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**STUDENTS ASSESSMENT IN THE FACULTY OF MEDICINE  
UNIVERSITY OF GEZIRA**

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**SUMMARY**

This is a description of (i) 15 methods of evaluation used in the assessment of students (ii) criteria used for selection of those methods (objectives domains, validity, reliability, practicability objectivity)(iii) the absolute criteria tests based on a pre-set MPL (iv) methods of evaluation of the evaluation methods (discriminating index and difficulty index (v) methods of evaluation used in each course in FMUG.

The methods of evaluation used are (1) MCQs (2) essay (3) clinical/oral (4) OSCE (5) practical exam (6) log book (7) write-up (8) attendance (9) performance (10) students product report (11) family problem (12) reports from rural hospital doctors (13) supervisory checklist, (14) peer evaluation, (15) community feedback

**INTRODUCTION**

The Faculty of Medicine University of Gezira (FMUG) curriculum aims to graduate a doctor who is capable of; manage health problems at the level of the individual family and community using a community oriented problem solving approach, work in the community, continue learning, conduct research, observe the code of medical ethics and specialize. The curriculum was developed according to the standard educational spiral (i) determining priority health problems and defining educational objectives (ii) preparing educational programme (iii) planning an evaluation system (iv) implementing the whole programme. It is quite clear that the evaluation system is an integral part of the curriculum and that it was planned together with the whole programme.

The role of evaluation in an educational programme is to assess objectively the achievements of students (students assessment) and assess the effectiveness of the whole programme (programme evaluation) in fulfilling the faculty objectives. The results of

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evaluation are used to modify the programme to suit the learners. This paper starts with a brief discussion of the educational principles relevant to students assessment and the rest of it is a description of the evaluation instruments currently used in the students assessment in FMUG. The nature of a learning objective determines the instrument of its evaluation and hence more than one instrument is always needed to evaluate a learning activity. There is enough evidence that the use of a group of instruments improves the validity and reliability of the examination. Assessment of students is strictly the responsibility of the teacher and therefore teachers should be able to design, use and evaluate the evaluation methods.

**AIMS OF STUDENTS EVALUATION**

1. Licensing: A minimum level of competence is required by the licensing body (General Medical Council) to permit the graduate doctor to practice and hence protecting the society by preventing incompetent personnel from practicing.
2. Graduation: Universities set prior standards which are required for awarding a degree. These standards are based on the educational objectives. Evaluation consists of finding out the extent to which each of those objectives has been attained; success or failure on the part of the student which is the conventional role of examinations.
3. Ranking: Discrimination of students. This is used for placing students in order of merit justifying decisions for: awarding a degree, moving to the next class, selecting students for academic tasks or posts.
4. Motivation of learning: it is an incentive to the learner and it steers the students learning.
5. Integration: Evaluation helps students integrate their achievements in a comprehensive meaningful outcome.
6. Information: Feedback to students and teacher. It keeps the student constantly informed about the instructions he is receiving, tells him what level he has reached, and makes him aware of what parts of the course he has not understood.

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It provides feedback to the teacher to help him modify the learning activities where necessary.

**TYPES OF EVALUATION (FORMATIVE AND CERTIFYING)**

1. Formative (diagnostic)

Students are assessed during the course once or more than once using one of currently used instruments of evaluation e.g. MCQs, Essays, OSCE etc. In the FMUG it is usually conducted at the mid course and it is coupled with an opinionaire about the progress and constraints of the courses especially the missing learning /teaching activities. Those deficiencies are normally rectified during the second half of the course. This type of evaluation:

- informs the student about the amount he still has to learn before achieving his educational objectives,
- measures the progress or gain made by the student,
- guides he student and prompts him to ask for help,
- provides the teacher with progress of students,
- provides the teacher with the difficulties and deficiencies in the courses,
- helps the teacher to make appropriate modification in the course,
- is carried out frequently as the students and teacher feel necessary,
- should NEVER be used to make certifying judgment and its results should NEVER appear in the official records.

2. Certifying (summative) this is conducted at the end of the course and its results are used officially for: licensing, graduation, ranking and dismissal from university.

**CRITERIA FOR SELECTING AN EVALUATION METHOD**

The choice of an evaluation method for assessing students depends essentially on the nature of the educational objective to be tested. Among the characteristics of a test, whatever its nature, four are essential; validity, reliability, objectivity and practicability. Other criteria are also important but they contribute in some degree to the qualities of

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validity and reliability which are the most important two criteria of an evaluation method. To be valid a test must be reliable and relevant as well.

1. Validity:

It is the extent to which the test used really measures what it is intended to measure (a watch is valid in measuring time and is entirely not valid in measuring the patient temperature).

Content validity:

Content validity is determined by looking at the items of the examination by a group of experts. If that group agrees that all the course objectives are covered by the examination, then it is considered a valid examination. Therefore when setting an examination all or at least the majority of the objectives must be covered.

Construction validity:

Each educational objective is best tested by a specific test. MCQs and essays are good in testing knowledge; clinical and OSCE examinations are good in testing skills and attitudes; supervisory check lists are good in testing students in community activities. The test is said to be valid when it measures what the teacher wants to measure. Using MCQs to test for knowledge is a valid test and using MCQs to test for skills is not valid.

2. Reliability:

The consistency with which an instrument measures a given variable a reliable. It is strictly a statistical concept. Some instruments are known to be very reliable like the MCQs and OSCE. Tests like the essay questions and the clinical examinations are considered to be less reliable; however, major modifications are introduced to improve their reliability. Reliability is a statistical concept which is the proportion of the variability or variance in scores which is due to true difference between subjects, thus is the ratio of the variability between subjects to the total variability in the particular scores under consideration.

- inter-rater reliability: the correlation between two raters rating the same performance.

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One of the factors which determine the reliability of an examination is the difference between the raters, inter-rater reliability. A test is said to be reliable when the minimum percentage of agreement between raters is 80% and that is called &

- coefficient
- Minimum accepted level= 0.8
- & coefficient = 0.8

This means that the test can measure up to 80% of accuracy. No method can give a 100% reliability. In measuring reliability you must have more than one item. Enter all the items and then calculate the &- coefficient, if there is consistency (reliable) in the examination then all students will do well in the easy items and do bad in the difficult items and then the test is considered reliable. If the results of the students in the easy or difficult items are very divergent then that test is not reliable and such a result can be obtained even by guessing alone.

Another method of measuring reliability is by giving the same examination to the same group of students twice and if the performance of the students is the same in both occasions then the examination is reliable and if it is different then the examination is not reliable. The situation is compared to: weighing a person twice by a weighing scale and if the same weight is obtained then that weighing scale is reliable.

**3. Objectivity:-**

It is the extent to which independent and competent examiners agree on what constitutes a good answer for each of the elements of a measuring instrument. Therefore it is mandatory that all tests should be written and answered by a group of experts before being given to students

**4. Practicability:-**

It is the overall simplicity of use of a test, both for test constructor and for students. It depends on the time required to construct an examination, to administer and score it and to interpret the results. Do not construct an essay question which need 2 hours

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to answer; do not bring a bleeding patient or a patient in coma in a clinical examination.

Common defects of examinations:

- Triviality: this is a serious defect. Students should never be tested on trivial elements. Sometimes the teacher chooses an important relevant area but he constructs the question on a small sample e.g. asking the student about the size of the sporozoite in a question of Malaria. It is essential for each question to be important and useful
- Ambiguity: this is the use of language which may lead the student to spend more time to understand the question than in answering it.
- Complicated instructions: in some tests the instructions for students on how to solve a problem are so complicated that what is really evaluated is the student ability to understand the instructions.

**DISCRIMINATION INDEX:**

It is essential to discriminate between good and bad students and to rank them; admission to school, move from one class to another, and select for studies etc. The discrimination index is measured by the standard deviation (SD) method. The mean and standard deviation of the students results in a specific item are calculated. If the SD is big then the discrimination index is high and the item can discriminate between students i.e.a discriminating item. If the SD is small then the discrimination index is low and the item is not good in discriminating between students. Very difficult items and very easy items cannot discriminate between students and hence they are bad items.

**DIFFICULTY INDEX (ID)**

It is an index for measuring the easiness or difficulty of a test question. It is obtained by calculating the percentage of students who answered a certain item correctly. If 100% of students answered it correctly then the DI is 100% and the item is easy. If only 5% answered it correctly then the DI is 5% and it is a difficult question. The higher the DI

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the easier the question. The acceptable DI lies between 30% and 70% and in that range the discrimination index is likely to be high. The following formula is used for its calculation:

Difficulty index

$$x = \frac{H+L}{N} 100$$

Where H = number of correct answers in the high group (upper third)

L = number of correct answers in the low group (lower third) N= total number of students in both groups

**MINIMUM PASS LEVEL (MPL):**

In the FMUG the minimum pass level of any test is calculated before the test is scored. The MPL of each test is estimated by a group of experts in the particular subject matter of the test. They decide the minimum level of performance required from the student to graduate. This method ensures that graduate doctors have optimum competencies which enable them to practice medicine safely and they will not harm the society. Thus all the tests in the FMUG are absolute criteria (criterion reference) test. The results are interpreted in terms of the minimum level of performance decided by the experts. The aim of using absolute tests is to determine if the student has or has not mastered a specific competency. In the absolute criteria tests all the students could theoretically pass or all of them could theoretically fail.

The relative criteria (norm-referenced) tests are not used in the FMUG. In these tests the results of students taking the test are interpreted using a curve to compare one student's performance to another. This method will always divide the students into at least two categories, those who succeed and those who do not, without an guarantee that the former are also competent. Hence if all the students taking the test have poor performance (below the optimum level of performance) the relative criteria method will allow some of them to pass and the consequences of releasing such students to the society will be extremely harmful for the health of population. Absolute criteria tests are the only ones that justify the certifying of any doctor as having demonstrated an optimum level of performance.

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Methods of calculation:

MPL of a question is estimated by giving a score out of 100 for each of these criteria:-

- a. Difficulty
- b. Common and or preventable
- c. Serious or needs urgent intervention.
- d.  $MPL = a + b + c / 3$

So the MPL of a question is the Mean of the MPL estimated by a group of examiners

E.g. cardiac arrest:

- a. It is difficult = 20%
- b. It is uncommon = 10%
- c. It is serious = 80%
- d.  $MPL = 110/3 = 37\%$  Complications of Malaria:

it is easy = 80%  
it is common = 90% it is  
serious = 70%  
The MPL:  $240/3 = 80\%$

MPL of an exam paper is the sum of MPL of all questions in that exam.

MPL for the end of course exam:

Is the sum of (the MPL multiplied by the weight of the tools) E.g.:

MPL for CVS course:

Clinical = 50% of 20markers = 10  
Essay = 50% of 20markers = 10  
A and P = 70% of 10markers = 7  
MCQs = 40% of 50markers = 20  
So MPL = 47

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E.g.: MPL for a clerkship course

Clinical	= 50% of 40markers	=20
Essay	= 50% of 15markers	=7.5
MCQs	= 40% of 25markers	=10
OSCE	= 50% of 10markers	=5 A and P
	= 70% of 10 markers	=7
So the MPL =		=49.5

**INSTRUMENTS USED IN STUDENTS ASSESSMENT IN FMUG**

The FMUG uses a composite of instruments in students assessment in an attempt to maximize the validity and reliability of the examination. The criteria for selection of instruments is strictly applied and hence different domains of objectives are evaluated by different instruments relevant to them. Not all instruments are used in all courses; each course is evaluated by an average of 5 instruments. The minimum number of instruments used in one course is 4. None of the courses is evaluated by one instrument.

The salient features of examination items used are; relevant to the course objectives, include important and useful areas, not trivial, clear, simple instructions and examinations are allotted optimum time during which the students could answer all questions.

**1. Multiple Choice Questions (MCQs):**

This is the commonest instrument used in assessment of students in FMUG. It is used in all courses except Introduction to Medicine, Rural Residency and FTRRD. The multiple true-false type is currently used. Each question is composed of a stem and 5 items, the options are either absolutely true or absolutely false. The total number of questions used in each examination is 30 questions (few examinations include 40 questions or 20questions). The total number of items is 150 items. The minimum pass level (MPL) of each question is set at the time of preparation of the examination. The MPL of all the examination is estimated by calculating the MPL of all the 30 questions. The MCQs examination is scored using penalty for wrong answers. One mark is given for the correct answer, -1 mark for the wrong answer and zero if the item is left blank and not tried. With this scoring system guessing is not only discouraged but students who

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guess wrongly are penalized. Whilst guessing is not a good strategy in the practice of medicine, reasoning and weighing up probabilities to reach a correct answer is recommended. The use of don't know and negative marking have the desired effect of discouraging guessing. The MCQs of the true/false type were favoured in the great majority of undergraduate and postgraduate examinations. They have good concurrent and predictive validity. They can evaluate a large number of objectives and their validity is very high when the questions address important areas. They are really valid when used to test recall of factual knowledge. They are reliable, discriminatory, reproducible, objective, practical and cost effective. They suffer a number of weaknesses:

- Their major weakness is that they basically test recall of factual knowledge. Cognitive domain (knowledge) objectives are classified in three levels; recall of facts (low level I), interpretation (level II), problem solving (high level III). It is true that learning how to apply knowledge in problem solving, interpretation, clinical reasoning and judgement is much more important than mere acquisition, retention and retrieval of knowledge. However one cannot apply knowledge if he or she does not have it. And hence factual knowledge is essential for both undergraduate and postgraduate students. The abilities of the undergraduate students of application of knowledge are rather limited because those competencies of problem solving, interpretation and judgement need a long time of practicing. And hence MCQs testing those abilities are too difficult for the undergraduate students. However undergraduate students in the FMUG learn a lot about how to use knowledge through problem based learning which is an integral learning strategy throughout the curriculum. In the FMUG the competencies of applying and using knowledge are tested by other valid instruments; clinical oral, OSCE, SSAQ.

In the early phases of the undergraduate curriculum of the FMUG the contents of the courses are mainly composed of basic sciences integrated with few clinical and behavioural sciences, while in the late phases of the curriculum the contents of the courses are mainly composed of clinical and behavioural sciences integrated with few basic sciences. MCQs of the true/false type are more appropriate in testing basic sciences objectives- mainly factual knowledge.

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- Secondly questions testing only recall of factual knowledge have poor effect on students learning styles. They encourage surface learning of isolated facts rather than understanding the topic in depth.
- Also they lead invariably to relative assessment. Their principle strength is in ranking students but the superior criterion reference is difficult to achieve because setting the MPL is always arbitrary.
- Finally guessing 1:2 affects validity.

The FMUG is fully aware of the above mentioned weaknesses and has made strenuous efforts to overcome them. These include:

- MCQs tests are always set by a group of experts to ensure face and content validity and to agree on the accepted level of performance. MPL - MCQs are not used as the sole assessment tool in summative examinations, other tests (clinical /Oral, OSCE, SSAQ) which can test higher taxonomic skills are used.

MCQs One best-answer type:

This type of MCQs is now widely used in undergraduate and postgraduate examinations. The question is composed of a stem, a lead in question and a number (usually 5) of plausible distracters. Only one of the choices is correct and the others are less correct (not completely wrong). This type can test the levels of knowledge, level I recall of facts, level II interpretation of specific data, level III solution of a problem. Hence the stem may include factual knowledge, data or a clinical problem. The one-best answer type is superior to the true/false type when it is used in testing levels II and III but it is almost identical to the true false type when used for testing level I. Unfortunately the majority of medical /health institutions which are using the one best answer type are using it to test recall of facts only and very few of them are using it to test levels II and III. For this reason the FMUG decided to continue using the true/false for the undergraduate and the one best answer levels II and III for post graduates.

The one- best answer is valid, reliable, discriminatory and practical examination. Guessing does not affect the validity 1:5 and so it is scored without penalty.

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The construction of the question is difficult and it needs a group of experts to decide on the negative distractors and on what is accepted as the best answer. The test must include a very large number of questions-150- to ensure adequate coverage of most of the objectives. It is rather difficult for the undergraduate (levels II and III) since those levels need competencies which require a long time of practice to acquire. Also questions testing levels II and III are not suitable in basic sciences examinations.

**2. Essay**

This is the traditional instrument used in assessment of students in universities. In spite of its limitations and disadvantages it is still used in almost all the examinations in the FMUG. The end of course written examination of the majority of courses includes a number of essay questions 3:5. In an attempt to minimize the disadvantages of the essay, the traditional long essay is gradually being replaced by the Structured Short Answer Question (SSAQ).

The design of the SSAQ is to elicit a progression of information. It starts with an illustrated data; diagrams, photos, graphs, histogram, pie diagram. In the FMUG the stem is sometimes composed of a case history; clinical problem and such SSAQ is sometimes called Modified Essay Question (MEQ). The illustrated data must be common, important and very familiar to the student. It must also be meaningful to the student and chosen from the material used in teaching of the course. Then the stem is followed by a series of questions drafted in such a way that the answers call for a predetermined concept or a solution of a problem. The first question asks basic material which is built on step by step. 8-10 minutes should be allowed for each question so that 18-20 questions can be asked in a 3-hour examination. A special answer book with few lines for each question is used to limit writing too much. A scoring key for each question is set before giving the examination to students; prepare a model answer which includes elements which should appear in the answer and then use a point system of scoring.

Since the selection of an evaluation method entirely depends on the nature of the educational objectives and since a number of important objectives could only be tested by an essay question, the essay shall continue as an important method of students

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assessment in the FMUG. The essay can evaluate a type of performance which cannot be measured just as efficiently by other methods (synthesis of a group of complex concepts, summary of a document, comparison of two phenomena, cause analysis, finding relationships, criticizing the relevance of a concept, formulating a plan of action).

The SSAQ is good in testing knowledge, interpretation and problem solving. The essay question is a very valid instrument. It provides the student with the opportunity to demonstrate his knowledge and his abilities of interpretation and problem solving and in description and explanations. The main advantage of the essay on the MCQs is that the student must construct his own answer rather than choosing from pre-formed answers. In real life situations the doctor must construct his own solutions. The major disadvantage of the traditional long essay is that the inter-rater reliability is very poor; however the reliability is improved by using the SSAQ with a model answer and scoring key. The SSAQ is also practical being easy to mark. It also reflects on participatory teaching and self directed learning. The large number of questions in SSSA test improves the validity. The essay question is there to stay and it seems that it will be more widely used in the future.

### 3. Clinical Examination

This is the most important instrument in the 4 clerkships; being weighted as 40% of the total score. It is also used in the system courses examination but its weight in those examinations is only 20%. Clinical examination is a valid instrument for evaluating the students knowledge, skills and attitudes. It provides opportunity to evaluate knowledge recall, interpreting findings, clinical reasoning and problem solving. It provides opportunity to test for attitudes and responsiveness and the ability to communicate. It provides opportunity to test in a realistic setting the skills involving all the senses. In the clerkship the student is examined on a long case and 3 short cases. A good case is usually selected for the long case; a patient with enough clinical findings who can tolerate the examination and communicate well. The consent of the patient is mandatory for his/her selection. The student is given a fixed time to take history and conduct examination and that is followed by discussion of all the case (clinical findings,

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investigations, diagnosis, treatment, complications and prevention). Then the student is shown 3 short cases and is required to demonstrate specific things e.g. diagnosis-treatment or complication. All the clinical examination is conducted in front of the examiner who observes the student throughout the examination. At least two examiners conduct the examination. They usually agree on the scoring system before starting the examination. A checklist is used for rating the student. In the clerkships the examination is attended by external examiners. Those are renowned doctors in their specialties with long experience in both teaching and service and research. Traditionally most of them come from Khartoum University, however, few come from the Ministry of Health and other universities. They participate as full examiners in assessment of the students in concordance to the FMUG evaluation system. The policy of external examiners in clerkships examinations proved to be an effective strategy in curriculum development and improving the quality of assessment.

The clinical examination is a valid instrument testing the student on a real life clinical task (a patient) which is the ultimate goal of the school of medicine. It is a valid instrument in testing the skills, the problem solving abilities, the depth of knowledge and their application, the clinical judgment and clinical reasoning the communication abilities, the readiness to deal with emergency situations and the attitudes. The main disadvantage of the examination is the relatively poor inter-rater reliability, intercase reliability and lack of standardization. Experience showed that the inter-rater reliability is much increased by using a check-list and by examining the student by a group of examiners. The inter-case reliability is increased by the use of a number of short cases in addition to the long case.

The examination needs a lot of patients and extensive preparations and a large number of internal and external examiners.

**4. Objective structured clinical Examination (OSCE)**

This is a clinical examination in which competencies are assessed in a planned structured and standardized examination. The objectives of the examination are testing the student on knowledge, skills and attitudes. It is a valid, reliable and feasible examination. The examination is composed of a number of stations in each of them

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there is a patient with a clinical problem. At each station the student is tested on a specific clinical competency; history taking, eliciting physical signs, making a diagnosis, communication skills, clinical reasoning, interpretation of findings and management. The student is examined under direct observation of examiners (usually two) who rate the student using a structured checklist. The students rotate along all the stations stopping for a fixed time at each. The examination covers a large number of cases (increase inter-case reliability) and hence it is a very valid examination. It is also reliable because it is standardized and all students are exposed to the same examination. However, the examination needs a lot of efforts for preparation. The most difficult thing is the availability of appropriate patients who accept waiting for a long time to be examined by 200 students.

The OSCE as described above is suitable only for small number of students. The OSCE used in the FMUG has the same objectives, however, a major modification was introduced which made it quite feasible for a large number of students without affecting its validity and reliability. In the FMUG the examination is composed of a number of stations (20-30) and students are admitted to the examination in groups of 20-30 students, according to the number of stations. The students rotate along the stations stopping at each station for a specific time- usually 2-3 minutes. The stations do not include patients and that is the major modification. Instead they include clinical materials in the stations; pathology specimens, human organs obtained by surgery or post mortem, models, cadavers, instruments, laboratory equipments, laboratory results, x-rays, bones drugs, charts, clinical data, slides.

The main advantage of this examination is that it covers a wide range of contents (face validity) and it is standardized (reliable) and it is easy to score objectively. The examination requires a lot of materials and needs extensive preparation. The examination replaced the oral examination with all its disadvantage and is currently used in the majority of courses in FMUG

**5. Practical Examination**

This type of examination is used to evaluate the laboratory skills in chemistry, physiology and pathology. During the examination the students carry out certain

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experiments or perform a specific laboratory tests. The examination is difficult to prepare for a large number of students and is being gradually replaced by the OSCE examination.

However, it is used as a method of continuous evaluation. By the end of each laboratory practical session the student performance in that session is scored out of 10 and then the total scores in all the practicals is calculated out of 10 in the end of course examination result. On the whole the practical examination is both valid and reliable

**6. Log book**

This is a method of continuous assessment, being included in the end of course examination. A student is provided with a structured log book and is expected to register all his experiences through out the course in that log book. The experiences are registered and the level of involvement of the student in each experience is stated (perform- participate observe). The registry is periodically signed by the tutor. The log book helps the student to assess his achievements and keeps the teacher to identify the students deficiencies. The log book is scored by counting the experiences. Although it is a valid way of assessing the competencies of the student it is very unreliable and subject to cooking. Out of 10 marks (AP) only 1-2 marks are allotted for it. It is used in all the clerkships, basic skills course, rural residency course and the PHCCP and FM course.

**7. Write- up**

Students in the clerkships courses are required to submit a book including a number of cases (normally 10-20) which he/she has involved in their management at any level. The cases are described in the conventional methods of reporting a clinical problem (history examination investigations, diagnosis, treatment, prevention). The description is followed by a comment about the whole case. The books are scored by the students tutors.

**8. Attendance**

The attendance of students in the FMUG is strictly recorded in attendance sheets during all the educational activities of that course (lectures, tutorials, clinical rounds etc.). The attendance is properly calculated by the course coordinator by the end of the course.

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Students who fail to attend 75% or more of all the activities are not allowed to sit for the examination (university academic regulations) and they are graded F or NT as appropriate. Students are given marks for attending activities extra to the 75% and those marks forms part of the 10 marks of AP.

9. Performance

One of the strategies of FMUG is student centered learning and hence their contribution in the learning activities is of paramount importance (class room, laboratory, field, PHC unit, hospital). The performance of the student in a course is scored by his/her tutors. It is obvious that this instrument of assessment is extremely subjective, not always feasible and is associated with a lot of errors. Efforts are continuously made to improve the objectivity of the instrument e.g. by using a panel of tutors to score the student. However, the weight of this tool is small (2-3%).

Attendance and performance (AP)

A fixed 10 marks out of the total 100 marks are allotted for attendance and performance (AP) in all FMUG end of courses examinations. Those 10 marks are assessed by a composite of tools; attendance, performance, log book and write-up to minimize its subjectivity. More innovations are continuously introduced to make this tool more objective. It is a very valid tool of students continuous assessment monitoring the presence and involvement of the student in the learning activities, yet its reliability has always been challenged. However, there is a consensus among all the teachers and students in the FMUG that it is an essential tool for students assessment in a faculty of applied sciences where involvement of students is very critical for meeting the school objectives.

Assessment of students in community based activities

Community oriented is perhaps the main philosophy and goal of the FMUG and in an attempt to attain that goal the school adopts several strategies, among them is community based education (CBE). CBE refers to the students learning in the community sites: villages, families and PHC units. In each course a number of educational objectives are taught in the community, however, there are certain courses which are taught wholly or

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partially in the community: Introduction to Medicine and study of Medicine, Primary Health Care Center Practice and Family Medicine (PHCCP& FM), Rural Residency, Field Training Research and Rural Development Programme (FTRRD), Doctor and His Society, Primary Health Care Clerkship. The assessment of students in community settings has always been a true challenge to innovative medical schools worldwide. The methods used in FMUG proved to be both effective and comprehensive and are recommended to be adopted by other medical schools. They are valid, reliable and feasible. They have been evolved through extensive experience. The main difficulties of assessment are:

- Assessment of group work:

The implementation of the community course is only possible if students work in small groups. It is rather impossible to assess the contribution of each individual in group and hence the product of the group is scored and each member of the group is given the same points irrespective of his actual role.

- Lack of standardization:

Community settings e.g. villages- families vary in many aspects.

- Preparation

Courses need extensive logistic preparations -

Attitude:

Although attitude and communication skills are essential contents to be evaluated, their evaluation is very difficult.

The following instruments are currently used for assessment of students in community settings.

#### 10. Students product report

Submission of a report is required in most of the community courses. This report is written in a scientific way- a summary, objectives, methods used, methods of analysis, results, discussion and references. In some of the courses the report is prepared by a group and in other courses it is an individual report.

##### 10.1 Reports prepared by group:

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Students work in small groups in the courses; Introduction to Medicine and Study of Medicine, Doctor and His Society, FTRRDP and PHC Clerkship. Each group submit a final report of all the activities, results conclusions and recommendations. That report is required for grading and is scored by the teacher and each member of the group is given the same points. This report is normally weighted very high. It is valid but less reliable.

10.3 Family report:

This is an individual report. In the PHCCP & FM course each student looks after a family throughout the course. By the end of the course he submits a report about the family including the structure, description and problems of the family. Of course each student is scored separately.

10.3 Rural Hospital Report :

This is an individual report in which each student is scored separately. The report includes; description of the rural hospital and its catchment area, the activities of the student in the rural hospital, a log book of skills, description of a health problem in the hospital surroundings. Of course this report is the major tool of assessment in this course.

11. Family problem

The written examination of the PHCCP & FM course includes a family problem essay question. Students are presented with a written family problem to solve. The solution of the problem must follow a certain methodology.

12. Report from the Rural Hospital Doctor

This is an essential report which shows that the student has attended the course. It is a confidential report including evidence that the student stayed in the hospital for the specified period of the course and the quality of his/her performance. If the student fails to obtain this report he/she will be graded Failed (F) or not taken (NT) as appropriate.

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13. Supervisory Check-list

The tutors of the course visit the students at the training site several items during the course to observe directly their attendance, performance and contribution. During his visit he helps the students with the course objectives, guides them and solves problems facing them. Of all the instruments used in assessment of students in community sites this is the most valid and most reliable. In fact the assessment of students in community sites is incomplete and deficient in the absence of an supervisory visit. During his visit the tutor uses a check list to make the evaluation comprehensive and standardized. Students who fail to avail themselves in the training sites are graduated For NT as appropriate

14. Peer Evaluation-Seminar

Students in some of the community courses organize a seminar during which they present their work. The seminar is normally scored by the tutor who scores the whole group and the same score goes to each member of the group. Peer evaluation refers to the assessment of the students by their colleagues; when a group makes a presentation and the rest of the class score them

Sometimes peer evaluation is used to distribute the points given to a group among the group members according to their contribution in the work presented. The tutor score the group and give them the whole points and they distribute the points between them according to their contribution e.g. a group of 10 students is scored 80% is given 800 points to distribute some have 95 and others 60-50. Research showed that peer evaluation is valid and reliable however. Its use in FMUG is very limited and it is used occasionally.

15. Community Feedback

The perception of the community about the students activities is obtained through questionnaire, interviews or focus groups from the community leaders. This instrument is mainly used in the programme evaluation. It is not included in the students assessment.

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**STAGES OF STUDENTS ASSESSMENT**

Each examination is set or scored by a group of examiners. Under no circumstances an examination is set or scored by a single examiner. The result of the examination is discussed in details by the examiners meeting (usually the course committee or the department) then the result is presented in a uniform format to the faculty board. The result must include a report about how the examination was set, conducted and scored. The report also includes brief description of the course. The result of each examination is discussed in the faculty board and is forwarded to the University Studies Committee which discusses it and of course the result is only finalized after approval of Senate. Students are informed about their results individually.

**FACULTY OF MEDICINE EVALUATION TOOLS AND WEIGHT**

Serial No.	Course No.	Course Title	Evaluation tool	weight
1	1011	Introduction to study of Medicine	A /P Written exam. Report Exhibition Seminar	10% 50% 20% 10% 10%
2	1013	Man and His Environment	A/P Seminar Essays MCQS	10% 10% 40% 40%
3	1012	Biochemistry	Practical Lab MCQS Essays	20% 40% 40%

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4	1014	Zoology & Introduction to Medical Entomology	A/P MCQS Essays Practical	10% 40% 30% 20%
5	1022	Nutrition & Nutritional Biochemistry	A/P Practical MCQs Essays	10% 10% 40% 40%
6	1021	Growth and Development	A/P Essays Oral exam MCQS OSPE	10% 20% 10% 40% 20%
7	1023	Introduction to study of Disease	A/P MCQS Essays Slides OSPE	10% 50% 20% 10% 10%
8	2031	Doctor and society	A/P Essays MCQs Report Seminar	10% 30% 30% 20% 10%
9	2034	Medical Statistics	A/P Assignment MCQs Short notes Problem	10% 10% 40% 20% 20%

Serial No.	Course No.	Course Title	Evaluation tool	weight
10	2044	Basic skills	A/P Log book Oral practical	10% 10% 80%

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11	2032	Blood and blood related oral practical	A/P MCQs Essays Practical Slides Data Interpretation	10% 40% 20% 10% 10% 10%
12	2033	Musculoskeletal system problems &	A/P MCQs Essays OSPE	10% 40% 20% 30%
13	2042	Cardiopulmonary system I	A/P MCQs Written OSPE	10% 40% 30-35% 15-20%
14	2043	Cardiopulmonary system II	A/P MCQs Written Clinical exam	10% 40% 20% 30%
15	3052	Gastrointestinal system problems I and	A/P Written MCQs OSPE	10% 20% 40% 30%
16	3053	Gastrointestinal system problem II and	A/P MCQS Essays Clinical OSPE	10% 30% 25% 25% 10%
17	3054	Endocrine and Metabolism	A/P End of course Exam	10% 90%
18	3062	Genitor- Urinary system	A/P MCQs OSPE Essays Clinical	10% 40% 20% 10% 20%

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Serial No.	Course No.	Course Title	Evaluation tool	weight
19	3063	Central Nervous system	A/P MCQs Essays OSPE	10% 40% 20% 30%
20	4075	Clerkship in Mental Health Care	A/P Essays MCQs OSCE Oral	10% 20% 40% 10% 30%
21	4073	Endemic Diseases	A/P MCQs Essays Report	20% 40% 20% 20%
22	4072	Medico- legal and Miscellaneous Problems	A/P MCQs Essays OSPE	10% 50% 30% 10%
23	5101	Medical Clerkship	A/P MCQs Essays OSCE Clinical	10% 25% 15% 10% 40%
24	5104	Peadiatrics Clerkship	A/P MCQs Essays OSCE Clinical	10% 25% 15% 10% 40%
25	5102	Surgical Clerkship	A/P MCQs Essays OSCE Clinical	10% 25% 10% 15% 40%
26	5103	Obstetrics & Gynaecology Clerkship	A/P MCQs Essays OSCE	10% 25% 15% 10%

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			Clinical	40%
27	2041 3015 3061 4071	Primary Health Care Practice in Health Centers and Family Medicine (four phases)	A/P Report Family problem MCQs Essays	25% 25% 10% 20% 20%
Serial No.	Course No.	Course Title	Evaluation tool	weight
28	4000	Rural Residency	Report Problems Dr. Report activities &	40% 30% 30%
29	4074	Primary Health Care Clerkship	A/P Report Seminar Written	15% 40% 15% 30%
30	1000	Interdisciplinary field training Research & Rural Development Programme I	A/P Seminar Report	40% 20% 40%
31	2000	Interdisciplinary field Training Research & Rural Development Programme II	A/P Report Proposal Seminar	30% 40% 15% 15%
32	3000	Interdisciplinary field training Research & Rural Development Programme III	A/P Seminar Intervention Report	30% 10% 30% 30%

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A /P: attendance and Performance

MCQs: Multiple Choice Questions

OSPE: Objective Structured Clinical Examination

OSCE: Objective Structured Clinical Examination