							
PA32.1	Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings						Human Anatomy Physiology, General Medicine, General Surgery	
PA32.9	Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms							
PA33.1	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis						Human Anatomy, Orthopedics	Microbiology
FM2.28	Describe and discuss signs of intrauterine death, signs of live birth, viability of foetus, age determination of foetus, DOAP session of ossification centres, Hydrostatic test, Sudden infants death syndrome and Munchausen's syndrome by proxy.				Lectures, Small group discussion, Autopsy, DOAP session	Written/Viva voce/ OSCE	Pediatrics, Human Anatomy	
FM3.1	Identification Define and describe Corpus Delicti, establishment of identity of living persons including race, Sex, religion, complexion, stature, age determination using morphology, teeth-eruption, decay, bite marks, bones ossification centres, medico-legal aspects of age.				Lectures, Small group discussion, Bedside clinic, DOAP session	Written/ Viva voce/skill assessment	Human Anatomy	

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
AS4.2	Describe the Anatomy of the airway and its implications for general anaesthesia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Human Anatomy	
AS5.2	Describe the correlative Anatomy of the brachial plexus, subarachnoid and epidural spaces							
AS5.3	Observe and describe the principles and steps/ techniques involved in peripheral nerve blocks	S			Lecture, Small group discussion, DOAP session			
AS8.1	Describe the anatomical correlates and physiologic principles of pain	K					Human Anatomy Physiology	
EN1.1	Describe the Human Anatomy & physiology of ear, nose, throat, head & neck.					Written/ Viva voce/Skill assessment	Human Anatomy	
OP2.1	Enumerate the causes, describe and discuss the aetiology, clinical presentations and diagnostic features of common conditions of the lid and adnexa including Hordeolum externum/ internum, blepharitis, preseptal cellulitis, dacryocystitis, hemangioma, dermoid, ptosis, entropion, lid lag, lagopthalmos				Lecture,Small group discussion	Written/ Viva voce		
OP4.1	Enumerate describe and discuss the types and causes of corneal ulceration							
OP6.1	Enumerate and discuss the aetiology, the clinical distinguishing features of various glaucomas associated with shallow and deep anterior chamber. Choose appropriate investigations and treatment for patients with above conditions							

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OP7.1	Describe the surgical anatomy and the metabolism of the lens	K	KH	Y	Lecture,Small group discussion	Written/ Viva voce	Biochemistry, Human Anatomy	
OP8.1	Discuss the aetiology, pathology, clinical features and management of vascular occlusions of the retina						Human Anatomy, Pathology	
DE1.1	Enumerate the parts of the tooth			N	Lecture,Small group discussion	Viva voce	Human Anatomy	
DE5.1	Enumerate the parts of the tooth and supporting structures							
IM3.1	Define discuss describe and distinguish community acquired pneumonia, nosocomial pneumonia and aspiration pneumonia			Y	Lecture, Small Group discussion	short note/ Viva voce	Human Anatomy, Pathology, Microbiology	
IM13.9	Demonstrate in a mannequin the correct technique for performing breast exam, rectal examination and cervical examination and pap smear	S	K		Bedside clinic	Skill assessment/ short case	Human Anatomy	General Surgery
IM17.1	Define and classify headache and describe the presenting features, precipitating factors, aggravating and relieving factors of various kinds of headache	K	KH		Lecture, Small group discussion	short note/ Viva voce	Human Anatomy	
IM18.1	Describe the functional and the vascular anatomy of the brain					Written/ Viva voce	Human Anatomy	
IM19.1	Describe the functional anatomy of the locomotor system of the brain						Human Anatomy, Physiology	

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OG2.1	Describe and discuss the development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to Obstetrics and Gynaecology.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce/ Skill assessment	Human Anatomy	
OG4.1	Describe and discuss the basic embryology of fetus , factors influencing fetal growth and development, anatomy and physiology of placenta, and teratogenesis		K		Lecture, Small group discussion	Theory	Human Anatomy	
OG14.1	Enumerate and discuss the diameters of maternal pelvis and types	K	KH	Y	Lecture, Small group discussion, Bedside clinic, DOAP session	Written/ Viva voce/ skill assessment	Human Anatomy	
SU19.1	Describe the etiology and classification of cleft lip and palate				Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
SU19.2	Describe the Principles of reconstruction of cleft lip and palate							
SU22.1	Describe the Applied anatomy, and physiology of thyroid							
SU22.5	Describe the applied anatomy of parathyroid.							
SU23.1	Describe the applied anatomy of adrenal glands							
SU24.1	Describe the clinical features, principles of investigation, prognosis and management of pancreatitis.							

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Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
SU25.1	Describe applied anatomy appropriate investigations for breast disease	K	KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
SU28.2	Describe the clinical features, investigations and principles of management of congenital anomalies of Genitourinary system.							
SU28.5	Describe the applied anatomy and physiology of esophagus		K			Written/ Viva voce	Human Anatomy, Physiology	
SU28.7	Describe the applied anatomy and physiology of stomach.		KH			Written/ Viva voce/ OSCE	Human Anatomy	
SU28.10	Describe the applied anatomy of liver. Describe the Clinical features, Investigations and principles of management of Liver abscess, hydatid disease, Injuries and Tumors of the liver.							
SU28.11	Describe the applied anatomy of Spleen. Describe the clinical features, Investigations and principles of management of splenic injuries. Describe the Post-splenectomy sepsis-prophylaxis.							
SU28.12	Describe the applied anatomy of biliary system. Describe the clinical features, investigations and principles of management of diseases of biliary system.							
SU28.13	Describe the applied anatomy of small and large intestines							
SU28.16	Describe applied anatomy including congenital anomalies of the rectum and anal canal							
SU30.2	Describe the applied anatomy, clinical features, investigations and principles of management of Undescended testis.	K	KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
SU30.3	Describe the applied anatomy, clinical features, investigations and principles of management of Epidydimo-orchitis							
SU30.4	Describe the applied anatomy, clinical features, investigations and principles of management of Varicocele							
SU30.5	Describe the applied anatomy, clinical features, investigations and principles of management of Hydrocele							

Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OR2.1	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle	K/S	KH/SH					
OR2.2	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fractures of proximal humerus	K	K/KH/SH					
OR2.3	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of supra condylar fracture of humerus		KH/SH					
OR2.4	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus and intercondylar fracture humerus with emphasis on neurovascular deficit	K/S	K/KH					
OR2.5	Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury	K						

Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OR2.6	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius	K	KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.7	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of pelvic injuries with emphasis on hemodynamic instability	K	K/KH/SH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.8	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of spine injuries with emphasisi on mobilisation of the patient	K	K/KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.9	Describe and discuss the mechanism of injury, Clinical features, investigations and principle of management of acetabular fracture	K	K/KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.10	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur	K/S/A/C	KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.11	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a)Fracture patella (b) Fracture distal femur © Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome	K	K/KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.12	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication	K	K/KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.13	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of: Fracture both bones leg Calcaneus Small bones of foot	K	K/KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.14	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of ankle fractures	K/S/C	K/KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	

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					T/L	Assess-ment	Vertical	Horizon-tal
OR2.15	Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome	K/S	SH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce/ OSCE	Human Anatomy	
OR2.16	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection, prevention and management	K	K/KH					
OR11.1	Describe and discuss the aetiopathogenesis, Clinical features, Investigations and principles of management of peripheral nerve injuries in diseases like foot drop, wrist drop, claw hand, palsies of Radial, Ulnar, Median, Lateral Popliteal and Sciatic Nerves		K/H		Lecture, Small Group discussion, case discussion			General Medicine, General surgery
OR12.1	Describe and discuss the Clinical features, Investigations and principles of management of Congenital and acquired malformations and deformities of: limbs and spine - Scoliosis and spinal bifida Congenital dislocation of Hip,Torticollis, congenital talipes equino varus				Lecture, Small group discussion	Written/ Viva voce/ OSCE		

Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PM2.1	Describe the causes of disability in the patient with a cerebrovascular accident					Written/ Viva voce		General Medicine
PM3.1	Describe and discuss the clinical features, types, evaluation, diagnosis and management of cerebral palsy							Pediatrics

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PE32.1	Discuss the genetic basis, risk factors, complications, prenatal diagnosis, management and genetic counselling in Down's Syndrome							

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PHYSIOLOGY
(CODE: PY)

"The Physiology of today is Medicine of tomorrow" – Starling

Claude Bernard and his pupils (Wellcome library)
Claude Bernard (1813-1878) was a French physiologist and scientist. He became famous for describing homeostasis but as importantly he was among the first to promote the experimental method
Bernard described learning and science as follows: 'Ardent desire for knowledge, in fact, is the one motive attracting and supporting investigators in their effort; and just this knowledge, really grasped and yet always flying before them.
Once again this image is most memorable for the interaction between teacher and learner and between learners themselves. The learners were observing, taking notes, leaning forward to get better

Topic: General Physiology					Number of competencies: (09)	
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
PY1.1	Describe the structure and functions of a mammalian cell	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY1.2	Describe and discuss the principles of homeostasis					
PY1.3	Describe intercellular communication					
PY1.4	Describe apoptosis – programmed cell death					
PY1.5	Describe and discuss transport mechanisms across cell membranes					
PY1.6	Describe the fluid compartments of the body, its ionic composition & measurements					
PY1.7	Describe the concept of pH & Buffer systems in the body					
PY1.8	Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue					
PY1.9	Demonstrate the ability to describe and discuss the methods used to demonstrate the functions of the cells and its products, its communications and their applications in Clinical care and research.					
Number of procedures that require certification: (NIL)						

Topic: Haematology			Number of competencies: (13)			
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
PY2.1	Describe the composition and functions of blood components	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY2.2	Discuss the origin, forms, variations and functions of plasma proteins					
PY2.3	Describe and discuss the synthesis and functions of Haemoglobin and explain its breakdown. Describe variants of haemoglobin					
PY2.4	Describe RBC formation (erythropoiesis & its regulation) and its functions					
PY2.5	Describe different types of anaemias & Jaundice					
PY2.6	Describe WBC formation (granulopoiesis) and its regulation					
PY2.7	Describe the formation of platelets, functions and variations.					
PY2.8	Describe the physiological basis of hemostasis and, anticoagulants. Describe bleeding & clotting disorders (Hemophilia, purpura)					
PY2.9	Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion				Lecture, Small group discussion, ECE- Visit to blood bank	Written/Viva voce
PY2.10	Define and classify different types of immunity. Describe the development of immunity and its regulation				Lecture, Small group discussion	
PY2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT	S	SH		DOAP sessions	Practical/OSPE/Viva voce
PY2.12	Describe test for ESR, Osmotic fragility, Hematocrit. Note the findings and interpret the test results etc	K	KH		Demonstration	Written /Viva voce
PY2.13	Describe steps for reticulocyte and platelet count					
Number of procedures that require certification: (NIL)						

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Topic: Nerve and Muscle Physiology Number of competencies: (18)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
PY3.1	Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines	K	KH	Y	Lecture, Small group discussion	Written/Viva
PY3.2	Describe the types, functions & properties of nerve fibers					
PY3.3	Describe the degeneration and regeneration in peripheral nerves					
PY3.4	Describe the structure of neuro-muscular junction and transmission of impulses					
PY3.5	Discuss the action of neuro-muscular blocking agents					
PY3.6	Describe the pathophysiology of Myasthenia gravis					
PY3.7	Describe the different types of muscle fibres and their structure					
PY3.8	Describe action potential and its properties in different muscle types (skeletal & smooth)					
PY3.9	Describe the molecular basis of muscle contraction in skeletal and in smooth muscles					
PY3.10	Describe the mode of muscle contraction (isometric and isotonic)					
PY3.11	Explain energy source and muscle metabolism					
PY3.12	Explain the gradation of muscular activity					
PY3.13	Describe muscular dystrophy: myopathies					
PY3.14	Perform Ergography	S	SH		DOAP sessions	Practical/OSPE/Viva voce
PY3.15	Demonstrate effect of mild, moderate and severe exercise and record changes in cardiorespiratory parameters					
PY3.16	Demonstrate Harvard Step test and describe the impact on induced physiologic parameters in a simulated environment					
PY3.17	Describe Strength-duration curve	K	KH		Lecture, Small group discussion	Written/Viva voce
PY3.18	Observe with Computer assisted learning (i) amphibian nerve - muscle experiments (ii) amphibian cardiac experiments	S	KH		Demonstration Computer assisted learning methods	Practical / Viva voce
Number of procedures that require certification: (NIL)						

Topic: Gastro-intestinal Physiology Number of competencies: (10)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
PY4.1	Describe the structure and functions of digestive system	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY4.2	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion					
PY4.3	Describe GIT movements, regulation and functions. Describe defecation reflex. Explain role of dietary fibre.					
PY4.4	Describe the physiology of digestion and absorption of nutrients					
PY4.5	Describe the source of GIT hormones, their regulation and functions					
PY4.6	Describe the Gut-Brain Axis					
PY4.7	Describe & discuss the structure and functions of liver and gall bladder					
PY4.8	Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests				Lecture, Small group discussion, Demonstration Esophageal Manometry & endoscopy	Written/Viva voce
PY4.9	Discuss the physiology aspects of: peptic ulcer, gastro-oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY4.10	Demonstrate the correct clinical examination of the abdomen in a normal volunteer or simulated environment	S	SH	Y	DOAP session	Skill assess-ment/ Viva voce/OSCE
Number of procedures that require certification: (NIL)						

Topic: Cardiovascular Physiology (CVS)		Number of competencies: (16)				
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
PY5.1	Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions					
PY5.3	Discuss the events occurring during the cardiac cycle					
PY5.4	Describe generation, conduction of cardiac impulse					
PY5.5	Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis					
PY5.6	Describe abnormal ECG, arrythmias, heart block and myocardial Infarction	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY5.7	Describe and discuss haemodynamics of circulatory system					
PY5.8	Describe and discuss local and systemic cardiovascular regulatory mechanisms					
PY5.9	Describe the factors affecting heart rate, regulation of cardiac output & blood pressure					
PY5.10	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation					
PY5.11	Describe the patho-physiology of shock, syncope and heart failure					
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment	S	SH	Y	DOAP sessions	Practical/OSPE/ Viva voce
PY5.13	Record and interpret normal ECG in a volunteer or simulated environment	S	SH	Y		
PY5.14	Observe cardiovascular autonomic function tests in a volunteer or simulated environment	S	SH	N		Skill assessment / Viva voce
PY5.15	Demonstrate the correct clinical examination of the cardiovascular system in a normal volunteer or simulated environment	S	SH	Y		Practical/OSPE/ Viva voce
PY5.16	Record Arterial pulse tracing using finger plethysmography in a volunteer or simulated environment	S	SH	N	DOAP sessions, Computer assisted learning methods	

Number of procedures that require certification: (03)
PY5.12 Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment
1 each x 3 DOAP sessions Practical/OSPE/ Viva voce

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Topic: Respiratory PhysiologyNumber of competencies: (10)						
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
PY6.1	Describe the functional anatomy of respiratory tract	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY6.2	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs					
PY6.3	Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide					
PY6.4	Describe and discuss the physiology of high altitude and deep sea diving					
PY6.5	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.					
PY6.6	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing					
PY6.7	Describe and discuss lung function tests & their clinical significance					
PY6.8	Demonstrate the correct technique to perform & interpret Spirometry	S	SH		DOAP sessions	Skill assessment/ Viva voce
PY6.9	Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment		P			Skill assessment/ Viva voce/OSCE
PY6.10	Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment		SH	Y		Practical/OSPE/ Viva voce
PY6.9	**Number of procedures that require certification: (01)** Demonstrate the correct clinical examination of the respiratory system in a normal volunteer or simulated environment DOAP sessions Skill assessment/ Viva voce/OSCE					

Topic: Renal Physiology Number of competencies: (09)						
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
PY7.1	Describe structure and function of kidney	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY7.2	Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system					
PY7.3	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism					
PY7.4	Describe & discuss the significance & implication of Renal clearance					
PY7.5	Describe the renal regulation of fluid and electrolytes & acid-base balance					
PY7.6	Describe the innervations of urinary bladder, physiology of micturition and its abnormalities					
PY7.7	Describe artificial kidney, dialysis and renal transplantation					
PY7.8	Describe & discuss Renal Function Tests					
PY7.9	Describe cystometry and discuss the normal cystometrogram					

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Topic: Endocrine Physiology	Number of competencies: (06)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
PY8.1	Describe the physiology of bone and calcium metabolism	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY8.2	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus					
PY8.3	Describe the physiology of Thymus & Pineal Gland					
PY8.4	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas					

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	Assessment
PY8.5	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY8.6	Describe & differentiate the mechanism of action of steroid, protein and amine hormones	K	KH	Y	Lecture, Small group discussion	Written/Viva voce

Topic: Reproductive Physiology	Number of competencies: (12)					
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
PY9.1	Describe and discuss sex determination; sex differentiation and their abnormities and outline psychiatry and practical implication of sex determination.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY9.2	Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.					
PY9.3	Describe male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness					
PY9.4	Describe female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes					
PY9.5	Describe and discuss the physiological effects of sex hormones					
PY9.6	Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantages					
PY9.7	Describe and discuss the effects of removal of gonads on physiological functions					
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.					
PY9.9	Interpret a normal semen analysis report including (a) sperm count, (b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the results					OSPE/Viva voce
PY9.10	Discuss the physiological basis of various pregnancy tests					Written/Viva voce
PY9.11	Discuss the hormonal changes and their effects during perimenopause and menopause					
PY9.12	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.					

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Topic: Neurophysiology	Number of competencies: (20)					
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
PY10.1	Describe and discuss the organization of nervous system	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY10.2	Describe and discuss the functions and properties of synapse, reflex, receptors					
PY10.3	Describe and discuss somatic sensations & sensory tracts					
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus					
PY10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)					
PY10.6	Describe and discuss Spinal cord, its functions, lesion & sensory disturbances					
PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities					
PY10.8	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production					
PY10.9	Describe and discuss the physiological basis of memory, learning and speech					
PY10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).					
PY10.11	Demonstrate the correct clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment	S	P		DOAP sessions	Skill assessment/ Viva voce/OSCE
PY10.12	Identify normal EEG forms	S	S		Small group teaching	OSPE/Viva voce
PY10.13	Describe and discuss perception of smell and taste sensation	K	KH		Lecture, Small group discussion	Written/Viva voce
PY10.14	Describe and discuss patho-physiology of altered smell and taste sensation					
PY10.15	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing					
PY10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests					
PY10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex					
PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY10.19	Describe and discuss auditory & visual evoke potentials	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY10.20	Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment	S	P	Y	DOAP sessions	Skill assessment/ Viva voce
PY10.11	**Number of procedures that require certification:** 1 each(total 5) Demonstrate the correct clinical examination of the nervous system: Higher functions, sensory system, motor system, reflexes, cranial nerves in a normal volunteer or simulated environment DOAP sessions Skill assessment/ Viva voce/OSCE					
PY10.20	**Number of procedures that require certification 1 each (total 4)** Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment DOAP sessions Skill assessment/ Viva voce					

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Topic: Integrated Physiology Number of competencies: (14)						
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
PY11.1	Describe and discuss mechanism of temperature regulation	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
PY11.2	Describe and discuss adaptation to altered temperature (heat and cold)					
PY11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke					
PY11.4	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects					
PY11.5	Describe and discuss physiological consequences of sedentary lifestyle					
PY11.6	Describe physiology of Infancy			N	Lecture, Small group discussion	Written/Viva voce
PY11.7	Describe and discuss physiology of aging; free radicals and antioxidants				Lecture, Small group discussion	Written/Viva voce
PY11.8	Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)			Y	Lecture, Small group discussion	Written/Viva voce
PY11.9	Interpret growth charts			N	Small group teaching	Practical/OSPE/ Viva voce
PY11.10	Interpret anthropometric assessment of infants					
PY11.11	Discuss the concept, criteria for diagnosis of Brain death and its implications			Y	Lecture, Small group discussion	Written/Viva voce
PY11.12	Discuss the physiological effects of meditation			N	Lecture, Small group discussion	Written/Viva voce
PY11.13	Obtain history and perform general examination in the volunteer / simulated environment	S S	SH SH	Y	DOAP sessions	Skill assessment/ Viva voce
PY11.14	Demonstrate Basic Life Support in a simulated environment					OSCE

Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C- Communication. Column D: K – Knows, KH - Knows How, SH - Shows how, P- performs independently, Column F: DOAP session – Demonstrate, Observe, Assess, Perform.
Column H: If entry is P: indicate how many procedures must be done independently for certification/graduation

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Integration

Human Anatomy

Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
AN3.1	Classify muscle tissue according to structure & action	K	KH	Y	Lecture	Written/ Viva voce		Physiology
AN5.1	Differentiate between blood vascular and lymphatic system							
AN5.2	Differentiate between pulmonary and systemic circulation							
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries						General Medicine	Physiology
AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio- venous anastomoses			N		Written		Physiology
AN5.8	Define thrombosis, infarction & aneurysm						Pathology	Physiology
AN7.2	List components of nervous tissue and their functions	K	KH	Y	Lecture	Written/ Viva voce		Physiology Physiology
AN7.3	Describe parts of a neuron and classify them based on number of neurites, size & function							
AN7.5	Describe principles of sensory and motor innervation of muscles			N		Written	General Medicine	Physiology
AN7.7	Describe various types of synapse							Physiology
AN21.9	Describe & demonstrate mechanics and types of respiration	K/S	SH	Y	Practical, Lecture, Small group dicussion, DOAP session	Written/Viva voce/ skill assessment		Physiology
AN22.2	Describe & demonstrate external and internal features of each chamber of heart							
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries							
AN22.4	Describe anatomical basis of ischaemic heart disease	K	KH		Lecture	Written/ Viva voce	General Medicine	Physiology
AN22.7	Mention the parts, position and arterial supply of the conducting system of heart					Written		Physiology
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				Practical, Lecture	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		Practical, Lecture, Small group discussion, DOAP	Written/ Viva voce/ skill assessment		
AN24.3	Describe a bronchopulmonary segment	K	KH	Y	Lecture	Written/ Viva voce		
AN25.3	Describe fetal circulation and changes occurring at birth	K	KH	Y	Lecture	Written	General Medicine	Physiology
AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheoesophageal fistula					Written/ Viva voce	General Medicine, Pediatrics	
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta							
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		Practical	Viva voce/ skill assessment		
AN56.2	Describe circulation of CSF with its applied anatomy	K	KH		Lecture	Written/ Viva voce	General Medicine	
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord							
AN57.5	Describe anatomical basis of syringomyelia			N		Written	General Medicine	
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional group			Y		Written/ Viva voce		
AN58.4	Describe anatomical basis & effects of medial & lateral medullary syndrome					Written	General Medicine	

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Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
AN59.1	Identify external features of pons	K/S	SH	Y	Lecture, DOAP session	Written/ Viva voce/ skill assessment		
AN60.3	Describe anatomical basis of cerebellar dysfunction	K	KH	N	Lecture	Written	General Medicine	
AN61.3	Describe anatomical basis & effects of Benedikt's and Weber's syndrome							
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	K/S	SH	Y	Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment		
AN62.3	Describe the white matter of cerebrum	K	KH	Y	Lecture	Written/ Viva voce	General Medicine	Physiology
AN62.4	Enumerate parts & major connections of basal ganglia & limbic lobe					Written/ Viva voce		
AN62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus					Written/ Viva voce		
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	K/S	SH		Practical, Lecture, Small group discussion, DOAP session	Written/ Viva voce/ skill assessment	General Medicine	Physiology
AN63.1	Describe & demonstrate parts, boundaries & features of IIIrd, IVth & lateral ventricle							Physiology
AN63.2	Describe anatomical basis of congenital hydrocephalus	K	KH	N	Lecture	Written	Pediatrics	Physiology
AN66.1	Describe & identify various types of connective tissue with functional correlation	K/S	SH	Y	Lecture, Practical	Written/ skill assessment		Physiology
AN67.2	Classify muscle and describe the structure-function correlation of the same	K	KH			Written		
AN68.2	Describe the structure-function correlation of neuron							
AN69.2	Describe the various types and structure-function correlation of blood vessel							

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Biochemistry								
Integration		**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core (Y/N)**	**Methods**		**Integration**	
					T/L	**Assess-ment**	**Vertical**	**Horizon-tal**
BI1.1	Describe the molecular and functional organization of a cell and its sub-cellular components	K	KH	Y	Lecture, Small group discussion	Written assessment and Viva voce		Physiology
BI3.7	Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism (eg; fluoride, arsenate)					Written/Viva voce		
BI5.2	Describe and discuss functions of proteins and structure-function relationships in relevant areas eg, hemoglobin and selected hemoglobinopathies						Pathology, General Medicine	Physiology
BI6.3	Describe the common disorders associated with nucleotide metabolism.							Physiology
BI6.7	Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.						General Medicine	Physiology
BI6.9	Describe the functions of various minerals in the body, their metabolism and homeostasis.							
BI6.11	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.						Pathology, General Medicine	Physiology
BI6.12	Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance.							
BI6.13	Describe the functions of the kidney, liver, thyroid and adrenal glands.						Pathology, General Medicine	Physiology, Human Anatomy
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).							
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands.							
BI10.4	Describe & discuss innate and adaptive immune responses, self/non-self recognition and the central role of T-helper cells in immune responses.						General Medicine, Pathology	Physiology
BI11.4	Perform urine analysis to estimate and determine normal and abnormal constituents	S	P		DOAP session	Skill assessment	General Medicine	Physiology
BI11.4	**Number required to certify P :1** Perform urine analysis to estimate and determine normal and abnormal constituents				DOAP session	Skill assessment		

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Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PA26.3	Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive airway disease (OAD) and bronchiectasis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Physiology, General Medicine	Microbiology
							General Medicine, Physiology	
PA27.3	Describe the etiology, types, stages pathophysiology pathology and complications of heart failure						Physiology, General Medicine	
PA27.8	Interpret abnormalities in cardiac function testing in acute coronary syndromes	S	SH		DOAP session	Skill Assessment		
PA27.9	Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of cardiomyopathies	K	KH	N	Lecture, Small group discussion	Written/ Viva voce	General Medicine, Physiology	
PA28.5	Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis			Y			Physiology, General Medicine	
PA32.1	Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings						Human Anatomy, Physiology, General Medicine, General Surgery	
PA32.2	Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thryotoxicosis						Physiology, General Medicine	
PA32.3	Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/ hypothyroidism							
PA32.4	Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus							
PA32.5	Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism			N				
PA32.7	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency	K	KH	N	Lecture, Small group discussion	Written/ Viva voce	Physiology, General Medicine	
PA32.8	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of Cushing's syndrome							
PA32.9	Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms						Human Anatomy, Physiology, General Medicine, General Surgery	

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Pharmacology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PH1.15	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of skeletal muscle relaxants	K	KH	Y	Lecture	Written/ Viva voce	Anesthesiology, Physiology	
PH1.19	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS, (including anxiolytics, sedatives & hypnotics, antipsychotic, antidepressant drugs, anti-maniacs,opioid agonists and antagonists, drugs used for neurodegenerative disorders, antiepileptics Drugs)						Psychiatry, Physiology	
PH1.25	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs acting on blood, like anticoagulants, antiplatelets, fibrinolytics, plasma expanders						Physiology, General Medicine	
PH1.26	Describe mechanisms of action, types, doses, side effects, indications and contraindications of the drugs modulating the renin angiotensin and aldosterone system							
PH1.35	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in hematological disorders like: Drugs used in anemias Colony Stimulating factors						General Medicine, Physiology	Pharmacology

Forensic Medicine & Toxicology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
FM14.7	Demonstrate & identify that a particular stain is blood and identify the species of its origin.	S	KH	Y	Small group discussion, Lecture	Log book/ skill station/ Viva voce	Pathology, Physiology	
FM14.8	Demonstrate the correct technique to perform and identify ABO & Rh blood group of a person.	S	SH	Y	Small group discussion, DOAP session			

Anaesthesiology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
AS7.3	Observe and describe the management of an unconscious patient	S	KH	Y	Lecture, Small group discussion, DOAP session	Written/ Viva voce	Physiology	General Medicine
AS7.4	Observe and describe the basic setup process of a ventilator							
AS8.1	Describe the anatomical correlates and physiologic principles of pain	K					Human Anatomy, Physiology	
AS8.2	Elicit and determine the level, quality and quantity of pain and its tolerance in patient or surrogate	S					Physiology	

Ophthalmology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OP1.1	Describe the physiology of vision.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Physiology	

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Medicine								
Integration		**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**		**Integration**	
					T/L	**Assess-ment**	**Vertical**	**Horizon-tal**
IM1.1	Describe and discuss the epidemiology, pathogenesis clinical evolution and course of common causes of heart disease including: rheumatic/ valvular, ischemic, hypertrophic inflammatory.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Pathology, Physiology	
IM1.2	Describe and discuss the genetic basis of some forms of heart failure	K	KH	N	Lecture, Small group discussion	Written	Pathology, Physiology	
IM1.3	Describe and discuss the aetiology microbiology pathogenies and clinical evolution of rheumatic fever, criteria, degree of rheumatic activity and rheumatic valvular heart disease and its complications including infective endocarditis			Y		Written/ Viva voce	Pathology, Physiology, Microbiology	
IM1.4	Stage heart failure						Pathology, Physiology	
IM1.5	Describe discuss and differentiate the processes involved in R Vs L heart failure, systolic vs diastolic failure							
IM1.6	Describe and discuss the compensatory mechanisms involved in heart failure including cardiac remodelling and neurohormonal adaptations							
IM1.7	Enumerate, describe and discuss the factors that exacerbate heart failure including ischemia, arrythmias anemia, thyrotoxicosis, dietary factors drugs etc.							
IM1.8	Describe and discuss the pathogenesis and development of common arrythmias involved in heart failure particularly atrial fibrillation							
IM2.1	Discuss and describe the epidemiology, antecedents and risk factors for atherosclerosis and ischemic heart disease						Pathology, Physiology Community Medicine	
IM2.2	Discuss the aetiology of risk factors both modifiable and non modifiable of atherosclerosis and IHD						Pathology, Physiology	
IM2.3	Discuss and describe the lipid cycle and the role of dyslipidemia in the pathogenesis of atherosclerosis						Physiology, Biochemistry	
IM2.4	Discuss and describe the pathogenesis, natural history, evolution and complications of atherosclerosis and IHD	K	K		Lecture, Small group discussion	Written/Viva voce	Pathology, Physiology Pathology, Physiology	
IM5.1	Describe and discuss the physiologic and biochemical basis of hyperbilirubinemia			Y				
IM5.2	Describe and discuss the aetiology and pathophysiology of liver injury							
IM8.1	Describe and discuss the epidemiology, aetiology and the prevalence of primary and secondary hypertension		KH					
IM8.2	Describe and discuss the pathophysiology of hypertension							
IM11.22	Enumerate the causes of hypoglycaemia and describe the counter hormone response and the initial approach and treatment.							
IM12.1	Describe the epidemiology and pathogenesis of hypothyroidism and hyperthyroidism including the influence of iodine deficiency and autoimmunity in the pathogenesis of thyroid disease		K					
IM12.3	Describe and discuss the physiology of the hypothalamopituitary - thyroid axis, principles of thyroid function testing and deviations in physiologic function					short notes	Pathology, Physiology	
IM15.3	Describe and discuss the physiologic effects of acute blood and volume loss					short note/ Viva voce	Pathology, Physiology	General Surgery

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Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
IM18.6	Distinguish the lesion based on upper vs lower motor neuron, side, site and most probable nature of the lesion	K/S	SH		Bedside clinic, DOAP session	Skill Assessment	Physiology	
IM18.7	Describe the clinical features and distinguish, based on clinical examination, the various disorders of speech			N				
IM18.8	Describe and distinguish, based on the clinical presentation, the types of bladder dysfunction seen in CNS disease	K	KH	Y	Small group discussion, Bedside clinic	Written/ Viva voce		
IM19.1	Describe the functional anatomy of the locomotor system of the brain				Lecture, Small group discussion	Written/Viva voce	Human Anatomy, Physiology	
IM22.1	Enumerate the causes of hypercalcemia and distinguish the features of PTH vs non PTH mediated hypercalcemia	K	KH	N	Lecture, Small group discussion	Written/ Viva voce	Pathology, Physiology	
IM22.9	Enumerate the causes and describe the clinical and laboratory features of metabolic acidosis						Physiology	
IM22.10	Enumerate the causes of describe the clinical and laboratory features of metabolic alkalosis							
IM22.11	Enumerate the causes and describe the clinical and laboratory features of respiratory acidosis							
IM22.12	Enumerate the causes and describe the clinical and laboratory features of respiratory alkalosis							
IM22.13	Identify the underlying acid based disorder based on an ABG report and clinical situation	S						
IM23.1	Discuss and describe the methods of nutritional assessment in an adult and calculation of caloric requirements during illnesses	K		Y			Physiology, Biochemistry	Pediatrics
IM23.2	Discuss and describe the causes and consequences of protein caloric malnutrition in the hospital							
IM23.3	Discuss and describe the aetiology, causes, clinical manifestations, complications, diagnosis and management of common vitamin deficiencies							
IM23.4	Enumerate the indications for enteral and parenteral nutrition in critically ill patients							
IM24.22	Describe and discuss the aetiopathogenesis, clinical presentation, complications, assessment and management of nutritional disorders in the elderly						Physiology, Biochemistry	

Obstetrics & Gynaecology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OG3.1	Describe the physiology of ovulation, menstruation, fertilization, implantation and gametogenesis	K	K	Y	Lecture, seminars	Theory	Physiology	
OG7.1	Describe and discuss the changes in the genital tract, cardiovascular system, respiratory, haematology, renal and gastrointestinal systems in pregnancy		KH					

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Paediatrics

Integration		Domain K/S/AC	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PE7.2	Explain the physiology of lactation	K	KH	Y	Lecture, small group discussion	Written / Viva voce	Physiology	
PE7.3	Describe the composition and types of breast milk and discuss the differences between cow's milk and human milk				Lecture, debate			
PE10.1	Define, describe the etio-pathogenesis, classify including WHO classification, clinical features, complication and management of severe Acute Malnourishment and Moderate Acute Malnutrition				Lecture, Small group discussion		Physiology Biochemistry	
PE10.2	Outline the clinical approach to a child with SAM and MAM							
PE10.3	Assessment of a patient with SAM and MAM, diagnosis, classification and planning management including hospital and community based intervention, rehabilitation and prevention	S	SH		Bed side clinics, Skill Lab	Skill station		
PE11.1	Describe the common etiology, clinical features and management of Obesity in children	K	KH		Lecture, Small group discussion	Written / Viva voce	Physiology, Biochemistry, Pathology	
PE11.2	Discuss the risk approach for obesity and discuss the prevention strategies						Physiology, Pathology	
PE12.7	Describe the causes, clinical features, diagnosis and management of Deficiency / excess of Vitamin D (Rickets and Hypervitaminosis D						Biochemistry, Physiology, Pathology	
PE12.8	Identify the clinical features of dietary deficiency of Vitamin D	S	P		Bedside clinics, Skills lab	Document in log book		
PE12.8	**Number required to certify P:03** Identify the clinical features of dietary deficiency of Vitamin D							
PE12.9	Assess patients with Vitamin D deficiency, diagnose, classify and plan management	S	SH	Y	Bed side clinics	Document in log book	Biochemistry, Physiology, Pathology	
PE12.13	Discuss the RDA, dietary sources of Vitamin K and their role in health and disease	K	K	N	Lecture, Small group discussion	Written / Viva voce		
PE12.14	Describe the causes, clinical features, diagnosis, management and prevention of of Deficiency of Vitamin K		KH	N				
PE23.1	Discuss the Hemodynamic changes, clinical presentation, complications and management of Acyanotic Heart Diseases –VSD, ASD and PDA			Y			Physiology Pathology	
PE23.2	Discuss the Hemodynamic changes, clinical presentation, complications and management of Cyanotic Heart Diseases – Fallot's Physiology							
PE23.3	Discuss the etio-pathogenesis, clinical presentation and management of cardiac failure in infant and children							
PE23.4	Discuss the etio-pathogenesis, clinical presentation and management of Acute Rheumatic Fever in children							
PE23.5	Discuss the clinical features, complications, diagnosis, management and prevention of Acute Rheumatic Fever							
PE23.6	Discuss the etio-pathogenesis and clinical features and management of Infective endocarditis in children						Physiology, Pathology, Microbiology	
PE29.1	Discuss the etio-pathogenesis, Clinical features, classification and approach to a child with anaemia						Pathology, Physiology	
PE29.2	Discuss the etio-pathogenesis, clinical features and management of Iron Deficiency anaemia	K	KH	Y	Lecture, Small group discussion	Written / Viva voce	Pathology, Physiology	
PE29.3	Discuss the etiopathogenesis, Clinical features and management of VIT B12, Folate deficiency anaemia	K K	KH	Y	Lecture, Small group discussion	Written / Viva voce	Pathology, Physiology	
PE29.4	Discuss the etio-pathogenesis, clinical features and management of Hemolytic anemia, Thalassemia Major, Sickle cell anaemia, Hereditary spherocytosis, Auto-immune hemolytic anaemia and hemolytic uremic syndrome							

General Surgery

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
SU1.1	Describe basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators	K	KH	Y	Lecture, Bed side clinic and Small group discussion	Written/ Viva voce	Physiology, Biochemistry	
SU2.1	Describe Pathophysiology of shock. Types of shock. Principles of resuscitation including fluid replacement and monitoring			Y	Lecture, Small group discussion		Pathology, Physiology	
SU4.1	Elicit, document and present history in a case of Burns and perform physical examination. Describe Pathophysiology of Burns.						Physiology	
SU12.1	Enumerate the causes and consequences of malnutrition in the surgical patient.				Lecture, Small group discussion, Bedside clinic			
SU12.2	Describe and Discuss the methods of estimation and replacement the Fluid and electrolyte requirements in the surgical patient	K	KH	Y	Lecture, Small group discussion, Bedside clinic	Written/ Viva voce	Physiology	
SU28.5	Describe the applied Anatomy and physiology of esophagus	K	K	Y	Lecture, Small group Discussion, Demonstration	Written/ Viva voce	Human Anatomy, Physiology	

Respiratory Medicine

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
CT2.1	Define and classify obstructive airway disease	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Physiology, Pathology	
CT2.2	Describe and discuss the epidemiology risk factors and evolution of obstructive airway disease							
CT2.4	Describe and discuss the physiology and pathophysiology of hypoxia and hypercapneia							
CT2.5	Describe and discuss the genetics of alpha 1 antitrypsin deficiency in emphysema			N				
CT2.11	Describe, discuss and interpret pulmonary function tests	S	SH	Y	Bed side clinic, DOAP session	Skill assessment		

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BIOCHEMISTRY
(CODE: BI)

"Now, a living organism is nothing but a wonderful machine endowed with the most marvelous properties and set going by means of the most complex and delicate mechanisms"

– Henry Copley Green

Topic: Basic Biochemistry		Number of competencies: (01)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
BI1.1	Describe the molecular and functional organization of a cell and its sub- cellular components.	K	KH	Y	Lecture, Small group discussion	Written assessment/ Viva voce

Topic: Enzyme		Number of competencies: (07)				
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/ SH/P**	**Core ((Y/N)**	**Methods**	
					T/L	**Assessment**
BI2.1	Explain fundamental concepts of enzyme, isoenzyme, alloenzyme, coenzyme & co-factors. Enumerate the main classes of IUBMB nomenclature.	K	K	Y	Lecture, case discussion	Written assessment/ Viva voce
BI2.2	Observe the estimation of SGOT & SGPT		K		Demonstration	Viva voce
BI2.3	Describe and explain the basic principles of enzyme activity		KH		Lecture, case discussion	Written/ Viva voce
BI2.4	Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes					
BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.					
BI2.6	Discuss use of enzymes in laboratory investigations (Enzyme-based assays)					
BI2.7	Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.				Lecture, Small group discussion, DOAP sessions	

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Topic: Chemistry and Metabolism of Carbohydrates **Number of competencies: (10)**

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/ SH/P	Core ((Y/N)	Methods	
					T/L	Assessment
BI3.1	Discuss and differentiate monosaccharides, di-saccharides and polysaccharides giving examples of main carbohydrates as energy fuel, structural element and storage in the human body	K	KH	Y	Lecture, Small group discussion	Written/Viva voce
BI3.2	Describe the processes involved in digestion and assimilation of carbohydrates and storage.					
BI3.3	Describe and discuss the digestion and assimilation of carbohydrates from food.					
BI3.4	Define and differentiate the pathways of carbohydrate metabolism, (glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt).					
BI3.5	Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders.					
BI3.6	Describe and discuss the concept of TCA cycle as a amphibolic pathway and its regulation.					
BI3.7	Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism (eg; fluoride, arsenate)					
BI3.8	Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates.					
BI3.9	Discuss the mechanism and significance of blood glucose regulation in health and disease.					
BI3.10	Interpret the results of blood glucose levels and other laboratory investigations related to disorders of carbohydrate metabolism.					

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Topic: Chemistry and Metabolism of Lipids			Number of competencies: (07)			
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
BI4.1	Describe and discuss main classes of lipids (Essential/non-essential fatty acids, cholesterol and hormonal steroids, triglycerides, major phospholipids and sphingolipids) relevant to human system and their major functions.	K	KH	Y	Lecture, Small group discussion	Written/Viva voce Written/ Viva voce
BI4.2	Describe the processes involved in digestion and absorption of dietary lipids and also the key features of their metabolism					
BI4.3	Explain the regulation of lipoprotein metabolism & associated disorders.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI4.4	Describe the structure and functions of lipoproteins, their functions, interrelations & relations with atherosclerosis					
BI4.5	Interpret laboratory results of analytes associated with metabolism of lipids					
BI4.6	Describe the therapeutic uses of prostaglandins and inhibitors of eicosanoid synthesis.					
BI4.7	Interpret laboratory results of analytes associated with metabolism of lipids.					

Topic: Chemistry and Metabolism of Proteins				Number of competencies: (05)		
No	**COMPETENCY** **The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods**	
					T/L	**Assessment**
BI5.1	Describe and discuss structural organization of proteins.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI5.2	Describe and discuss functions of proteins and structure-function relationships in relevant areas eg, hemoglobin and selected hemoglobinopathies					
BI5.3	Describe the digestion and absorption of dietary proteins.					
BI5.4	Describe common disorders associated with protein metabolism.					
BI5.5	Interpret laboratory results of analytes associated with metabolism of proteins.					

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Topic: Metabolism and homeostasis			Number of competencies: (15)			
No	**COMPETENCY** **The student should be able to**	**Domain** **K/S/A/C**	**Level** **K/KH/SH/P**	**Core** **(Y/N)**	**Methods** **T/L**	**Assessment**
BI6.1	Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI6.2	Describe and discuss the metabolic processes in which nucleotides are involved.					Written/ Viva voce
BI6.3	Describe the common disorders associated with nucleotide metabolism.					
BI6.4	Discuss the laboratory results of analytes associated with gout & Lesch Nyhan syndrome.					
BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency					
BI6.6	Describe the biochemical processes involved in generation of energy in cells.					
BI6.7	Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.					
BI6.8	Discuss and interpret results of Arterial Blood Gas (ABG) analysis in various disorders.					
BI6.9	Describe the functions of various minerals in the body, their metabolism and homeostasis.					
BI6.10	Enumerate and describe the disorders associated with mineral metabolism.					
BI6.11	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.					
BI6.12	Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance.					
BI6.13	Describe the functions of the kidney, liver, thyroid and adrenal glands.					
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).					
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands.					

Topic: Molecular biology			Number of competencies: (07)			
No	**COMPETENCY** **The student should be able to**	**Domain** **K/S/A/C**	**Level** **K/KH/SH/P**	**Core** **(Y/N)**	**Methods** **T/L**	**Assessment**
BI7.1	Describe the structure and functions of DNA and RNA and outline the cell cycle.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI7.2	Describe the processes involved in replication & repair of DNA and the transcription & translation mechanisms.					
BI7.3	Describe gene mutations and basic mechanism of regulation of gene expression.					
BI7.4	Describe applications of molecular technologies like recombinant DNA technology, PCR in the diagnosis and treatment of diseases with genetic basis.					
BI7.5	Describe the role of xenobiotics in disease					
BI7.6	Describe the anti-oxidant defence systems in the body.					
BI7.7	Describe the role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis.					

Topic: Nutrition				Number of competencies: (05)		
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
BI8.1	Discuss the importance of various dietary components and explain importance of dietary fibre.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI8.2	Describe the types and causes of protein energy malnutrition and its effects.					
BI8.3	Provide dietary advice for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy.					
BI8.4	Describe the causes (including dietary habits), effects and health risks associated with being overweight/ obesity.					
BI8.5	Summarize the nutritional importance of commonly used items of food including fruits and vegetables.(macro-molecules & its importance)					

Topic: Extracellular Matrix				Number of competencies: (03)		
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
BI9.1	List the functions and components of the extracellular matrix (ECM).	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI9.2	Discuss the involvement of ECM components in health and disease.					
BI9.3	Describe protein targeting & sorting along with its associated disorders.			N		

Topic: Oncogenesis and immunity				Number of competencies: (05)		
No	**COMPETENCY The student should be able to**	**Domain K/S/A/C**	**Level K/KH/SH/P**	**Core (Y/N)**	**Methods T/L**	**Assessment**
BI10.1	Describe the cancer initiation, promotion oncogenes & oncogene activation. Also focus on p53 & apoptosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI10.2	Describe various biochemical tumor markers and the biochemical basis of cancer therapy.					
BI10.3	Describe the cellular and humoral components of the immune system & describe the types and structure of antibody					
BI10.4	Describe & discuss innate and adaptive immune responses, self/non-self recognition and the central role of T-helper cells in immune responses.					
BI10.5	Describe antigens and concepts involved in vaccine development.					

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Topic: Biochemical Laboratory Tests Number of competencies: (24)Number of procedures that require certification: (05)

No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods	
					T/L	Assessment
BI11.1	Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI11.2	Describe the preparation of buffers and estimation of pH.					
BI11.3	Describe the chemical components of normal urine.					
BI11.4	Perform urine analysis to estimate and determine normal and abnormal constituents	S	P		DOAP session	Skill assessment
BI11.5	Describe screening of urine for inborn errors & describe the use of paper chromatography	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce
BI11.6	Describe the principles of colorimetry					
BI11.7	Demonstrate the estimation of serum creatinine and creatinine clearance	S	P	Y	Practical	Skills assessment
BI11.8	Demonstrate estimation of serum proteins, albumin and A:G ratio					
BI11.9	Demonstrate the estimation of serum total cholesterol and HDL- cholesterol					
BI11.10	Demonstrate the estimation of triglycerides					
BI11.11	Demonstrate estimation of calcium and phosphorous					
BI11.12	Demonstrate the estimation of serum bilirubin					
BI11.13	Demonstrate the estimation of SGOT/ SGPT					
BI11.14	Demonstrate the estimation of alkaline phosphatase					
BI11.15	Describe & discuss the composition of CSF	K	KH		Lecture, Small group discussion	Written/ Viva voce

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No	COMPETENCY The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods T/L	 Assessment
BI11.16	Observe use of commonly used equipments/techniques in biochemistry laboratory includ•pH meter •Paper chromatography of amino acid •Protein electrophoresis •TLC, PAGE •Electrolyte analysis by ISE •ABG analyzer •ELISA •Immunodiffusion •Autoanalyser •Quality control •DNA isolation from blood/ tissue	S	KH	Y	Demonstration	Skill assessment
BI11.17	Explain the basis and rationale of biochemical tests done in the following conditions: diabetes mellitus, dyslipidemia, myocardial infarction, renal failure, gout, proteinuria, nephrotic syndrome, edema, jaundice, liver diseases, pancreatitis, disorders of acid- base balance, -thyroid disorders.	K			Lecture, Small group discussion	Written/ Viva voce
BI11.18	Discuss the principles of spectrophotometry.					
BI11.19	Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications.					
BI11.21	Demonstrate estimation of glucose, creatinine, urea and total protein in serum.	S	SH	Y	DOAP sessions	Skill assessment
BI11.22	Calculate albumin: globulin (AG) ratio and creatinine clearance	K		Y	Lecture, Small group discussion	Written/ Viva voce
BI11.23	Calculate energy content of different food Items, identify food items with high and low glycemic index and explain the importance of these in the diet		KH	Y		Written/ Viva voce
BI11.24	Enumerate advantages and/or disadvantages of use of unsaturated, saturated and trans fats in food.			Y		Written/ Viva voce
BI11.7	**Number required to certify P:1** Demonstrate the estimation of serum creatinine and creatinine clearance	S	P	Y	Practical	Skill assessment
BI11.8	**Number required to certify P:1** Demonstrate estimation of serum proteins, albumin and A:G ratio	S	P	Y	Practical	Skill assessment
BI11.20	**Number required to certify P:1** Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states	S	P	Y	DOAP	Skill assessment
BI11.21	**Number required to certify P:1** Demonstrate estimation of glucose, creatinine, urea and total protein in serum.	S	SH	Y	DOAP	Skill assessment

Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C- Communication. Column D: K – Knows, KH - Knows How, SH - Shows how, P- performs independently, Column F: DOAP session – Demonstrate, Observe, Assess, Perform

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Integration

Physiology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PY3.11	Explain energy source and muscle metabolism	K K	KH	Y	Lecture, Small group discussion	Written/Viva voce		Biochemistry Biochemistry
PY4.2	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion							
PY4.4	Describe the physiology of digestion and absorption of nutrients							
PY4.7	Describe & discuss the structure and functions of liver and gall bladder							
PY4.8	Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests		KH	Y	Lecture, Small group discussion, Demonstration Esophageal Manometry & endoscopy	Written/Viva voce		
PY4.9	Discuss the physiology aspects of: peptic ulcer, gastro-oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease							
PY7.8	Describe & discuss Renal Function Tests					General Medicine		
PY8.4	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas				Lecture, Small group discussion			

Pathology

Integration		Domain K/S/A/C	Level K/KH/SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PA12.2	Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Biochemistry, Pediatrics	
PA14.1	Describe iron metabolism						Biochemistry	
PA15.1	Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency						Biochemistry, General Medicine	
PA16.1	Define and classify hemolytic anemia							
PA16.2	Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia							
PA16.3	Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anemia and thalassemia							
PA16.4	Describe the etiology, pathogenesis, hematologic indices and peripheral blood picture of Acquired hemolytic anemia							
PA25	Describe bilirubin metabolism, enumerate the etiology and pathogenesis of jaundice, distinguish between direct and indirect hyperbilirubinemia	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Biochemistry, General Medicine	

Dermatology, Venereology & Leprosy

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
DR17.1	Enumerate and identify the cutaneous findings in Vitamin A deficiency	K/S	SH	Y	Lecture, Small group discussion, Bedside clinic	Skill assessment Viva voce	General Medicine, Pediatrics, Biochemistry	
DR17.2	Enumerate and describe the various skin changes in Vitamin B complex deficiency	K	KH H		Lecture	Written/ Viva voce		
DR17.3	Enumerate and describe the various changes in Vitamin C deficiency							
DR17.4	Enumerate and describe the various changes in Zinc deficiency				Lecture, Small group discussion			

Ophthalmology

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
OP7.1	Describe the surgical anatomy and the metabolism of the lens	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Biochemistry, Human Anatomy	

General Medicine

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
IM2.3	Discuss and describe the lipid cycle and the role of dyslipidemia in the pathogenesis of atherosclerosis	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Physiology, Biochemistry	
IM2.12	Choose and interpret a lipid profile and identify the desirable lipid profile in the clinical context	S	SH		Bed side clinic, DOAP session	Skill assessment	Biochemistry	
IM2.18	Discuss and describe the indications, formulations, doses, side effects and monitoring for drugs used in the management of dyslipidemia	K	KH		Lecture Small group discussion	Written/ Viva voce	Pharmacology, Biochemistry	
IM11.12	Perform and interpret a capillary blood glucose test	S	P	Y	Bed side clinic, DOAP session	Skill assessment	Pathology, Biochemistry	
IM11.13	Perform and interpret a urinary ketone estimation with a dipstick							
IM13.1	Describe the clinical epidemiology and inherited & modifiable risk factors for common malignancies in India	K	K		Lecture, Small group discussion	short note/ Viva voce	Pathology, Biochemistry	
IM23.1	Discuss and describe the methods of nutritional assessment in an adult and calculation of caloric requirements during illnesses		KH			Written/ Viva voce	Physiology, Biochemistry	Pediatrics
IM23.2	Discuss and describe the causes and consequences of protein caloric malnutrition in the hospital						Physiology, Biochemistry	Pediatrics
IM23.3	Discuss and describe the aetiology, causes, clinical manifestations, complications, diagnosis and management of common vitamin deficiencies						Physiology, Biochemistry	Pediatrics

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
IM23.4	Enumerate the indications for enteral and parenteral nutrition in critically ill patients						Physiology, Biochemistry	Pediatrics
IM24.22	Describe and discuss the aetiopathogenesis, clinical presentation, complications, assessment and management of nutritional disorders in the elderly						Physiology, Biochemistry	
IM11.12	**Number required to certify P:2** Perform and interpret a capillary blood glucose test	S	P	Y	Bed side clinic, DOAP session		Pathology, Biochemistry	
IM11.13	**Number required to certify P:2** Perform and interpret a urinary ketone estimation with a dipstick							

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Pediatrics

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PE9.1	Describe the age-related nutritional needs of infants, children and adolescents including micronutrients and vitamins	K	KH	Y	Lecture, Small Group discussion	Written/ Viva voce	Community Medicine, Biochemistry	
PE9.3	Explains the Calorific value of common Indian foods		K				Biochemistry	
PE10.1	Define Describe the etio-pathogenesis , Classify including WHO classification , clinical features, complication and management of Severe Acute Malnourishment (SAM) and Moderate Acute Malnutrition (MAM)		KH				Physiology, Biochemistry	
PE10.2	Outline the clinical approach to a child with SAM and MAM	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce	Physiology, Biochemistry	
PE10.3	Assessment of a patient with SAM and MAM, diagnosis, classification and planning management including hospital and community-based intervention, rehabilitation and prevention	S	SH		Bed side clinics, Skill Lab	Skill station		
PE11.1	Describe the common etiology, clinical features and management of Obesity in children	K	KH		Lecture, Small group discussion	Written/ Viva voce	Physiology, Biochemistry, Pathology	
PE12.1	Discuss the (RDA) , dietary sources of Vitamin A and their role in Health and disease		K				Biochemistry	
PE12.2	Describe the causes, clinical features, diagnosis and management of Deficiency / excess of Vitamin A		KH					
PE12.3	Identify the clinical features of dietary deficiency / excess of Vitamin A	S	SH		Bed side clinics, Small group discussion	Document in log book		
PE12.4	Diagnose patients with Vitamin A deficiency, Classify and plan management			N				
PE12.5	Discuss the Vitamin A prophylaxis program and their recommendations	K	K	Y	Lecture, Small group Discussion	Written/ Viva voce		
PE12.6	Discuss the RDA, dietary sources of Vitamin D and their role in Health and disease							
PE12.7	Describe the causes, clinical features, diagnosis and management of Deficiency / excess of Vitamin D (Rickets and Hypervitaminosis D)		KH				Biochemistry, Physiology, Pathology	
PE12.8	Identify the clinical features of dietary deficiency of Vitamin D	S	SH		Bedside clinics, Skills lab	Document in log book		
PE12.9	Assess patients with Vitamin D deficiency, Diagnose, Classify and plan management	S	SH	Y	Bed side clinics	Document in log book	Biochemistry, Physiology, Pathology	

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Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PE12.11	Discuss the RDA, dietary sources of Vitamin E and their role in Health and disease	K	K	N	Lecture, Small group discussion	Written/ Viva voce	Biochemistry	
PE12.12	Describe the causes, clinical features, diagnosis and management of deficiency of Vitamin E		KH			Written/ Viva voce		
PE12.13	Discuss the RDA , dietary sources of Vitamin K and their role in Health and disease		K				Biochemistry, Physiology, Pathology	
PE12.14	Describe the causes, clinical features, diagnosis , management and prevention of Deficiency of Vitamin K		KH					
PE12.15	Discuss the RDA , dietary sources of Vitamin B and their role in Health and disease		K	Y			Biochemistry	
PE12.16	Describe the causes, clinical features, diagnosis and management of Deficiency of B complex Vitamins		KH		Lecture, Small group discussion			
PE12.17	Identify the clinical features of Vitamin B complex deficiency	S	SH		Bedside clinics, Skills lab	Document in log book		
PE12.18	Diagnose patients with Vitamin B complex deficiency and plan management							
PE12.19	Discuss the RDA, dietary sources of Vitamin C and their role in Health and disease	K	KH	N	Lecture, Small group discussion	Written/ Viva voce		
PE12.20	Describe the causes, clinical features, diagnosis and management of Deficiency of Vitamin C (scurvy)							
PE12.21	Identify the clinical features Vitamin C deficiency	S	SH		Bed side clinics, Skill lab	Document in log book		
PE13.1	Discuss the RDA, dietary sources of Iron and their role in health and disease	K	K	Y	Lecture, Small group discussion	Written/ Viva voce	Pathology, Biochemistry	
PE13.2	Describe the causes, diagnosis and management of Fe deficiency		KH			Written/ Viva voce		
PE13.3	Identify the clinical features of dietary deficiency of Iron and make a diagnosis	S	SH		Bed side clinics, Skill Lab	Document in log book		
PE13.4	Interpret hemogram and Iron Panel				Bed side clinic, Small group discussion	Skill Assessment		
PE13.7	Discuss the RDA , dietary sources of Iodine and their role in Health and disease	K	K		Lecture, Small group discussion	Written/ Viva voce	Biochemistry	
PE13.8	Describe the causes, clinical features, diagnosis and management of Deficiency of Iodine		KH					
PE13.9	Identify the clinical features of Iodine deficiency disorders	S	SH	N				
PE13.10	Discuss the National Goiter control program and their recommendations	K	K	Y	Lecture, Small group discussion	Written/ Viva voce		
PE13.11	Discuss the RDA, dietary sources of Calcium and its role in Health and disease	K	K	Y	Lecture, Small group discussion	Written/ Viva voce	Biochemistry, PSM	
							Biochemistry	

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Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess-ment	Vertical	Horizon-tal
PE13.12	Describe the causes, clinical features, diagnosis and management of Ca Deficiency		KH					
PE13.13	Discuss the RDA , dietary sources of Magnesium and their role in Health and disease		K	N				
PE13.14	Describe the causes, clinical features, diagnosis and management of Magnesium Deficiency		KH					
PE19.1	Explain the components of the Universal immunization Program and the sub National Immunization Programs			Y			Community Medicine, Microbiology	
PE19.2	Explain the epidemiology of Vaccine preventable diseases	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		
PE19.3	Vaccine description with regards to Classification of vaccines, Strain used, Dose, route, schedule, Risks benefits and side effects, indications and contraindications		KH	Y				
PE19.4	Define cold chain and discuss the methods of safe storage and handling of vaccines		KH	Y				
PE19.5	Discuss immunization in special situations – HIV positive children, immunodeficiency, preterm, organ transplants, those who received blood and blood products, splenectomised children, Adolescents, travellers		KH	Y				
PE21.11	Perform and interpret the common analytes in a Urine examination	S	SH	Y	Bed side clinic Labs, Skill lab	Skill assessm ent	Biochemistry, Pathology	
PE29.16	Discuss the Indications for Hemoglobin electrophoresis and interpret report	K	K	N	Small group discussion	Viva voce	Biochemistry	
PE33.6	Perform and interpret Urine Dip Stick for Sugar	S	P	Y	DOAP session	Skill assessm ent	Biochemistry	
PE33.6	**Number required to certify P:3** Perform and interpret Urine Dip Stick for Sugar	S	P	Y				

General Surgery

Integration		Domain K/S/A/C	Level K/KH/ SH/P	Core (Y/N)	Methods		Integration	
					T/L	Assess -ment	Vertical	Horizon-tal
SU1.1	Describe basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators.	K	KH	Y	Lecture, Bed side clinic and Small group discussion.	Written/ Viva voce.	Physiology, Biochemistry	
SU1.2	Describe the factors that affect the metabolic response to injury.						Biochemistry	
SU9.1	Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient.				Lecture, Small group discussion.		Biochemistry, Microbiology, Pathology	
SU12.3	Discuss the nutritional requirements of surgical patients, the methods of providing nutritional support and their complications.				Lecture, Small group discussion, Bedside clinic discussion		Biochemistry	

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SBKS MEDICAL INSTITUTE & RESEARCH CENTRE

EVIDENCE BASED EDUCATION SYSTEM

PROPOSAL FOR REVISION OF EBM COURSE PLAN

AIM:

1. *Innovative T-L approach for UG teaching*
2. *Student centric interactive learning*
3. *Adult learning*
4. *Application based study*
5. *Credit based assessment*

OUTLINE:

The proposed Module is based on EB curriculum incorporates EBES concepts in Teaching, Learning & Evaluation.

The silent features of proposed Module are:

1. *There shall be 4 modules for undergraduate medical student, one module per academic year.*
2. *Each module shall have*
    a. *Theory lectures*
    b. *Practical classes &/ hands on exercise&/ role modelling*
    c. *Peer Teaching, small group discussion*
    d. *Internal assessment &/ Assignment*
3. *Teaching staff shall be appointed for each module on prior basis. Each trained faculty can work as faculty for EBM teaching.*
4. *At end of each module students shall be given module completion certificates*
5. *Internal Evaluation will be based on their attendance, participation and performance throughout the module.*

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COURSE PLAN & SYLLABUS:

MODULE I

- ***I MBBS***
- ***Total hours: 16 hrs***
- ***Phase coordinators: Mrs Hiral Panchal, Assistant Professor, Physiology***
- ***Preferably in II term***

A. Content

- *Introduction to the concept of Evidence Based Medicine and various other aspects*
- *Introduction to Medical Database*
- *Internet use Protocols*
- *Steps of Evidence based decision making*
- *Importance of EBP*

B. Syllabus

Topic	*Hrs*	*Facilitator/Department*
Registration & Inauguration		
EBES in SVDU		
Introduction to EBM & Why EBM		
ICO-Introduction		
ICO-Hands on		
EBES Module reading	*5*	
Source of Evidence		
Computer skills required for searching		
Hands on searching	*5*	
Home Assignments/Group activity with facilitator		
Presentation of assignments		
Feedback & Valedictory		

C. Assessment: Peer teaching, Assignments

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MODULE 2

- ***II MBBS***
- ***Total hours: 16 hrs***
- ***Phase coordinators: Dr Sunil Doshi, Assistant Professor, FM***
- ***Preferably in IV term***

A. Content

- *Research designs as related to EBP*
- *Searching strategies*
- *Levels of Evidence*
- *Critical appraisal of article*

B. Syllabus

Topic	***Hrs***	***Facilitator/Department***
Registration & Inauguration		
Revision	*5*	
ICO- Formulation of research question		
EBES Module reading		
Research Designs		
Pyramid of Evidence-Concept		
Various search engines(&Databases)		
A Advance Search with filters		
H Hands on searching/peer teaching		
Group activity with facilitator/Assignments		
Presentation of assignments		
Feedback & Valedictory		

C. Internal assessment will be based on assignments and performance

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MODULE 3

- ***III MBBS Part-I***
- ***Total hours: 16 hrs (Three parts)***
- ***Phase coordinators: Dr Nirali Chouhan, Professor, ENT***
- ***Preferably in VII term***

A. Content

- *Formulation of Question (PICO)*
- *Revision of research designs*
- *Evidence generating projects*
-

B. Syllabus

Topic	***Hrs***	***Facilitator/Department***
Introduction of EVIGenCHIP	*1*	
Research question & Problem	*1*	
Research designs (summary)	*1*	
Ethics in Research	*1*	
Group activities with mentor (Module reading)	*3*	
LRC visit	*3*	
Presentation	*6*	

C. Internal assessment will be based on EviGENCHIP assignments and performance

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MODULE 4

- ***III MBBS Part-II***
- ***Total hours: 16 hrs***
- ***Phase coordinators: Dr Prashant Modi, Associate Professor, Department of Paediatric***
- ***Preferably in IX term***

A. Content

- *Critical Appraisal of all study designs*
- *Bio Statistics and its application in EBM*
- *Evidence based treatment protocol*
- *Clinical query and future scope of EBM*

B. Syllabus

Topic	Hrs	Facilitator/Department
Review	1	
Hypothesis testing, Bias & error	1	
Biostatistics application, OR, RR, CI	2	
Hands on for statistics/Peer teaching	3	
How to generate evidence & evidence based protocol	1	
Communication skill in research & critical appraisal	1	
Hands on for critical appraisal	3	
Clinical Query	1	
Submission & Presentation	3	

C. Internal assessment will be based on clinical query assignments and performance

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Sumandeep Vidyapeeth
An Institution Deemed to be University
Vill. Piparia, Taluka: Waghodia.
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