Undergraduate Assessment Record

Physiology

The TN Dr. M.G.R. Medical University
Chennai

The Tamil Nadu Dr.M.G.R. Medical University
Chennai

Under Graduate Assessment Record

Department of Physiology

Preface

Competency based education implemented by this university is an outcome-based learning on a framework of competencies. The present system needs an ongoing and longitudinal assessment to identify the learning, enable learning opportunities and acquire the mandated competency. Consequently, this university is enabling this assessment record to decide if the learner has acquired the mandated competencies.

This assessment record is designed to collect and analyse data of a student's learning in relation to a required competency and the learner's stage of training, based on - use of knowledge, technical skills, clinical reasoning, communication, emotions, values and reflection continuously and consistently and not isolated to the final examination.

As given in the MCI document on "Competency Based Assessment Module for Undergraduate Medical Education-2019" - "Informal assessments should happen during teaching-learning activities with the express purpose of finding out the stage of the student and taking corrective action in teaching-learning methodology on an ongoing basis. During lectures, small groups or seminars, use of techniques like clickers, one-minute papers and muddiest point provide valuable information to check understanding and provide developmental feedback. Same can be done during practical/clinical teaching using one-minute preceptor (OMP) or SNAPPS technique (Summarize history and findings, Narrow the differential; Analyse the differential; Probe preceptor about uncertainties; Plan management; Select case-related issues for self-study). Many of these do not need to be considered for pass/fail decisions but are useful to aid learning and acquire competencies. These can be planned by the teachers on a day to day basis and modified depending on the tasks at hand.

This Assessment Record for the Undergraduates is to be maintained by the Faculty of the concerned Department and shall be shown to the student during the feedback sessions and at the end of the course period. The Assessment Record should be retained in the Department until the student completes the course.

Table of Contents

1. University Norms for Assessment of the Course

a. Formative / Internal Assessment

No	Type of Assessment	Methods of Assessment	Total Marks	Min Pass Mark
1	**Theory Component**			
a	Theory Tests (Average of 8 Tests)	MCQ, VSAQ, SAQ, LAQ	40	
b	Formative Assessment	Assignments	10*	
		Integrated Sessions		
		Self-Directed Learning		
	Total		**50**	
2	**Practical Component**			
a	Practical (Average of 4 tests)	PE, OSPE, OSCE, Viva	40	
b	Formative Assessment	Early Clinical Exposure	10*	
		AETCOM Learning		
	Total		**50**	
	Grand Total		**100**	**50**

Note:

1. Internal assessment shall be based on day-to-day assessment. It shall relate to different ways in which learners participate in learning process including assignments, preparation for seminar, integrated classes, participation in ECE, AETCOM, SDL, Projects.
2. Regular periodic examinations shall be conducted throughout the course. There shall be no less than 8 internal assessment examinations and no less than 4 practical examinations.
3. In 1.b*, Assignments, Integrated sessions and Self-Directed Learning will be assessed independently for 10 Marks each. Their average is computed for 10 marks.
4. In 2.b*, Early Clinical Exposure and AETCOM Learning will be assessed independently for 10 Marks each. Their average is computed for 10 marks.
5. Day to day records and log book (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills. Colleges and teachers should try to build their valid assessment tools.
6. Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.
7. Learners must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.
8. Feedback should be provided to learners throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and learners must be sensitized to giving and receiving feedback.

9. The results of IA should be displayed on notice board within 2 weeks of the test and an opportunity provided to the learners to discuss the results and get feedback on making their performance better. Remedial measures for learners who are either not able to score qualifying marks or have missed on some assessments due to any reason(s) shall be allowed with a record.
10. It is also recommended that learners should sign with date whenever they are shown IA records in token of having seen and discussed the marks.
11. Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

b. Summative Assessment - University Examination

University examinations will consist of

1. Theory: 2 papers of 100 marks each. (Total 200 marks)
2. Practical Exam + Viva: 100 marks

Note:

1. Theory Examinations: Nature of questions will include different types such as structured essays (Long Answer Questions - LAQ), Short Answers Questions (SAQ) and objective type questions (e.g. Multiple-Choice Questions - MCQ). Marks for each part should be indicated separately. MCQs shall be accorded a weightage of not more than 20% of the total theory marks. In subjects that have two papers, the learner must secure at least 40% marks in each of the papers with minimum 50% of marks in aggregate (both papers together) to pass.
2. Practical/clinical examinations will be conducted in the laboratory. The objective will be to assess proficiency and skills to conduct experiments, interpret data and form logical conclusion. Emphasis should be on candidate’s capability to demonstrate skills, write a description, analyse the case etc
3. Viva/oral examination should assess approach to problem solving, applied situations, attitudinal, ethical and professional values. Candidate’s skill in interpretation of common investigative data, X-rays, identification of specimens, etc. is to be also assessed
4. Internal assessment marks are not to be added to marks of the University examinations and should be shown separately in the grade card.
5. Pass in University Exam will be 50% marks in theory and practical

These concepts have been incorporated from the "Competency Based Assessment Module for Undergraduate Medical Education-2019"

2. Curriculum Vitae

Name of Student											
Name of Parent/Guardian											
Date of Birth & Age											
Permanent Address											
Address for Postal Communication											
Landline Phone (Home)											
Mobile Phone (Parent/Guardian)											
Mobile Phone (Parent/Guardian)											
Mobile Phone (Student)											
Email ID (Parent/Guardian)											
Email ID (Student)											

Signature of Student

3.Understanding Competency Based Assessment

Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually. However, as stated earlier, using individual domain framework may not always result in making an accurate assessment of the specific competency. Therefore, efforts should be made to include competencies in the assessment process as much as possible. CBA is very useful to convey a message to the learners to structure their learning around competency framework.

- CBA operates within the framework of competencies. Assessment tools should align competencies/objectives.
- CBA should help to acquire competencies/objectives (*Assessment for learning*) and their certification (Assessment *of learning*).
- CBA is continuous and ongoing process with opportunities for providing developmental feedback.
- Direct observations of learners improve utility of CBA and feedback.
- Multiple assessors, multiple tools and multiple assessments improve the validity and reliability of CBA.

Formative & Internal Assessment (IA)

Formative assessment is an assessment conducted during the instruction with the primary purpose of providing feedback for improving learning. It also helps the teachers and learners to modify their teaching learning strategies. The feedback is central to formative assessment and is linked to deep learning, seeking to explore the educational literature and its pedagogical lessons for healthcare educational practice. It provides inputs to both learners and teachers regarding adequacy of teaching-learning. A variety of feedback principles and techniques can be used depending on the context.

Although there can be a debate on the summative or formative nature of IA, it still provides the best opportunities for formative purposes. IA is when assessment is done by the teachers who have taught the subject. It overcomes the limitations of day-to-day variability and allows larger sampling of topics, competencies and skills.

In competency based curriculum, IA provides useful avenues for both formative and summative assessment. The IA focuses on the process of learning i.e. how the learners have learnt throughout the course. This assessment gives priority to psychomotor, communication and affective domains. These are those domains which are usually not assessed by the traditional assessment methods. It should involve all faculty members of a department (Senior Residents upwards) and not just one or two senior teachers. This helps to build the ownership of teaching-learning and assessment as well as provide ‘hands-on’ experience in assessment to all teachers. In that way, IA can be a very useful tool for assessing all competencies in any competency based curriculum.

IA should not be considered as an assessment without external controls and can be utilized in a manner to overcome some its perceived weaknesses. Utility of IA can be further improved by involving all teachers in the department and limiting the contribution of individual teacher, test or tool.

Designing a system of assessment

While designing an internal assessment, all domains of learning i.e. cognitive, psychomotor and affective should be taken into account and weightage should be assigned to these domains for assessment. We can divide various domains into smaller components and assign marks to each component. Make a blueprint of assessment, then circulate to few learners and faculty, take their comments/ views/feedback and revise as per the need. Miller's pyramid (figure 2) provides a simple way to select appropriate tool for assessment. Efforts should be made to climb higher in the pyramid.6, 13 The following adapted example illustrates this:

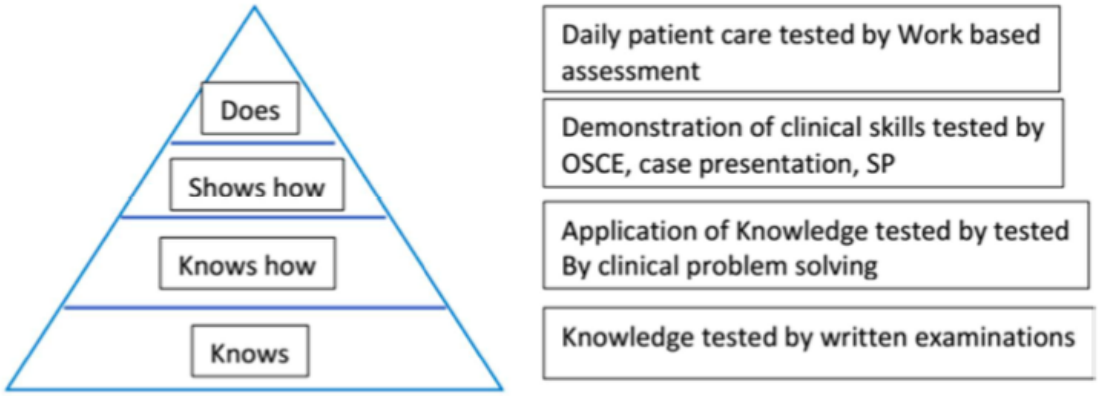

Figure 2. Assessment methods as per levels of competency (Adapted from Ramani) OSCE: Objective Structured Clinical Examination, SP: Standardised/ Simulated Patients

The key to building validity and to make CBA assessment useful is to align it with competencies/objectives. Including some aspects from competencies of other phases is useful to assess integration of concepts. Some examples of such alignment can be seen in the competency sheet given in Table1.

Table 1. Deriving assessment methods from objectives

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

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

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

PA42.3.1	At the end of the session **the PII student** must be able to enumerate the most common causes of meningitis correctly	Short note or part of structured essay: Enumerate 5 causes of meningitis based on their prevalence in India
PA42.3.2	At the end of the session the PII student must be able to enumerate the components of a CSF analysis correctly	Short note or part of structured essay: Enumerate the components tested in a CSF analysis
PA4.3.3	At the end of the session the PII student must be able to **describe** the CSF features for a given etiologic of meningitis **accurately**	Short note or part of structured essay:Describe the CSF findings that are characteristic of tuberculous meningitis
PA4.3.4	At the end of the session the PII student must the able to identify the aetiology of meningitis correctly from a **given set of CSF parameters**	Short note / part of the structured essay/ Skill station/ Viva: Review the CSF findings in the following patient and identify (write or vocalise) the most likely ethology

Table 1. Deriving assessment methods from objectives

A useful approach, especially for affective, psychomotor and communication domains, is to adopt the concept of assessment toolbox. A toolbox is a listing of available tools (and rating forms, if required), which are suggested for a particular competency or sub-competency and aims at improving the value of assessment data.14 The listed tools are suggestions only and can be freely used either singly or in combination by teachers to suit particular requirements. Efforts should be made to use multiple tools even for a given competency to improve validity and reliability of assessment. While assessment will continue to be subject based, efforts must be made to ensure that phase appropriate correlates are assessed to determine if the learner has internalised and integrated the concept and its application.

Internal Assessment

Scheduling of IA

A student who has not taken minimum required number of tests for IA each in theory and practical will not be eligible for University examinations. **Proper records of the work should be maintained which will form the basis for the learners' internal assessment and should be available to the assessors at the time of inspection of the college by the Medical Council of India.**

Components of IA

(i) Theory IA can include: theory tests, seminars, quizzes, interest in subject, scientific attitude etc. Written tests should have short notes and creative writing experiences.

(ii) Practical/Clinical IA can include: practical/clinical tests, Objective Structured Clinical Examination (OSCE)/Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), Mini Clinical Evaluation Exercise (mini-CEX), records maintenance and attitudinal assessment.

Colleges and teachers should try to build capacity to use a variety of assessment tools. A number of tools are available in the form of assessment toolbox. The construct validity and predictive utility of internal assessment is high. Many of the tools mentioned for IA may appear subjective. However, by virtue of being high on validity and by conveying a message to the learners to not ignore skills, attitudes and communication (educational impact), they contribute to better learning. Since stakes at IA are low, the use of expert subjective assessments to cover areas which are not assessable by conventional objectivised assessment tools is appropriate. There is plenty of evidence in literature to suggest that expert subjective assessments can be as reliable as highly objective ones.

Assessment of Foundation Course should be included in formative assessment of first phase. Assessment of Early Clinical Exposure should be included in formative as well as in internal assessment in first phase subject-wise. There should be at least one assessment based on direct observation of skills, attitudes and communication at all levels. Communication and attitudinal assessment should also be built in all assessments as far as possible.

Feedback in IA

Feedback should be provided to learners throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and learners must be sensitized to giving and receiving feedback. The results of IA should be displayed on notice board within 2 weeks of the test and an opportunity provided to the learners to discuss the results and get feedback on making their performance better. It is also recommended that learners should sign with date whenever they are shown IA records in token of having seen and discussed the marks. Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

(These concepts have been incorporated in the proposed Regulations in Graduate Medical Education, 2019 (GMER 2019) and are reproduced here.

4. Formative Assessment of Classroom Learning

The term "Classroom Learning" mentioned here includes any learning that happens within the ambit of the department as large group and small group teaching, demonstrations, Clinical Physiology classes, Haematology practical classes etc. The learning in the department predominantly fits into the Scale of 1 and 2 of the 5 level Blooms Taxonomy.

The Assessment Methods would include

1. End of Lecture Class/Module Assessment: 5-8 MCQ's solved over 5-8minutes
2. End of Clinical Physiology Module / Class: OSCE of 10-12minutes
3. End of Haematology Class/Module: Spotting / OSPE

For effective assessment and grading of performances a Likert's scale is given as under:

Grade	Characteristic
1	Score < 35% marks in the end of class assessments
2	Score 35%-50% marks in the end of class assessments
3	Score >50%-60% marks in the end of class assessments
4	Score >60%-75% marks in the end of class assessments
5	Score > 75% marks in the end of class assessments

Number	COMPETENCY The student should be able to	Level	Grading Scale					Initials of Facilitator
			1	2	3	4	5	
General Physiology								
PY1.1	Describe the structure and functions of a mammalian cell	KH						
PY1.2	Describe and discuss the principles of homeostasis	KH						
PY1.3	Describe intercellular communication	KH						
PY1.4	Describe apoptosis - programmed cell death	KH						
PY1.5	Describe and discuss transport mechanisms across cell membranes	KH						
PY1.6	Describe the fluid compartments of the body, its ionic composition and measurements	KH						
PY1.7	Describe the concept of pH and Buffer systems in the body	KH						
PY1.8	Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue	KH						
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	KH						
Haematology (Blood)								

PY2.1	Describe the composition and functions of blood components	KH						
PY2.2	Discuss the origin, forms, variations and functions of plasma proteins	KH						
PY2.3	Describe and discuss the synthesis and functions of Haemoglobin and explain its breakdown. Describe variants of haemoglobin	KH						
PY2.4	Describe RBC formation (erythropoiesis and its regulation) and its functions	KH						
PY2.5	Describe different types of anaemias and Jaundice	KH						
PY2.6	Describe WBC formation (granulopoiesis) and its regulation	KH						
PY2.7	Describe the formation of platelets, functions and variations	KH						
PY2.8	Describe the physiological basis of hemostasis and, anticoagulants. Describe bleeding and clotting disorders (Hemophilia, purpura)	KH						
PY2.9	Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion	KH						
PY2.10	Define and classify different types of immunity. Describe the development of immunity and its regulation	KH						
PY2.11	Estimate Hb, RBC, TLC, RBC indices, DLC, Blood groups, BT/CT	SH						
PY2.12	Describe test for ESR, Osmotic fragility, Hematocrit. Note the finding and interpret the test results etc	KH						
PY2.13	Describe steps for reticulocyte and platelet count	KH						
Nerve and Muscle Physiology								
PY3.1	Describe the structure and functions of a neuron and neuroglia; Discuss nerve growth factor and other growth factors/cytokines	KH						
PY3.2	Describe the types, functions and properties of nerve fibers	KH						
PY3.3	Describe the degeneration and regeneration in peripheral nerves	KH						
PY3.4	Describe the structure of neuromuscular junction and transmission of impulses	KH						
PY3.5	Discuss the action of neuromuscular blocking agents	KH						
PY3.6	Describe the pathophysiology of Myasthenia gravis	KH						
PY3.7	Describe the different types of muscle fibres and their structure	KH						
PY3.8	Describe action potential and its properties in different muscle types (skeletal and smooth)	KH						
PY3.9	Describe the molecular basis of muscle contraction in skeletal and in smooth muscles	KH						
PY3.10	Describe the mode of muscle contraction (isometric and isotonic)	KH						
PY3.11	Explain energy source and muscle metabolism	KH						
PY3.12	Explain the gradation of muscular activity	KH						
PY3.13	Describe muscular dystrophy: myopathies	KH						
PY3.14	Perform Ergography	SH						

PY3.15	Demonstrate effect of mild, moderate and severe exercise and record changes in cardio respiratory parameters	SH						
PY3.16	Demonstrate Harvard Step test and describe the impact on induced physiologic parameters in a simulated environment	SH						
PY3.17	Describe Strength-duration curve	KH						
PY3.18	Observe with Computer assisted learning (i) amphibian nerve-muscle experiments (ii) amphibian cardiac experiments	KH						
Gastro-intestinal Physiology								
PY4.1	Describe the structure and functions of digestive system	KH						
PY4.2	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion	KH						
PY4.3	Describe GIT movements, regulation and functions. Describe defecation reflex. Explain the role of dietary fibre	KH						
PY4.4	Describe the physiology of digestion and absorption of nutrients	KH						
PY4.5	Describe the source of GIT hormones, their regulation and functions	KH						
PY4.6	Describe the Gut-Brain axis	KH						
PY4.7	Describe and discuss the structure and functions of liver and gall bladder	KH						
PY4.8	Describe and discuss gastric function tests, pancreatic exocrine function tests and liver function tests	KH						
PY4.9	Discuss the physiology aspects of: Peptic ulcer, gastroesophageal reflux disease, vomiting, diarrhoea, constipation, adynamic ileus, Hirschsprung's disease	KH						
PY4.10	Demonstrate the correct clinical examination of the abdomen in a normal volunteer or simulated environment	SH						
Cardiovascular System								
PY5.1	Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.	KH						
PY5.2	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions	KH						
PY5.3	Discuss the events occurring during the cardiac cycle	KH						
PY5.4	Describe generation, conduction of cardiac impulse	KH						
PY5.5	Describe the physiology of electrocardiogram (ECG), its applications and cardiac axis	KH						
PY5.6	Describe abnormal ECG, arrythmias, heart block and myocardial Infarction	KH						
PY5.7	Describe and discuss haemodynamics of circulatory system	KH						
PY5.8	Describe and discuss local and systemic cardiovascular regulatory mechanisms	KH						
PY5.9	Describe the factors affecting heart rate, regulation of cardiac output and blood pressure	KH						

PY5.10	Describe and discuss regional circulation	KH						

	including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation							
PY5.11	Describe the patho-physiology of shock, syncope and pheart failure	KH						
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a voluntary or simulated environment	SH						
PY5.13	Record and interpret normal ECG in a volunteer or simulated environment	SH						
PY5.14	Observe cardiovascular autonomic function tests in a volunteer or simulated environment	SH						
PY5.15	Demonstrate the correct clinical examination of the cardiovascular system in a normal volunteer or simulated environment	SH						
PY5.16	Record arterial pulse tracing using finger plethysmography in a volunteer or stimulated environment	SH						
Respiratory Physiology								
PY6.1	Describe the functional anatomy of respiratory tract	KH						
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	KH						
PY.6.3	Describe and discuss the transport of respiratory gases: oxygen and carbon dioxide	KH						
PY.6.4	Describe and discuss the physiology of high altitude and deep sea diving	KH						
PY6.5	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness	KH						
PY6.6	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis and asphyxia; drowning, periodic breathing	KH						
PY6.7	Describe and discuss lung function tests and their clinical significance	KH						
PY6.8	Demonstrate the correct technique to perform and interpret spirometry	SH						
PY6.9	Demonstrate the correct clinical examination of respiratory system in a normal volunteer or simulated environment	P						
PY6.10	Demonstrate the correct technique to perform measurement of peak expiratory flow rate in a normal volunteer or simulated environment	SH						
Renal Physiology								
PY7.1	Describe structure and functions of kidney	KH						
PY7.2	Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system	KH						
PY7.3	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion, concentration and diluting mechanism	KH						
PY7.4	Describe & discuss the significance and implication of renal clearance	KH						
PY7.5	Describe the renal regulation of fluid and electrolytes & acid-base balance	KH						
PY7.6	Describe the innervations of urinary bladder,	KH						

	physiology of micturition and its abnormalities							
PY7.7	Describe artificial kidney, dialysis and renal transplantation	KH						
PY7.8	Describe & discuss Renal function tests	KH						
PY7.9	Describe cystometry and discuss the normal cystometrogram	KH						
Endocrine Physiology								
PY8.1	Describe the physiology of bone and calcium metabolism	KH						
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	KH						
PY8.3	Describe the physiology of thymus and pineal gland	KH						
PY8.4	Describe function tests: Thyroid gland, Adrenal cortex, Adrenal medulla and pancreas	KH						
PY8.5	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, stress response. Outline the psychiatry component pertaining to metabolic syndrome	KH						
PY8.6	Describe and differentiate the mechanism of action of steroid, protein and amine hormones	KH						
Reproductive Physiology								
PY9.1	Describe and discuss sex determination; sex differentiation and their abnormalities and outline psychiatry and practical implication of sex determination	KH						
PY9.2	Describe and discuss puberty; onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.	KH						
PY9.3	Describe male reproductive system: functions of testis and control of spermatogenesis and factors modifying it and outline its association with psychiatric illness	KH						
PY9.4	Describe female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes	KH						
PY9.5	Describe and discuss the physiological effects of sex hormones	KH						
PY9.6	Enumerate the contraceptive methods for male and female. Discuss their advantages and disadvantages	KH						
PY9.7	Describe and discuss the effects of removal of gonads on physiological functions	KH						
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it	KH						
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	KH						
PY9.10	Discuss the physiological basis of various pregnancy tests	KH						
PY9.11	Discuss the hormonal changes and their effects during perimenopause and menopause	KH						

PY9.12	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility	KH						
Neurophysiology								
PY10.1	Describe and discuss the organisation of nervous system	KH						
PY10.2	Describe and discuss the functions and properties of synapse, reflex and receptors	KH						
PY10.3	Describe and discuss somatic sensations and sensory tracts	KH						
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus	KH						
PY10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)	KH						
PY10.6	Describe and discuss Spinal cord, its functions, lesion and sensory disturbances	KH						
PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	KH						
PY10.8	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production	KH						
PY10.9	Describe and discuss the physiological basis of memory, learning and speech	KH						
PY10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element)	KH						
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	P						
PY10.12	Identify normal EEG forms	S						
PY10.13	Describe and discuss perception of smell and taste sensation	KH						
PY10.14	Describe and discuss patho-physiology of altered smell and taste sensation	KH						
PY10.15	Describe and discuss functional anatomy of ear and auditory pathways and physiology of hearing	KH						
PY10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests	KH						
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	KH						
PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	KH						
PY10.19	Describe and discuss auditory and visual evoked potentials	KH						
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	P						
Integrated Physiology								
PY	Describe and discuss mechanism of temperature	KH						

11.1	regulation							
PY 11.2	Describe and discuss adaptation to altered temperature (heat and cold)	KH						
PY 11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke	KH						
PY 11.4	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects	KH						
PY 11.5	Describe and discuss physiological consequences of sedentary lifestyle	KH						
PY 11.6	Describe physiology of Infancy	KH						
PY 11.7	Describe and discuss physiology of aging; free radicals and antioxidants	KH						
PY 11.8	Discuss and compare cardio-respiratory changes in exercise (isometric & isotonic) with that in the resting state and under different environmental conditions (heat and cold)	KH						
PY 11.9	Interpret growth charts	KH						
PY 11.10	Interpret anthropometric assessment of infants	KH						
PY 11.11	Discuss the concept, criteria for diagnosis of Brain death and its implications	KH						
PY 11.12	Discuss the physiological effects of meditation	KH						
PY 11.13	Obtain history and perform general examination in the volunteer/simulated environment	SH						
PY 11.14	Demonstrate Basic Life Support in a simulated environment	SH						

5. Formative Assessment of Assignments

Note:

1. Formative Assessment involves various methods out of which class assignments are an important instrument.
2. The structure for the assignment should be clearly mentioned at the start. The structure should include an introduction, main body of the assignment and a conclusion if it is an essay work. Illustrations, flow charts, tables and graphs should be part of the submission where ever necessary.
3. Plagiarism should be discouraged.

No	Title of Assignment	MARKS (out of 10 marks)	Initial of Facilitator
1			
2			
3			
4			
5			
6			
7			
8			
9			

No	Title of Assignment	MARKS	Initial of

		(out of 10 marks)	Facilitator
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

6. Formative Assessment of Integrated Sessions

Note:

1. Formative Assessment of integrated teaching sessions involves assessment of student level of sessional learning.
2. The student shall be given a 15-20 MCQ test at the end of the session. This can be both in the offline and online modes,

No	Topic of Integrated Session	MARKS (out of 10 marks)	Initial of Facilitator
1			
2			
3			
4			
5			
6			
7			
8			
9			

No	Topic of Integrated Session	MARKS (out of 10 marks)	Initial of Facilitator
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

7. Formative Assessment of Early Clinical Exposure

Note:

1. Formative Assessment of ECE sessions involves assessment of student level of learning through assessment of the synopsis and reflection
2. The student shall submit the same at the end of the session. This can be both in the offline and online modes.

No	Topic	MARKS (out of 10 marks)	Initial of Facilitator
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

8. Formative Assessment of Self-Directed Learning

Note:

1. Formative Assessment of SDL sessions involves assessment of student level of learning through assessment of the synopsis and bibliography
2. The student shall submit the same at the end of the session. This can be both in the offline and online modes.

No	Topic	MARKS (out of 10 marks)	Initial of Facilitator
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

No	Competency	MARKS (out of 10 marks)	Initial of Facilitator
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

9. Formative Assessment of AETCOM Learning

Note:

1. Formative Assessment of AETCOM sessions involves assessment of student's level of learning through DOPS, OSPE sessions

No	Topic	MARKS (out of 10 marks)	Initial of Facilitator
1			
2			
3			
4			
5			
6			
7			
8			

10. Formative Feedback Record

Note:

1. Feedback should be provided to learners throughout the course so that they are aware of their performance and remedial action can be initiated well in time.
2. The feedbacks need to be structured and the faculty and learners must be sensitized to giving and receiving feedback.
3. The results of IA should be displayed on notice board within 2 weeks of the test and an opportunity provided to the learners to discuss the results and get feedback on making their performance better.
4. The learner should sign with date whenever they are shown IA records in token of having seen and discussed the marks.
5. The learner Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination
6. Some suggestions for handling the Feedback process
    a. Start with the learner's agenda for the session
    b. Evaluate the performance of the learner in the previous sessions and outcomes the learner is trying to achieve
    c. Enquire about problems faced by the learner in the process of learning in the classroom, at home and during the assessments.
    d. Encourage the learner to think about goal setting
    e. Encourage self-assessment and self-solving problems
    f. Offer space for the learner to make suggestions, to generate solutions
    g. Be non-judgmental and specific, prevent vague generalisation, provide balanced feedback
    h. Offers suggestions and alternatives, make suggestions rather than prescriptive comments. Be valuing and supportive
    i. Structure and summarise the session to ensure that learner has some specifics to take home.

Formative Feedback Session			1
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session	2
Date	

Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session	3
Date	

Type of Assessment	
Topic of Assessment	

Feed Back received from Student
Feed Back given to the Student
Remedial Action Suggested

Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session	4
Date	

Type of Assessment	
Topic of Assessment	

Feed Back received from Student
Feed Back given to the Student
Remedial Action Suggested

Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			5
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			6
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			7
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session	8
Date	

Type of Assessment	
Topic of Assessment	

Feed Back received from Student
Feed Back given to the Student
Remedial Action Suggested

Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			9
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			10
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			11
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			12
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session	13
Date	

Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			14
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

Formative Feedback Session			15
Date			
Type of Assessment			
Topic of Assessment			
Feed Back received from Student			
Feed Back given to the Student			
Remedial Action Suggested			
Timeline of Remedial Action			
Signature of Mentor		Signature of Student	

11. Certification of Skills

Note:

1. Certification of Skills (COS) should be provided to learners at all points of the course so that they are aware of their performance and remedial action can be initiated well in time for the student to achieve the goal of obtaining a certified skill.
2. The feedbacks need to be structured and the faculty and learners must be sensitized to giving and receiving feedback.
3. The results of assessment for COS should be discussed at the end of the assessment and an opportunity provided to the learners to discuss the results and get feedback on making their performance better.
4. The learner should be given a date for remedial session wherein they will be reassessed.
5. A maximum of 5 remedial sessions may be offered beyond which he shall not be certified for the current academic session. The university and MCI regulations will be mandatory.
6. Example:

PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures in a volunteer or simulated environment

Type of Skill	PY 5.12A: Record blood pressure PY 5.12B: Record peripheral pulse	
Type of Assessment	A1: OSPE: Place the BP Cuff around the arm of a volunteer. A2: DOPS: Record Blood Pressure of a Volunteer in supine position B1: OSPE: Show the location for feeling radial pulse on a volunteer B2: DOPS: Record the pulse rate in a volunteer in rest	
Performance of Student	A1: OSPE: Fails to place correctly A2: DOPS: Wrong procedure and wrong recording B1: OSPE: Fails to identify the location of the radial pulse B2: DOPS: Wrong procedure	
Feed Back of Learner	The learner "Mr.BPA" states that he was sick and hence did not attend the class	
Feed Back of Facilitator	Facilitator reassures the learner. "Mr.BPA" is adviced to attend a remedial class. The facilitator explains the key points on - how to identify the cuff, parts of BP apparatus, tying the cuff in arm and making a measurement in rest and after exercise. The facilitator also explains the key points on how to identify the radial pulse and making a measurement in rest and after exercise. Mr BPA is asked to make a record of the procedures and and submit the same next working day.	
Remedial Action Suggested	"Mr.BPA" is adviced to repeat the assessments 10days later	
Remedial Assessment	1	A1: OSPE: Place the BP Cuff around the arm of a volunteer. A2: DOPS: Record Blood Pressure of a Volunteer in supine position B1: OSPE: Show the location for feeling radial pulse on a volunteer B2: DOPS: Record the pulse rate in a volunteer in rest
Performance of Student	A1: OSPE: Places correctly A2: DOPS: Correct procedure and recording B1: OSPE: Identifies the location of the radial pulse B2: DOPS: Correct procedure	
Certification of Skill	Certified that the learner has successfully completed the certification of the Skill for competency PY 5.12	
Date of COS	25.3.2019	
Signatures		
	Learner	Facilitator

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

Certification of Skills - Competency PY:.....			
Type of Skill			
Type of Assessment			
Performance of Student			
Feed Back of Learner			
Feed Back of Facilitator			
Remedial Action Suggested			
Remedial Assessment	1	**Date**	
Performance of Student			
Remedial Assessment	2	**Date**	
Performance of Student			
Remedial Assessment	3	**Date**	
Performance of Student			
Remedial Assessment	4	**Date**	
Performance of Student			
Remedial Assessment	5	**Date**	
Performance of Student			
Certification of Skill	Certified / Not Certified		
Date of COS			
Signatures			
	Learner	Facilitator	

12A. Record of Internal Assessment Tests-Theory

No	Topic of Assessment	Type of Assessment	Max Mark	Mark Given	% Mark	Initials of FIC

12B. Record of Internal Assessment Tests-Practical

No	Topic of Assessment	Type of Assessment	Max Mark	Mark Given	% Mark	Initials of FIC

13. ATTENDANCE RECORD

Details	**Percent of Attendance**
Foundation Course (Common for all 3 departments)	
Theory	
Practicals	
Early Clinical Exposure	
Self Directed learning	
AETCOM	