

College of Medicine & Health Sciences , SQU

# Assessment Policy, Regulations, & Guidelines

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The Committee met 18 times from October through May 2009.

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## **I. Summary**

The College assessment policy will follow principles of sound assessment and will be aligned with University assessment regulations but subject to College needs. The policy will deal with governance, design, conduct, and other aspects of the assessment process in the College. The governance will deal with the hierarchical responsibilities of different bodies such as College and Departmental Examinations Committees, the role of Phase and Course Coordinators and affiliated staff, and the roles of the Medical Education Unit and External Examiners. The guidelines of assessment design and conduct will strive to ensure validity and reliability of the assessment process in the College while simultaneously aiming for a positive impact on student learning.

To ensure the conduct of a sound assessment policy, a comprehensive faculty development program should be established.

Detailed regulations can be found in the University Undergraduate Academic Regulations, 3<sup>rd</sup> edition, 2005, available from the University's Admission and Registration Web site.

## **II. Introduction**

Assessment is the process of forming a judgment about the quality and extent of student achievement or performance, and therefore, by inference, a judgment about the learning itself. Assessment inevitably shapes the learning that occurs; that is, what students learn and how they learn should reflect closely the purposes and aims of the course of study.

The aims of assessment include the following:

1. Improving the quality of the curriculum (courses and programs)
2. Evaluating the effectiveness of the teaching process and facilitating continuing improvement
3. Improving and promoting subsequent learning through feedback that is clear, informative, timely, and relevant
4. Provide opportunities for staff to receive feedback on their teaching so that they can improve – quality assurance and enhancement
5. Formally certifying achievements
6. Accountability to the University, accrediting bodies, employers, and the wider community

Assessment methods may take a variety of forms: the key criterion for choice among methods should be appropriateness to the learning outcomes. Assessment should be criteria-based rather than norm-referenced. The requirements for learner success should be made clear, and the overall strategy should be to develop in students the ability to evaluate the quality of their own work to equip them to function as professionals with a commitment to life-long learning.

The following general principles underpin the Assessment Policy and Procedures:

1. There should be evidence of linkage to course objectives
2. Where appropriate, diverse assessment methods should be used
3. Assessment should address different levels of attainment, including knowledge, comprehension and higher cognitive skills, psychomotor skills, and behavior
4. Marking should be accurate and consistent
5. Marking and grading should be based on pre-defined outcome criteria
6. Assessment should enhance student learning
7. Students should be aware of assessment criteria at the beginning of the study program
8. Feedback should be timely, meaningful, and helpful
9. Assessment should be proportional to the workload of the course for both staff and students. The load should be commensurate with the credit points (or equivalent) allocated to a unit and the nature of the discipline

The overseeing and ongoing development and implementation of the assessment policy will be the responsibility of the College Examinations Committee reporting to the College Board.

It is the responsibility of the faculty member who is involved in teaching and assessment to be aware of this policy and to comply with its rules and procedures. This policy will follow University regulations but will be subject to the needs of the College.

### **III. Assessment Policy**

The following are clauses relating to the undergraduate program in the College of Medicine and Health Sciences. These should be read in conjunction with “SQU Academic Undergraduate Regulations (2005), 3<sup>rd</sup> Edition, available from the Admissions and Registrations Web site.

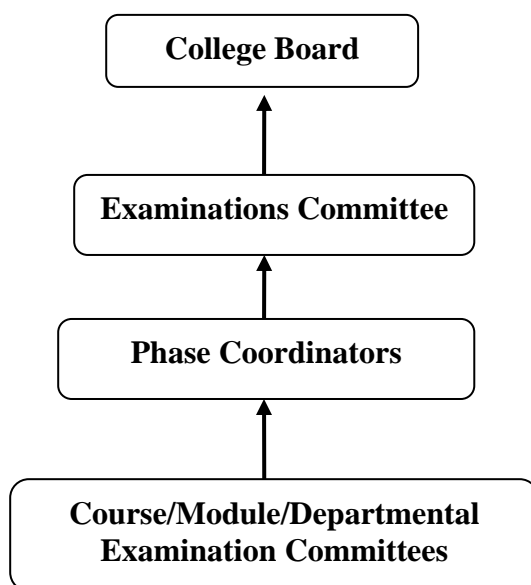
1. Assessment shall be based on sound principles
2. Assessment shall be quality assured
3. Assessment shall be managed by a hierarchy of instructors and committees
4. Assessment shall be used for identifying problems, progression, and certification purposes
5. Assessment shall show evidence of linkage to course objectives
6. Assessment shall reflect integration of basic and clinical sciences and clinical relevance
7. Assessment tools used shall be appropriate to the competencies being measured
8. Whenever possible, assessment shall be evidence-based. Where research is lacking, best practices shall be used and evaluated

9. Assessment shall be criteria-based
10. For each course/module, an evidence-based or best practice (defensible) method shall be used to set pass/fail standards
11. Scores generated from assessments shall provide a meaningful and comprehensive reflection of competence as judged by experts. In that regard,
  - a. Scoring systems that ensure reliability should be used
  - b. Judgment of clinical competence should be based on multiple observations of clinical performance over a range of clinical situations
  - c. Where applicable, judgment of multiple observers should be used with regular checks on inter-rater agreement built into the system
12. Assessment results should provide sufficient insight into student strengths and weaknesses in knowledge, skills, and behavior
13. Students shall be trained in any new assessment method when introduced
14. As much as possible, on-line assessment will be encouraged to allow better documentation and analysis of data
15. Dissemination of assessment information to staff and students will be carried out as appropriate
16. External evaluation of the assessment process shall be carried out by External Examiners to ensure standards are met
17. Examinations shall be conducted in an environment that ensures security of the assessment process
18. Appropriate staff development program shall be established to educate faculty about the assessment process

## **IV. Governance and Quality Assurance**

The College Board, which is chaired by the Dean, is the ultimate authority in managing the assessment process. Recommendations and decisions arrived at by deliberations from various bodies involved in the management of the assessment process (i.e., Course/Module or Departmental Examinations Committee, where applicable, and Phase Coordinators) will be transmitted to the College Board through the Examinations Committee (Figure 1). The Examinations Committee shall be a subcommittee of the College Board and shall be responsible for the central administration of the assessment process in the College. It shall provide leadership and direction in all matters relating to undergraduate assessment and shall oversee all assessment activities of each phase of the curriculum. External evaluation of the assessment process shall be carried out by External Examiners who will act as a form of quality assurance for standards of the assessments. The medical education unit will collaborate with the relevant committees to assist in the evaluation and quality assurance of the assessment program.

**Figure1**



## **1. Responsibilities of the Course, Module, and Departmental Examinations Committees**

The above committees will be responsible for organizing, managing, administering, and monitoring courses, modules, or department undergraduate examinations and for determining the standards to be achieved by the candidates. It is mandatory that these committees declare to the Assistant Dean and Examinations Committee the format of their assessment and mark allocation prior to the commencement of the course/module/rotation.

The responsibilities of the above committees are the following:

### **1.1 Assuring the quality of the assessment methods by:**

- 1.1.1 Reviewing all examinations
- 1.1.2 Ensuring content validity of exams by blueprinting
- 1.1.3 Designing and selecting the assessment methods that will reflect the objectives of the course/module
- 1.1.4 Vetting examination papers for design, appropriate content, coverage, and typographical/grammatical errors
- 1.1.5 Deciding on the weighting of different components
- 1.1.6 Setting standards of expected performance
- 1.1.7 Reviewing item performance

### **1.2 Summarizing and reporting results to the Phase Coordinators and College Examinations Committee**

### **1.3 Informing students of assessment requirements at the beginning of the course/module/rotation**



- 1.4 Providing feedback to students
- 1.5 Recommending remedial action for students with the Phase Coordinators, Assistant Deans, and College Examinations Committee
- 1.6 Liaising with appropriate bodies in cases of student appeals that relate to assessment
- 1.7 Reviewing External Examiners reports, implementing appropriate recommendations, and reporting to the Dean
- 1.8 Reporting the appraisal of the assessment process to the concerned bodies [Phase Coordinators, Medical Education Unit, College Examinations Committee, Assistant Deans]
- 1.9 Maintaining a full record of examination papers and results and assuring the security of these records

## **2. Responsibilities of Affiliated Staff**

Affiliated doctors/coordinators should:

- 2.1 Be actively involved in the continuous evaluation of the undergraduate clinical assessment
- 2.2 Contribute to the departmental Questions Bank on a regular basis
- 2.3 Maintain a full record of all end-of-rotation exams conducted in affiliated hospitals and assure the security of these records
- 2.4 Report results to the concerned department Examinations Committee within 48 hours of conducting the examinations
- 2.5 Be familiar with the assessment policy of the College of Medicine and Health Sciences
- 2.6 Be actively involved in conducting the clinical examinations at SQUH or affiliated hospitals

## **3. Responsibilities of Phase Coordinators**

- 3.1 Ensure that the assessment policy/guidelines have been implemented and adhered to
- 3.2 Ensure that the appropriate assessment methods that match the learning objectives have been selected
- 3.3 Ensure the emendation of examination questions
- 3.4 Ensure that the appropriate standard setting procedures have been applied
- 3.5 Ensure that the item analysis has been conducted
- 3.6 Present results to the Examinations Committee accompanied by the Phase Course Coordinators

#### **4. Responsibilities of the College Examinations Committee**

- 4.1 Continuous evaluation, in collaboration with the Medical Education Unit, of the assessment process in the College
- 4.2 Scrutinizing and monitoring of assessment quality by:
  - 4.2.1 Ensuring University and College regulations are adhered to
  - 4.2.2 Reviewing reports from Course, Module, and Phase Coordinators
  - 4.2.3 Reviewing External Examiners' reports in matters pertaining to the assessment
  - 4.2.4 Verifying with Course Examination Coordinators that examination papers are vetted
  - 4.2.5 Periodically reviewing a sample of examination question papers
  - 4.2.6 Confirming that appropriate standard-setting procedures are adopted
  - 4.2.7 Periodically reviewing item performance
  - 4.2.8 Periodically reviewing the distribution of grades
  - 4.2.9 Recommending improvements and changes to the assessment process
- 4.3 Ratification of changes in the assessment process
- 4.4 Approval of timetables and invigilation guidelines of final examinations
- 4.5 Receipt and consideration of final examinations results
- 4.6 Recommendation, in consultation with Course Coordinators, of supplementary examinations/Failure with Supplementary Privilege (FSP)/resits and other sanctions as appropriate
- 4.7 Notification of appropriate bodies through the Assistant Deans to recommend remedial action regarding problem and failed students whose academic progress is at risk
- 4.8 Handling misconduct in assessments
- 4.9 Liaising with appropriate bodies in cases of student appeals that relate to assessments
- 4.10 Recommending amendments to the College assessment policy
- 4.11 Any other duties that may, from time to time, be assigned to the Committee

#### **5. Responsibilities of the Examinations Office**

The Examinations Office will act as a reference center for all matters that relate to College examinations. The Examination Officer reports to the Dean, Assistant Deans, and Chairman of the Examinations Committee as required. The responsibilities of the Office will include the following:

- 5.1 Preparation of all examination time tables in liaison with Course Coordinators, student representatives, and the Timetabling Department of the Deanship of Admissions and Registration
- 5.2 Production of adequate supplies of examinations booklets, optical mark sheets, and clinical student log books
- 5.3 Copying, storage, and ensuring security of all examination question papers
- 5.4 Coordination of invigilation and assignment of invigilators
- 5.5 Grading of Multiple Choice Question (MCQ) examinations by the optical mark reader
- 5.6 Preparation of result spreadsheets for consideration by the College Examinations Committee
- 5.7 Submission of grades to the Deanship of Admissions and Registration
- 5.8 Announcement of results
- 5.9 Preparation of summary of results for the College Board
- 5.10 Maintenance of end-of semester, end-of-rotation, and final MD examination results and transmission of these results to the Deanship of Admissions and Registration for preparation of the MD transcript
- 5.11 Preparation, printing, and distribution of information relating to the assessment
- 5.12 Coordination of the visit of External Examiners in liaison with Phase Coordinators, Heads of Departments, Dean, and University and College Administration
- 5.13 Allocation of space for examinations
- 5.14 Security and custody of all College examination results
- 5.15 Custody of clinical student log books
- 5.16 Distribution and collection of clinical student log books and cross-checking of results
- 5.17 Preparation of clinical student progress reports at the end of each academic year

## **6. Responsibilities of the Medical Education Unit**

The Medical Education Unit will have specific responsibilities with regard to the assessment process in the College. Its responsibilities will include the following:

- 6.1 Working with the Examinations Committee to standardize the assessment process in the College
- 6.2 Maintaining a databank of exam questions that have undergone validity and reliability testing
- 6.3 Acting as a link with the IDEAL Consortium for sharing assessment banks

- 6.4 Providing support for the conduct of on-line examinations
- 6.5 Conducting item analysis and reviewing item performance with the Examinations Committee
- 6.6 Providing the College with information about recent trends in assessments
- 6.7 Working towards implementing best practice evidence-based assessment methods
- 6.8 Providing expert advice on assessments
- 6.9 Continuous evaluation of the assessment process in the College
- 6.10 Conducting research in the area of assessments
- 6.11 Conducting regular faculty development workshops in the area of student assessments

## **7. Role of External Examiners**

The External Examiner will act as a form of quality assurance for the standards of assessments. In doing so, the External Examiner shall review, scrutinize, and comment on curriculum areas including course structure and content; the delivery of the course modules in the departments and College; the levels and methods of assessments and a comparison with internationally accepted standards. In addition, the External Examiner is expected to interact with faculty and students so as to provide contemporaneous constructive feedback to Course/Module/Rotation/Phase Coordinators. The duties of External Examiners are shown in Appendix I.

## **V. Assessment Guidelines**

### **1. Assessment Design**

Assessments should be both formative and summative. The methods of assessment used will be dictated by the purpose of the assessment.

Summative assessment is any form of assessment that will contribute to the final grade of a student. Guidelines for conducting summative assessments are as follows:

- 1.1. Each Module Coordinator shall draw out a blueprint of course objectives and the assessment instruments to be used to test these objectives. Multiple methods are usually required to achieve blueprint objectives. The different assessment instruments allow a balance of strengths and weaknesses of each method. An example of a blueprint is shown in Appendix II
- 1.2. Recommended assessment instruments and guidelines about how to construct each are shown in Appendix III.
- 1.3. For written assessments, a maximum of 30% of the final exam questions should come from the restricted IDEAL databank of exam questions. A maximum of 20% of the MCQs can come from previous exams
- 1.4. As much as possible, questions should assess higher-order thinking and not just a simple recall of information

- 1.5. For skills/performance-based assessments, properly constructed checklists and/or rating scales should be used (guidelines for construction, Appendix III). Tasks should be as clinically authentic as possible
- 1.6. Assessment of meta-skills as specified in the curriculum should be conducted systematically and should contribute to the overall grade of the student

## **2. Weighting of Components**

Refer to the University Academic Regulations sections C2-1 and C10 with the following provisions applied to the College:

- 2.1. End-of-rotation examinations are considered final examinations
- 2.2. Where a clinical component exists, it should account for greater weight than the written component. As a rough guide, the clinical component should account for 60–70% while the written (knowledge) component for 30–40% of the final grade.

## **3. Review of Examinations**

For all exams (in-course and final), exam questions/stations/cases etc. should be reviewed and emended by the course/module/departmental Examinations Committees before the examination takes place.

## **4. Standard Setting**

For each course/module, a defensible standard-setting method should be used by trained Coordinators/committees such as Angoff's or Hofstee's methods for MCQ examinations or the borderline group method for OSCE (Appendix IV). Arbitrary methods such as a pass mark of 60% should not be used. The standard-setting procedure should be declared to the College Examinations Committee.

Training of examiners in standard-setting methods will be conducted regularly.

## **5. Marking of Examinations**

For MCQs, if not done on-line, optical marking should be used to enable computation and question analysis. Course Coordinators are personally responsible for collating the appropriate sets of answer sheets together with the appropriate answer-key sheet in a sealed envelope that is to be handed in to the Examinations Officer for feeding into the optical reading machine. The resultant readings should be confirmed by the Course Coordinator.

For short notes and essays, model answers should be provided and used as the basis for marking and feedback to students. Several examiners should be available, but one examiner should mark the same question for all students for consistency. Double marking is encouraged.

For OSCE stations and short cases, properly designed checklists and rating scales should be used (Appendix III). Again, several examiners should be available. Each case/station should be assigned to one examiner.

If used, long cases should be observed and marked by a checklist and a global rating scale.

## **6. Grades and Grading**

Refer to University Regulations sections C2, C3, C4, C5, and C8 with the following provisions applied to the College:

- 6.1. Letter grades shall be used to describe the achievement level attained within a particular course (or rotation). A final semester (year) grade shall be based on continuous assessment throughout the semester (year) as well as a final examination. A final examination is customary but may not be considered necessary in certain types of courses (rotations).
- 6.2. Scores will be converted to grades using an Excel program designed specifically for this purpose and which is available from the Examinations Office and the College Web site.

## **7. Reporting of Results**

### **7.1. Pre-clinical Final Examination Results**

The maximum time frame for reporting end-of-semester final examination results in the College shall be as follows:

Courses with less than 50 students	48 hours
*Courses with 51–100 students	72 hours
*Courses with more than 100 students	96 hours

Hours include weekends and holidays.

Results for course examinations that have External Examiners shall be returned no later than the last Wednesday of the examination period.

\*Results for course examinations held on the last Tuesday or Wednesday of the examination period shall be returned no later than 10 a.m. on Saturday following the examination period.

### **7.2. Mode of Return of Grades**

Letter grades only shall be entered on the Deanship of Admissions and Registration on-line grade program that shall be “read only.” Grades will be confirmed after the College Examinations Committee meeting.

In addition to on-line grade entry, a separate spreadsheet showing grades of all in-course and final assessments accompanied by Course Report Forms duly completed and signed shall be returned to the Examinations Office within the stipulated times.

Approval is by the Dean on behalf of the College Board.

### **7.3. Grade Changes**

Refer to the University Undergraduate Academic Regulations section C8.

Grade changes are effected with the specified Grade Change Form obtainable from the Examination Office.

#### **7.4. Clinical Rotation Results**

All clinical courses/rotations results shall be returned to the Examinations Office no later than 7 days from the date of assessment. If applicable, Log Books duly signed by the Course Tutor and Head of Department shall be returned to the Examination Office in the same period of time. Results shall be ratified by the Examinations Committee at the end of each academic year.

#### **7.5. Final MD Results**

Final MD results shall be returned to the Examinations Office no later than the last Wednesday of the final MD examination period. The grade sheets shall be duly signed by the Final MD Coordinator and Head of Department.

### **8. Item Analysis and Test Statistics**

Student performance on exam questions should be analyzed using appropriate item analysis software by the Coordinators. Results of these analyses should be discussed by the relevant committees to assist in making informed decisions about the assessment process.

For all assessment instruments used by instructors, reliability indices should be determined and the data used to improve on the assessment process in the College. Strategies that would lead to increased assessment reliability are shown in Appendix V.

### **9. Feedback (to Students) on the Assessment Process**

Feedback on in-course assessments should be given to students within 1 week of the assessment. It is recommended that the feedback session is timetabled. Feedback should not involve the release of questions but a discussion of points of weaknesses with students.

Final exams will not be discussed.

## **VI. Other Provisions**

### **1. Selection of Examiners**

In order to safeguard the quality and validity of examinations, Examiners and members of Examinations Committees shall be selected on the following basis:

1.1. The Head of each department shall form a Department Examinations Committee consisting of at least three members who are appropriately qualified or experienced in the process of assessments. These members/examiners should preferably demonstrate one or more of the following:

- i. Holding a certificate in teaching/assessment/education
- ii. Attendance/participation in workshops/conferences on teaching/assessment/education
- iii. Experience of 2 years or more of examining at the university level
- iv. Appointment as an External Examiner to a college, university, or professional examining body

In case of small departments, the Head of Department may appoint an individual as the Departmental Examinations Officer.

1.2. Where applicable, the chairpersons of the Departmental Examinations Committee, and the Departmental Examinations Officers should consist of faculty/senior medically qualified SQU hospital employees.

1.3. Staff members who do not satisfy the conditions above (1 i-iv) may be involved in examinations or Examinations Committees as observers for the purpose of gaining experience.

## **2. Training of Students in Assessment Methods**

Students should be familiarized with the type of examinations in the College. Practice questions should be provided by the concerned coordinators.

## **3. Access to Old/Previous Exams**

Students should have no access to examination questions.

## **4. Repeat Exams**

If a student is eligible for a repeat/supplementary exam, this supplementary exam should be cleared after a remedial activity/course as may be prescribed by the concerned parties (progression rules, student handbook, p. 22). The format of the repeat exam should be exactly the same, except for content, as the failed exam.

## **5. Grade Appeals**

Refer to the University Undergraduate Academic Regulations section C10-4.

## **6. Absenteeism from Examinations**

Refer to the University Undergraduate Academic Regulations section C10-5. The following addition will apply to the College:

Sick leave accompanied by detailed medical reports only from SQUH or the Ministry of Health Institutions may be accepted as an excuse for absence from course examinations subject to confirmation by an expert panel from the Department of Family Medicine and Public Health.

**Note:** A student exempted due to bereavement, hospital admission, or in extreme ill health should be offered the option of sitting for the examination in accordance with the circumstance prevailing at the time and must be in-line with University Regulations.

## **7. Misconduct in Examinations**

Refer to University Regulations C10-3 and C11. The following procedure of reporting misconduct will be applied in the College:

Misconduct in examinations should be reported to the Examinations Officer by the Senior Invigilator of the examination during which the malpractice occurred. The Examinations Officer will report the incident to the Assistant Dean and the



Chairperson of the Examinations Committee for deliberation at the meeting of the Committee. Thereafter, a recommendation will be made to the Dean.

## **8. Security of Exam Questions**

The College will maintain the highest level of security for all types of examinations. In that regard, the following guidelines should be adhered to:

### **8.1. Preparation of Examination Papers**

Examination papers should be prepared in more than one version depending on the number of students taking the exam. Soft copies of the examination should not be stored on the hard drive of office computers.

### **8.2. Photocopying and Storage**

Examination questions shall be photocopied in the Examination Office. Final examination papers will be wrapped, sealed, and the seals signed over by the Examination Officer and the Course Coordinator or their representatives and put away in a safe.

### **8.3. Transmission of Examination Questions**

Transmission of examination questions should be carried out by the safest possible means. Sending of questions electronically should not be practiced.

## **9. Storage and Disposal of Past Examination Question Papers/Scripts**

By University Academic Council decision SQU/AC3/2007-08, departments are required to keep final examinations papers for two semesters after each examination. The examination papers should be destroyed by incineration after two semesters by a Departmental Officer designated for this purpose.

## **10. IDEAL Databank**

The IDEAL office in the College accommodates the IDEAL restricted (secure) assessment banks. The following are guidelines for use of the restricted IDEAL databank:

- 10.1. Final examinations should contain a maximum of 30% of questions from the restricted (secure) IDEAL databank
- 10.2. All staff members involved in setting examination questions are expected to use the restricted bank to select items (questions) to be included in their **final** examinations
- 10.3. Copying questions from the restricted (secure) databank on personal devices such as floppy disks, flash disks, CDs, etc. is not allowed
- 10.4. Staff members should prepare and print their final examinations in the IDEAL office. Photocopying and storing of exam papers are to be done in the examination office
- 10.5. Items selected from the IDEAL secure assessment banks should only be used in the **final** examinations and should not be released to students

## 11. Invigilation

Invigilation is part of the responsibilities of all faculty and technical staff.

The following guidelines should be read in conjunction with the University Academic Regulations on invigilation sections C10-1, C10-2, and C10-7. The guidelines will apply only to preclinical (phases I and II) and final MD examinations:

11.1. Course Tutors and Course Coordinators do not normally invigilate their own course examinations.

11.2. Appointment of Invigilators: The Examinations Officer writes to HoDs to request submission of the names of all available academic and technical staff members who will form a pool of invigilators. The most senior and experienced faculty member is appointed as the Senior Invigilator with other academic and technical staff as members of the team. Where the examination is a mixture of male and female students, the Invigilators should also include male and female invigilators. The ratio of Invigilator:student should range from 1:10 to 1:30, depending on the examination venue. The Course Coordinator must be in his/her office during the examination so that the Senior Invigilator may contact him/her for clarification. At the end of the examination, the Senior Invigilator should personally deliver the scripts to the Course Coordinator.

11.3. Duties of the Senior Invigilator:

The Senior Invigilator shall be responsible for the entire proceedings of the examinations to which he/she is appointed. Specifically, the Senior Invigilator shall:

1. On the date of the examination, personally and accompanied by Invigilator #2, collect the question papers and other prescribed examinations materials from the Examinations Office no later than one hour prior to the start of the examination and be at the venue at least 30 minutes before the commencement of the examination
2. Prior to the commencement of the examination, require each student to deposit, at a designated point, any textbooks, notebooks, papers, baggage, files, mobile telephones, etc., as they enter the examination room
3. At the appropriate time, start the examination. Remind students of the duration of the examination and to write their names and I.D. numbers clearly on the first page or cover page
4. Inform students when they have reached the following stages in the examination: half time, three-fourths of time, and 5 minutes remaining
5. Submit examination incident reports to the Examinations Officer who reports to the Assistant Dean and the Chairman of the Examinations Committee
6. Ensure that answer scripts and candidates present tally, and personally accompanied by Invigilator #2, return these to the Course Coordinator and return Attendance Record and Incident Reports to the Examinations Office

## **12. On-line Exams**

### **12.1. General Conduct of Candidates**

- 12.1.1. Candidates must not indulge in any behavior or conduct that may disturb other candidates or disrupt the smooth progress of an examination.
- 12.1.2. Candidates are not permitted to smoke in any part of the examination room.
- 12.1.3. Candidates must obey the instructions of any Invigilator and their attention is drawn to the regulations for the invigilation of examinations governing admission to and departure from the examination room.

### **12.2. Conduct of Candidates Before On-line Examination**

- 12.2.1. Candidates are forbidden to take into the examination room any unauthorized books, manuscripts, notes, bags, cases, or any means whereby they may improperly obtain assistance in their work. All such materials, including handbags, must be placed on a table outside the examination room.
- 12.2.2. Candidates are forbidden to take into the examination room electronic transmission devices such as mobile phones, pagers, PDAs, etc., or any digital storage media such as flash drives, CD, floppy discs, etc.
- 12.2.3. Candidates are forbidden to take into the examination hall paper of any sort. A wipeable writing slate (or similar material) shall be provided in the examination hall should any candidate require it.
- 12.2.4. Candidates must be at the venue of the examination at least 10 minutes before exam commencement.
- 12.2.5. Before the commencement of the examination, the candidate must place on the top right hand corner of the desk their ID card for inspection by one of the Invigilators.

### **12.3. Conduct of Candidates During On-line Examination**

- 12.3.1. Candidates shall only display the examination page throughout the duration of the examination. No other pages should be opened during the course of the examination.
- 12.3.2. Candidates must “submit” their examination before leaving the exam venue. This is done by clicking on the “submit” icon at the end of the examination. Failure to submit will result in loss of marks for that examination.
- 12.3.3. Candidates must not use any means whatsoever to communicate or obtain, directly or indirectly, assistance in their work, or give or attempt to give, directly or indirectly, assistance to any other candidate.
- 12.3.4. Candidates are permitted to use only personal non-programmable electronic calculators in an examination provided they are silent in operation and have an independent power supply.
- 12.3.5. Any suspected breach of the foregoing Regulations will be the subject of an investigation.

## **12.4. Guidelines for Staff**

### **12.4.1 Course Coordinators**

- Any course coordinator planning to conduct an on-line examination must be familiar with the on-line examination software. Specifically they,
  - Must have attended on-line examination workshops conducted by the IT section of the Medical Education Unit. Staff may not conduct on-line exams if s/he did not attend this workshop
  - Should, independently, be able to set up the examination including uploading of questions
  - Should upload exam questions as close as possible to the day of the examination and preferably not earlier than 24 hours before the examination date
  - Should ensure that security features are activated
  - Should ensure that password protection is applied to the examination access page. Only the Course Coordinator should set the password
  - Should ensure the removal of examination questions from the server when the examination is finished
- Course Coordinators planning to conduct on-line examinations should inform the Assistant Dean/Examinations Office about the type of exam (whether written, on-line, or other) and other required information before the beginning of the semester so that a timetable is formulated and room booking is ensured.
- The Examinations Office will, in turn, inform the Medical Education Unit with regard to times and dates of on-line exams to ensure the availability of technical help
- No on-line exams will be entertained nor will technical assistance be provided if the Medical Education Unit is not informed of on-line exams ahead of time

### **12.4.2. Invigilators**

- There must be at least two Invigilators in every room where on-line examinations are taking place. The Invigilators assigned should ensure smooth conduct of examinations
- Invigilators should ensure sufficient spacing between candidates during the examination. As a guide, there should be a minimum of 1 meter between any two candidates in the room
- In the unusual case of a student having to leave the examination room temporarily, such a student must be accompanied by an Invigilator
- Invigilators should ensure that examinations are submitted by the candidates before leaving the examination room

### **13. Training of Faculty**

The Medical Education Unit will conduct regular workshops to update faculty/affiliated staff in assessment methodology. It is the responsibility of Heads of Departments and Curriculum and Examination Committee chairs to ensure that staff members attend the faculty development workshops. A staff member who does not attend appropriate faculty development workshops should not be considered for an appointment as a Course/Examination Coordinator or affiliated faculty.

## **VII. Appendices**

### **Appendix I. Duties of External Examiners**

#### ***1. Degree Plan and Courses***

Comment on the following:

1. The structure of the degree plan, objectives and content of courses/rotations, and their conformity to international standards
2. The quality of teaching materials, including textbooks, handouts, laboratory manuals, assignments, e-learning, etc.
3. Teaching methods and their conformity to the objectives of the curriculum

#### ***2. Assessments***

Courses/rotations should be considered with the view to comment on the following:

1. The use of continuous assessments
2. Standard of examinations in comparison with international standards
3. Marking of examination papers and assignment of grades
4. Overall performance of students on exams
5. Overall quality of graduating students
6. Conduct of exams
7. Types of exams used
8. Weighting of different components
9. Pass/fail standards
10. Alignment with curriculum objectives
11. Fairness of marking
12. Recommendation of any changes in the assessment process

#### ***3. Research Activities and Resources***

After discussion with faculty and reviewing the research resources in the Department and College, comment on the following:

1. Research resources including equipment, space, library, and computing facilities
2. Manpower and availability of trained technical and support staff
3. Funding and conferences
4. Research output

#### ***4. Teaching Resources***

Comment on the following:

1. Teaching resources including classrooms, laboratories, libraries, computing facilities, and e-learning. Compare teaching resources with that found in similar programs internationally in terms of quality and quantity for the number of students in the course
2. Staffing levels including academic, technical, and administrative
3. In regard to resources, the main short-comings of the curriculum
4. Pastoral care, guidance, and advising of students on the curriculum

## Appendix II. Example of a Blueprint

**Purpose of the exam:** Summative: e.g.: Final M.D examination  
End of Clerkship etc.

**Competency domain:** Patient care

What to assess																How to assess	
System	Problem	Practice context		Age			Clinical task						Competency level				Test instrument
		1	2	1	2	3	1	2	3	4	5	6	1	2	3	4	
Gastrointestinal	Upper GI bleeding	x			x				x	x			x				A-type MCQ Key feature question
	Projectile vomiting – pyloric stenosis	x		x			x	x	x	x	x		x	x			A-type MCQ R-type MCQ
	Blood in the stool – rectal cancer		x			x	x	x	x	x	x		x	x	x		MEQ OSCE – X-ray
Cardiovascular	Cardiac arrest	x				x			x		x				x		OSCE – CPR
	Chest pain	x			x		x	x	x	x			x	x	x		Written OSCE – ECG – Simulated patient

Key:

**Problem**  
Presentation or  
pathology

**Practice context**  
1 = Emergency  
2 = Non-emergency

**Age**  
1 = Child  
2 = Adult  
3 = Elderly

**Clinical task**  
1 = History taking  
2 = Physical examination  
3 = Diagnosis  
4 = Investigation  
5 = Treatment  
6 = Follow-up

**Competency level**  
1 = Knows  
2 = Knows how  
3 = Shows how  
4 = Does

**Test instrument**  
1 = Written  
a. A-type MCQs  
b. R-type MCQs  
c. Key feature questions  
d. Modified essay question (MEQ)  
2 = OSCE  
Simulated  
patients/procedures  
3 = Clinical encounter  
Real patients



## **Appendix III. Assessment Methods**

### ***1. Multiple-choice Questions (A-Type: One Best Answer)***

These require examinees to select the single best response from three or more options.

#### **1.1 Example**

In a 40-year-old patient with mild hypertension, which one of the following would you use to commence treatment?

- A. Atenolol
- B. Hydralazine
- C. Clonidine
- D. Amiloride
- E. Methyl DOPA

#### **1.2 Guidelines for writing one-best answer questions**

- Each item should focus on an important concept. Avoid trivial, “tricky,” or overly complex questions.
- Each item should assess application of knowledge, not recall, of an isolated fact.
- The main content of the question should be in the stem and options should be kept as short as possible.
- For the clinical sciences, questions should begin with the presenting problem of a patient, followed by the history (including duration of signs and symptoms), physical findings, results of diagnostic studies, initial treatment, subsequent findings, etc. Vignettes may include only a subset of this information, but the information should be provided in the above-specified order. For the basic sciences, patient vignettes may be very brief; “laboratory vignettes” are also appropriate.
- The stem of the item must pose a clear question, and it should be possible to arrive at an answer with the options covered.
- All distracters (i.e., incorrect options) should be homogeneous. They should fall into the same category as the correct answer (e.g., all diagnoses, tests, treatments, prognoses, disposition alternatives).
- Order the options in logical (e.g., numeric) or alphabetical order.
- Do not write any questions of the form “Which of the following statements is correct?” or “Each of the following statements is correct EXCEPT.” Avoid negatives.
- Do not use “all of the above” or “none of the above.”

## 2. Multiple-choice Questions (R-type: Extended Matching Items)

Extended Matching items are multiple-choice items organized into sets that use one list of options for all items in the set.

A well-constructed extended-matching set includes four components: theme, option list, lead-in statement, and at least two item stems.

### 2.1 Example (adapted from Case & Swanson)

**Theme:** *Fatigue*

**Options:**

- |   |  |
|---|--|
| A. Acute leukemia                               | H. Hereditary spherocytosis                            |
| B. Anemia of chronic disease                    | I. Hypothyroidism                                      |
| C. Congestive heart failure                     | J. Iron deficiency                                     |
| D. Depression                                   | K. Lyme disease  |
| E. Epstein-Barr virus infection                 | L. Microangiopathic hemolytic anemia                   |
| F. Folate deficiency                            | M. Miliary tuberculosis                                |
| G. Glucose 6-phosphate dehydrogenase deficiency | N. Vitamin B <sub>12</sub> (cyanocobalamin) deficiency |

**Lead-in:** For each patient with fatigue, select the most likely diagnosis.

**Stems:** 1. A 19-year-old woman has had fatigue, fever, and sore throat for the past week. She has a temperature of 38.3°C (101°F), cervical lymphadenopathy, and splenomegaly. Initial laboratory studies show a leukocyte count of 5,000/mm<sup>3</sup> (80% lymphocytes, with many lymphocytes exhibiting atypical features). Serum aspartate aminotransferase (AST, GOT) activity is 200 U/L. Serum bilirubin concentration and serum alkaline phosphatase activity are within normal limits. **Ans: E**

2. A 15-year-old girl has a 2-week history of fatigue and back pain. She has widespread bruising, pallor, and tenderness over the vertebrae and both femurs. Complete blood count shows hemoglobin concentration of 7.0 g/dL, leukocyte count of 2,000/mm<sup>3</sup>, and platelet count of 15,000/mm. **Ans: A**

### 2.2 Guidelines for writing extended-matching items

**1. Identify the theme for the set.** The theme can be a chief complaint (e.g., chest pain, fatigue), a disposition situation (e.g., admission/discharge from the emergency department), or a drug class (e.g., antihypertensive agents, antibiotics).

**2. Write the lead-in for the set.** (e.g., *For each patient described below, select the most likely diagnosis*). The lead-in indicates the relationship between the stems and options, clarifying the question posed for examinees. It is an essential component of an extended-matching set.

**3. Prepare the list of options.** The list of options should be single words or very short phrases. List the options in alphabetical order unless there is a logical order.

**4. Write the items.** The items within a set should be similar in structure. Most often, patient vignettes are appropriate.

**5. Review the items.** Check to make sure that there is only a single “best” answer for each question. Also make sure that there are at least four reasonable distractors for each item. As a final check, it is recommended that you ask a colleague to review the items (without the correct answer indicated). If the colleague has difficulty determining the correct answer, modify the option list or the item to eliminate the ambiguity.

### **3. Short-answer Questions (SAQs)**

Short-answer questions avoid cueing and require students to supply an answer, rather than to select or to guess from a fixed number of options. The major limitation of the short-answer test is that it is not suitable for testing complex learning outcomes.

#### **3.1 Example** (adapted from Newble & Cannon)

1. An elderly patient presents with a tremor that is present at rest, made worse by anxiety and decreased with intention. You note that this is not present when the patient is asleep. What is the likely diagnosis?

**Answer:** Parkinsonism (1 mark)

2. A serum biochemical screen reveals a low calcium, low phosphate, and elevated alkaline phosphatase. List two typical symptoms you would expect this patient to have.

**Answer:** Bone pain; muscle weakness; difficulty in walking (1 mark for two correct answers; ½ mark for one correct answer)

#### **3.2 Procedure for setting and marking short-answer questions**

1. *Make the questions precise*
2. *Prepare a structured marking sheet*
  - Allocate marks or part marks for the acceptable answer(s)
  - Be prepared to consider other equally acceptable answers, some of which you may not have predicted
3. *Mark questions with the following points in mind:*
  - Mark anonymously
  - Complete the marking of one page of questions at a time
  - Preferably have a different examiner for each page of questions to reduce bias

#### **4. Modified Essay Questions (MEQs)**

MEQs constitute a series of questions that must be answered in the sequence asked, with no review and no possibility of correcting previous answers. In general, a brief patient clinical scenario (presentation) is followed by a few questions exploring diagnostic hypotheses and mechanisms underlying the clinical presentation. Subsequent questions may focus on applied basic science, interpretation of diagnostic information, management issues, disease complications, and ethical issues or prognosis. The initial scenario is either repeated or reformulated as the reporting process progresses and, as further information is provided, the assessed area narrows. A well-written MEQ assesses the approach of students to solving a problem, their reasoning skills, and their understanding of concepts, rather than recall of factual knowledge.

##### **4.1 Example** (adapted from Newble & Cannon)

A 78-year-old widower who lives alone complains of lethargy and weight loss. He has been admitted to the hospital in which you work for further investigation.

- Q1. What are the three most likely diagnoses?
- a.
  - b.
  - c.
- Q2. List five specific questions which would help you distinguish between these possibilities.
- a.
  - b.
  - c.
  - d.
  - e.

-----page break-----

A routine blood test reveals a hemoglobin of 10.4 g/dL, and the anemia is reported to be of the microcytic hypochromic type.

- Q3. List two typical clinical signs you would look for when you examine the patient.
- a.
  - b.
- Q4. Briefly describe how this information has affected your first diagnosis.

A certain amount of skill is required when preparing an MEQ to avoid giving answers to the previous questions and to avoid the student being repeatedly penalized for the

same error. Scoring is by the use of model answers. Guidelines for scoring are the same as for short-answer questions.

## 5. Checklists

Checklists are basically two-point rating scales. They are useful for assessing any competence or competency component that can be broken down into specific behaviors or actions that can be either done or not done.

### 5.1 Example

Mouth-to-mouth resuscitation

	Done	Order #	Not done	NA
Shakes & shouts to check if unconscious				
Applies chin lift to open airway				
Applies neck lift to open airway				
Uses 'look, listen, lift' method for apnea				
Closes nose by pinching				
Effects tight mouth-to-mouth seal				
Gives four quick ventilations				
Checks carotid pulse				
Checks pupils for dilatation				
Bares victim's chest				
Checks anatomical landmarks				

### 5.2 Steps in construction

- Analyze task or performance into specific sequential steps required
- List common errors (of omission and commission) made by students
- List actions and errors in logical order of occurrence
- Provide a system for observer to record sequence of actions

To obtain consistent scores and satisfactory reliability of observed performance using checklists, trained evaluators are required. To ensure the validity of content and scoring rules, checklist development requires consensus by several experts on the essential behaviors, actions, and criteria for evaluating performance.

## 6. Rating Scales

The essential feature of a rating scale is that the observer is required to make a judgement along a scale that may be continuous or intermittent. They are widely used to assess behavior or performance. However, subjectivity in using the rating scales is an unavoidable problem. To be fair to the student, multiple independent ratings of the same student undertaking the same activity are essential.

### 6.1 Example

Obtaining information from a patient			
Little or no information obtained	Some information obtained. Major errors or omissions	Adequate performance. Most information elicited	Very thorough exploration of patient's problems
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To improve the performance of observers, it is suggested to select individuals to rate who are inherently more consistent than others. Observers should be adequately briefed on the ratings form, and they should not be asked to rate aspects of the student's performance that they have not observed.

## 7. Objective Structured Clinical/Practical Examination (OSCE/OSPE)

The OSCE/OSPE is an administrative structure of a variety of test methods the aim of which is to test a wide range of skills in an objective fashion.

The students proceed through a series of “stations” and undertake a variety of tasks. Marking sheets and checklists are prepared beforehand to improve the reliability of scoring.

### 7.1 Example

Short physical Examination – Knee (5 minutes allowed)		
<p>Student's Name:</p> <p>Greet the student and give him/her the following instructions:            “This patient presents with a history of the right knee giving way after which it swells. Please examine the knee. I would like you to provide a commentary on what you are doing and what you have found.”</p> <p>Please rate the student on each of the following criteria. The expected level of performance is that of a hospital intern about to commence duty. Circle only one mark for each criteria.</p>		
	<i>Performed adequately and completely</i>	<i>Attempted but inadequate or incomplete</i>
1. General approach to the patient	1.0	0.5
2. Inspection for deformity and swelling, muscles for wasting	1.0	0.5
3. Palpation:		
a. Contours	0.5	0.25
b. For inflammation	0.5	0.25
c. Tenderness (along collaterals and along joint line)	0.5	0.25
d. Patella	0.5	0.25
e. Fluid (massage bulge test or patellar tap)	1.0	0.5
4. Movement		
a. Active (both knees)	0.5	0.25
b. Passive (both knees)	0.5	0.25
c. Palpation for crepitus	0.5	0.25
5. Tests of stability		
a. Collateral ligaments	0.5	0.25
b. Cruciate ligaments	0.5	0.25
<b>Total</b>	<b>Signed (Examiner): .....</b>	



## Appendix IV. Standard Setting

Standard setting is about establishing defensible absolute passing scores. All standards reflect the subjective opinions of experts. The keys to defensible standards lie in the choice of credible judges and in the use of a systematic approach to collecting their judgments. Content expertise is the most important characteristic of judges selected for the standard-setting exercise. Judges must also know the target population well; understand both their task as judges and the content materials used in the performance assessment; be fair, open-minded, and willing to follow directions; be as unbiased as possible; and be willing and able to devote their full attention to the task. For most methods and settings, five to six independent judges might be considered minimum, with 10 to 12 judges the maximum. Most absolute standard-setting methods depend on the idea of the borderline student or examinee. The cut score, which separates those who pass from those who fail, corresponds to the point that exactly separates those who know (or can do) just enough to pass from those who do not know enough (or cannot do enough) to pass. The borderline examinee is thus one who has an exact 50:50 probability of passing or failing the test. The borderline examinee is the marginal student—one who on some days might just barely pass your assessment but on other days might fail. However, practical considerations often play a major role in judge selection, the numbers of judges used, the venues for standard-setting exercises, and the exact manner in which the procedures are implemented.

### 1. The Angoff Method

There are five steps in implementing an Angoff standard-setting exercise:

1. The standard-setting judges discuss the characteristics of a borderline examinee and note specific examples of borderline students
2. Judges come to a consensus agreement on the qualities of the borderline examinee with specific examples in mind
3. Each judge is asked to think of 100 borderline examinees who would just pass the exam (i.e., minimally competent) and estimate the proportion of this number who would answer each item correctly
4. These judgments are recorded (usually by a non-judge recorder or secretary)
5. Group discussion among the judges may take place to explain gross differences (>20%) in their judgments of minimum passing levels (MPLs) for each item. Judges may now independently alter their previous MPL if they desire. Once they have completed this process, each judge's estimates for all the items are added to obtain that judge's MPL for all the items ( $MPL1 + MPL2 + \dots$ )/ $n \times 100 = A\%$

After which all judges' MPL are averaged  $(A\% + B\% + \dots)/n \times 100 = \underline{\text{Passing Score}}$

Some actual performance data may be given to the judges. Summary data, such as the mean and standard deviation, will help to calibrate judges as to the difficulty of the items for real students. Alternately, more specific data may also be presented such as the proportion of the total group of students who get an item correct.

## 2. The Hofstee Method

The Hofstee method will allow for adjustment of the standard set by the Angoff method based on the actual performance data of the examinees having sat for the examination. Thus, the Hofstee method is a compromise between absolute and relative standards. It has two steps:

1. Estimation of two sets of cut-off levels set before the examination
2. Determining the final pass score after the examinees have sat for the test

### 2.1 Procedure:

1. A group of content-expert judges who are familiar with the students and the performance examinations under consideration are assembled and trained in the Hofstee method
2. The judges group from the Angoff setting determine two sets of cut-off values:
  - a. Minimum acceptable failing rate and maximum acceptable failing rate
  - b. Minimum acceptable passing score and maximum acceptable passing score
3. The mean percentage for each of the four values across all judges is computed
4. The mean of the four data points (minimum and maximum acceptable fail percent and pass score) is plotted on a cumulative frequency distribution curve (Figure 1)
5. The midpoint of the intersection of the minimum and maximum fail rates and pass scores represents the overall passing score for the group of judges

If the cumulative frequency distribution curve does not fall within the score boundaries defined by the judges, and the judges cannot be recalled to run the exercise again, the standard can default to the minimum acceptable passing score or the maximum acceptable failure rate determined by the judges.

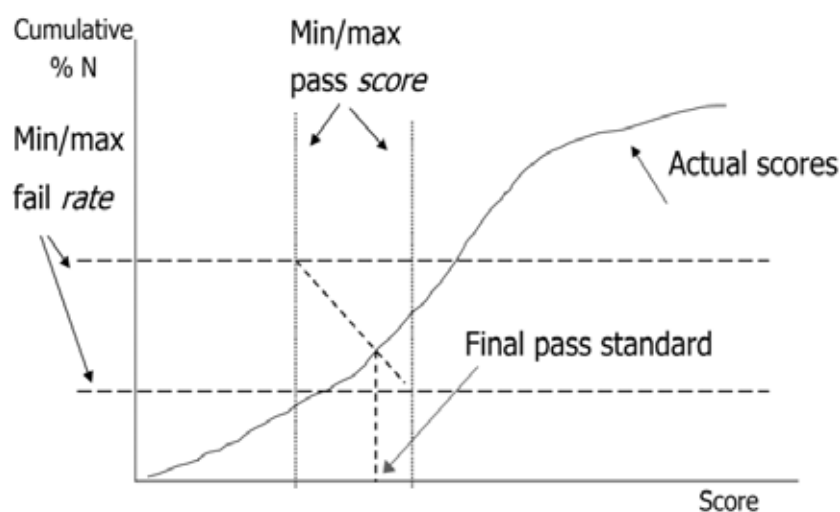


Figure 1. The Hofstee method.

### 3. The Borderline Group Method

The Borderline Group method is an examinee-centered rather than an item-centered method: judgments are made about individual test takers, not test items or content. The method can be used only when content experts who are qualified to serve as standard setters (e.g., faculty) directly observe the performance test. The observing judges' global ratings are used to determine the checklist score that will be used as the passing standard.

#### 3.1 Procedure

1. Prepare judges by orienting them to the station or case and to the checklist or other rating instruments.
2. Judges directly observe the test performance of each examinee. Each judge should observe multiple examinees on the same station rather than following an examinee across several stations. The test performance observed may, with appropriate training, consist of performance products such as individual checklist item scores or post-encounter notes.
3. The observing judge provides a global rating of the overall performance of each examinee on a three-point scale: 1 = *Fail*, 2 = *Borderline*, 3 = *Pass*.
4. The performance is also scored (by the judge or another rater) using a multiple-item checklist or rating scale.
5. The mean checklist score of those examinees rated borderline becomes the passing score for the test (See Figure 2).

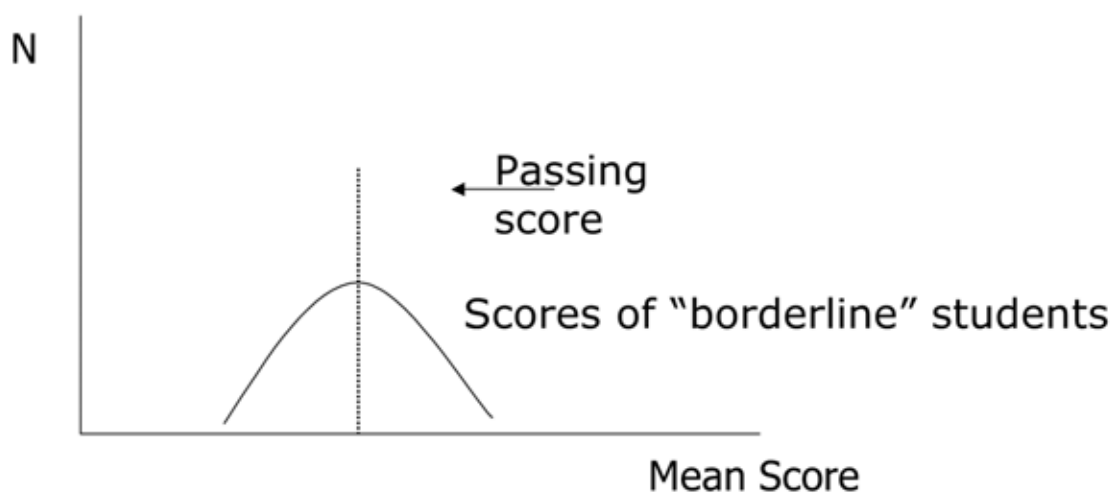


Figure 2. The Borderline Group method.

## **Appendix V. Reliability**

Reliability is an expression of the precision, consistency, and reproducibility of measurements. Adequate reliability requires substantial sampling, therefore, substantial resources, such as testing time, examiners, patients, etc., should be used. To help increase reliability, the following guidelines/strategies should be followed:

- For exams based on MCQs, more than a total of 60 questions that span the entire course objectives should be used
- For SAQs and MEQs, model answers to help guide the marking should be formulated. If at all possible, double marking should be carried out. When more than one marker is available, markers should be nested within an item (marker 1 correcting question 1 of all candidates, marker 2 marking question 2 of all candidates, etc.), which leads to more reliable scores than nesting markers within candidates (marker 1 correcting the full papers of certain candidates, marker 2 correcting the full papers of another group of candidates, etc.).
- For OSCEs and short cases, structured marking sheets and/or rating forms should be prepared and used. Examiners should be briefed in their use. As many stations/cases and examiners as possible should be used.

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