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Faculty of Medicine

Isfahan University of Medical Sciences

Comprehensive Student Assessment System in the General Medicine and MBBS Curriculum

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Introduction

Learner assessment is a key part of a curriculum. Proper assessment can have significant impacts by guiding teachers and learners. It applies to the entire curriculum and is more influential than any other factor in the success or failure of a program. In medical education Assessing learners can be seen as one of the ways to ensure accountability to society. Through assessment, it is possible to ensure that learners have acquired the skills and competencies necessary for medicine and the qualifications necessary to meet the needs of the health system in It is important to note that skilled delivery of health care requires not only technical skills and knowledge, but also related, but the service provider must have other quality characteristics such as communication skills, providing interdisciplinary consultation and care, Evidence-based medicine and system-based practice must also be provided. Therefore, the measurement system must also be comprehensive and effective enough to be able to achieve these characteristics. Evaluate in line with testing knowledge and other functional skills.

Academic achievement tests can be mainly divided into theoretical tests and skill tests. These tests can be divided into: Synchronous and asynchronous electronic and non-electronic exams will be held. Also, all these exams will be held in two scientific fields: and executive are managed and directed. The focus of executive processes is on matters such as scheduling, sourcing, attendance, etc. While the goal of scientific processes is to improve the quality and science of tests, including validity, reliability, and error reduction, in order to increase accuracy, Accuracy and fairness in tests.

Educational Vice Chancellor of the Faculty of Medicine, Isfahan University of Medical Sciences, based on the document of capabilities of graduates of the Doctor of Medicine course General and Miller Pyramid, and in order to improve the scientific and administrative quality of academic achievement tests in the faculty, a comprehensive evaluation system has been developed. In order to implement this system, a management structure has been defined, which first includes this structure and then other parts of the system. Including test design and master plan1It includes the process of addressing student academic failure, exam security, and the process of providing feedback to students. Students will be presented.

Structure of managing academic achievement tests in the medical school The following elements will participate in supervising and managing the faculty exams:

❖Faculty Educational Council

❖Faculty Examinations Committee

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o Faculty Examination Executive Committee
o Faculty Examination Scientific Committee

A- Faculty Examinations Executive Committee
The members of this committee include the following people:
- Assistant Professor of General Medicine, Faculty of Medicine
- Responsible for exams
- Faculty Virtual Learning Interface
- Head of the Faculty Education Department
- Head of the Faculty Computer Unit

The duties of this committee include the following:
- Planning for optimal implementation of proficiency, electronic and non-electronic tests at the faculty level
- Monitoring and approving the exam schedule
- Anticipating problems and challenges in the implementation of tests and providing possible solutions
- Monitoring the optimal conduct of exams
- Coordination of locations for non-electronic in-person exams
- Coordination with the management of the Shahid Soleimani Examination Center to hold in-person electronic exams

B- Faculty Examinations Scientific Committee
The members of this committee include the following people:
- Head of Education Development Office
- Assistant Professor of General Medicine
- Educational group exam officials*
- A representative from the Center for Medical Education Studies and Development 5

* The person in charge of the group's exams is a member of the faculty of that group who is interested and capable in the field of medical education and exams. This responsibility in educational groups is the responsibility of the group manager, and in large groups, it is the responsibility of the group's educational assistant or a Another member of the group can take on this responsibility.

The definition and description of the duties of the Scientific Committee for Medical School Exams are as follows:

The Medical School Examination Scientific Committee is one of the committees in the field of education of the Faculty and is under the supervision of the Faculty Development Office, which, in partnership with A number of experienced, interested, and committed professors in the field of training and assessing learners with the aim of improving the processes of designing and conducting exams learners and hold that faculty accountable for the exams held. This committee is responsible for monitoring academic quality. It is responsible for all faculty examinations. This is accomplished through the following main tasks:

- Tracking the scientific processes of the faculty exam management system
- Reviewing the test reports of educational groups in committee meetings
- Supervising the proper implementation of the University Educational Council's approvals regarding academic progress tests.
- Providing qualitative feedback on tests to professors and educational groups and following up on professor empowerment based on that
- Follow up and take necessary measures to improve the quality of tests and launch new and useful tests.
- Coordination with relevant units, including the university's educational vice-president and faculty.
- Addressing existing problems and ambiguities in the field of student protests based on the analysis of tests (if necessary, with the presence of Representative of the University's Studies and Education Development Management)
- Analyzing faculty exams and presenting reports to the committee
- Follow-up on the preparation of question banks in groups
- Sending a report on the examination of educational groups to the University's Studies and Educational Development Management

Test design and test master plan

In order to design tests, it is necessary to have a template in order to systematically design tests. In this document, the general medical capabilities framework approved by the relevant ministry and the Miller Pyramid will be considered as a design framework:

Document of capabilities of graduates of the Doctorate of General Medicine course

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One educational approach that has been prominent in medical education literature since around 1960 is the outcome-based educational program, which It focuses on the final product. In simple terms, it can be said that capability is the ability to perform a set of tasks or roles in the form of Effective or sufficient that learners should be able to do after completing the training course. Capabilities typically include all three components. They are knowledge, skills, and attitudes, and an individual's knowledge is not considered merely as a capability, but rather what the student can do when facing problems. It is something that needs to be done in practice and fits into this definition. Given the key role of competence in the educational program, its importance in the assessment discussion is It also manifests itself in learners. In fact, it is necessary to assess the learner in a way that best reflects his/her ability to face his/her tasks. Various organizations have attempted to compile a list of capabilities that are expected of graduates of various fields and levels. It is going to be clear what they mean by this term. Currently, various frameworks of competency in the medical field There are general and specialized courses provided by various universities and organizations.

The Supreme Council for Medical Sciences Planning issued the document of capabilities of graduates of the Doctorate of General Medicine course on 10/20/2015. This document includes the competencies expected of graduates of the Doctor of General Medicine program in seven areas. According to this document, it is expected that the curriculum of the general medicine course will be organized in such a way that students will be able to: These skills should be acquired. The core competencies include the following:

1-Clinical skills
2-Communication skills
3-Patient care (diagnosis, treatment, rehabilitation)
4- Health promotion and prevention in the health system and the role of the physician in it
5-Personal development and continuous learning
6-Professional commitment, ethics and medical law
7- Decision-making, reasoning and problem-solving skills

Competency assessment is a multifaceted process, involving the measurement of complex and diverse behaviors and characteristics that include knowledge, attitudinal components, and In simpler terms, competency is assessed as the final outcome of achieving a large number of complex behaviors and functions in Therefore, its evaluation should include activating prior knowledge, acquiring and analyzing data, solving clinical problems, and making decisions. appropriate decisions for patient management and ultimately the performance of a specific task. Given this definition, it is clear that in practice, assessment Competence will not be possible through a single test, but rather a series of tests are needed to measure these parameters at the same time.

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Miller Pyramid

Following the growing interest in assessing competencies in the workplace, George Miller developed a model for assessing clinical competencies in 1990. proposed what is known as the Miller Pyramid. This pyramid divides clinical competence into four levels: "knows"2"Knows how"3"Show" "How does it give?"4"does"5To evaluate each capability based on the levels of Miller's pyramid, appropriate assessment methods must be used. The level to be used is shown in Figure 1 of this pyramid and in Table 1 the assessment methods appropriate to each level are presented.

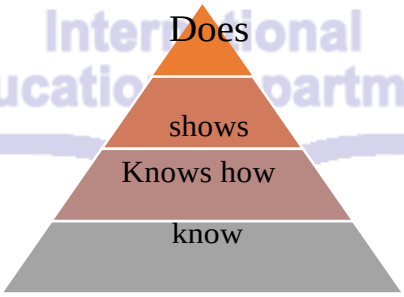

Figure 1 - Miller's Pyramid: Clinical Competencies

Row	Evaluation level	Assessment tool
1	He knows and he knows how.	Oral exam, essay questions, short answer questions, multiple choice questions, Extensive matching questions, key feature testing
2	Shows how	Full clinical case, short clinical case,OSCE
3	does	Checklist, 360-degree assessment, logbook, workbook,DOPS, Mini-CEX

Table 1: Evaluation methods at different levels of Miller's pyramid

According to the principles stated for assessing capabilities and based on Miller's pyramid, for assessing general medical students in the medical school Isfahan University of Medical Sciences uses appropriate assessment methods. The following is the main map of student exams: (Tables 2 to 6).

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Table 2: Basic Science Course Exam Map Based on Expected Competencies from General Medicine and Miller's Pyramid

Row	Ability	Relevant lesson		Evaluation method	Performance level based on Miller's pyramid
		Course name	Semester		
1	Communication skills	Medical Etiquette 1 to 4	2 to 5	Written exam (test, short answer and limited response essay), project work, scenario writing	Knows-6Does-7 Shows how8
2	Health promotion and prevention In the health system and the role of the physician in it	Principles of health services	1	Carrying out student projects, written exams (tests, short answer and limited response essays)	Does - knows
		Principles of Epidemiology	2	Written exam (test, short answer and limited response essay)	knows
3	Personal development and continuous learning	Medical Etiquette 1 to 4	2 to 5	Workbook,9Project completion, written exam (test, short answer and limited response essay)	Does - knows
		Introduction to theoretical and practical computers	1	Written exam (test, short answer and limited answer explanation), Practical test	Knows - does
		Physical Education 1 and 2	2 and 3	Practical test	does
		Health Psychology	2		knows

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<table>
<tr><td rowspan="8">Row</td><td rowspan="8">Ability</td><td colspan="2">Relevant lesson</td><td rowspan="8">Evaluation method Written exam (test, short answer and limited essay) Answer)</td><td rowspan="8">Performance level based on Miller's pyramid</td></tr>
<tr><td>Course name</td><td>Semester</td></tr>
<tr><td>Islamic Thought 1 and 2</td><td>1 and 2</td></tr>
<tr><td>Specialized language</td><td>2 and 3</td></tr>
<tr><td>Thematic Tafsir of the Qur'an</td><td>2</td></tr>
<tr><td>Islamic Ethics/Rules of Life Culture</td><td>3</td></tr>
<tr><td>and Civilization Islam and Iran</td><td>3</td></tr>
<tr><td>Knowledge Family and Society</td><td>4</td></tr>
<tr><td>Islamic Revolution of Iran</td><td>5</td></tr>
<tr><td>4</td><td>Professional commitment, Ethics Forensic medicine</td><td>and Medical Etiquette 1 to 4</td><td>2 to 5</td><td>Written exam (test, short answer and limited response essay), project work, scenario writing</td><td>Knows - Does - Shows How</td></tr>
<tr><td>5</td><td>Decision-making skills, Argument and problem solving</td><td>Medical Etiquette 1 to 4</td><td>2 to 5</td><td>Key Features Test 10Project implementation (KF) Written exam (test, short answer and limited response essay)</td><td>Knows how1-1Does - knows</td></tr>
</table>

		Anatomical sciences, physiology, biochemistry, genetics, microbiology	Clinical examples in teaching anatomy, physiology, biochemistry,	Written exam (test, short answer and limited essay) Extensive customization), student project and activity work	Knows - does

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Row	Ability	Relevant lesson		Evaluation method	Performance level based on Miller's pyramid
		Course name	Semester		
		Pathology, Parasitic Fungi, Immunology and knowledge of sciences	Genetics, microbiology, parasitic fungi, immunology		
		Acquire basic knowledge and appropriate attitude In the field of medicine	All lessons	Written exam (test, short answer and limited answer explanation), Project implementation2and1Student activities	Knows - does
6	Clinical skill capability (performing) Laboratory tests, examination Physical)	Anatomical sciences, physiology, biochemistry, genetics, microbiology Pathology, Parasitic Fungi, Immunology	All semesters	Written exam (test, short answer and limited essay) Extensive customization), project execution and activities Student	Knows - does
		Genetics, microbiology lessons, Parasitic fungi, immunology	Semester 2 to 5	Practical tests with checklists	does
7	Patient care (nutrition, basic knowledge) and appropriate attitude in the field Medicine)	Medical nutrition	Semester 3	Written exam (test, short answer and limited essay) Widely adaptable), project	Knows - does
		All lessons	All semesters	Written exam (test, short answer and limited answer explanation), Project implementation3and1Student activities	Knows - does

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Table 3: The main map of the clinical introductory course exams based on the expected competencies of general medicine and the Miller Pyramid.

Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
1	Communication skills	History and physical examination 1 and 2	Semester 6 and 7	Standardized Patient Checklist4-1Objective test Clinically structured15	Does-Shows How to give
2	Health promotion and Prevention in the health system and The role of the doctor in it	Epidemiology of common infectious diseases and non-communicable in the country	Semester 6 and 7	Individual and group projects, multiple choice, extended response, limited response, short response Matching-True/False In a formative and cumulative manner	Does - knows
3	Professional commitment, ethics and law Medicine	History and physical examination 1 and 2 History and examination internship Physical 1 and 2	Semester 6 and 7	Checklist - Standardized Patient - Structured Objective Test Clinical	Does - shows How to give
4	Decision-making skills And the reasoning of the problem	All lessons, exclusively in Clinical reasoning lesson	Semester 6 and 7	Multiple choice - Extended response - Limited response - Short answer - Sortable - True/False as Formational and compact	knows
5	Clinical skills (history taking, physical examination, how to	All courses-internships biography and Physical examination 1 and 2	Semester 6 and 7	Standardized Patient Checklist6-1Objective test Clinically structured	Does - shows How to give

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Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
	Recording and presenting information, performingLaboratory tests)				
6	Personal development and continuous learning (information technology, language) English, Psychology)	All lessons	Semester 6 and 7	Project in formative exams	does
7	Patient care (prescription) Medicine, general principles of patient care, Nutrition)	All lessons	Semester 6 and 7	Multiple choice-explanatory, limited response-explanatory Answer - Short Answer - Random - True / False In a formative and cumulative manner	knows

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Table 4: Master plan for internship exams based on expected competencies from general medicine and Miller's pyramid

Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
1	Communication skills	All internship courses	Internship	Observation in real conditions based on the checklist mini CEX OSCE	Does - shows How to give
2	Patient care (Diagnosis, treatment, rehabilitation)	All internship courses	Internship	Multiple-choice - Clinical reasoning tests such as puzzles and Testing key observation features in real world conditions based on a checklist mini CEX OSCE Logbook	Knows - Knows how - Does - Shows Give - does
3	Health promotion and prevention In the health system and the role The doctor in it	Epidemiology of common infectious diseases and Non-contagious in the country	Internship	Multiple choice-explanatory, limited response-explanatory Answer - Short answer - Broad sorting - True/False, Project	Knows - does
		Traditional medicine	Internship	Multiple choice - extended response - limited response - short answer - extended matching - true/false - clinical reasoning tests such as puzzles and feature tests KeyProject KF	Knows-knows how does

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Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
		Community-oriented internship	Internship	Multiple Choice - Extended Explanatory Response - Limited Explanatory Response - Short Answer - Extended Sorting - True/False - Project Observation in real conditions based on the checklist	Knows - does
4	Individual development and Continuous learning	Research and medicine based on the method Evidence (EBM)	Internship	Multiple Choice - Extended Explanatory Response - Limited Explanatory Response - Short Answer - Extended Sorting - True/False - Project	Knows - does
		Principles of Demography and Health Family	Internship	Written exam, individual and group assignments	Knows - does
		Health management in accidents and disasters and passive defense	Internship	Written exam, individual and group assignments	Knows - does
		All internship lessons and morning report)(morning report) and Journal Club	Internship	Assessment based on checklist	does
5	Professional commitment, ethics and medical law	Ethics	Internship	Observation and evaluation in the real environment,Case Log	Does - shows How to give
		All internship courses	Internship		

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Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
6	Decision-making skills, Argument and problem solving	Clinical training, report Morning, clinic and...	Internship	Assessment based on checklist, logbook, objective test Clinically structured, and Clinical reasoning tests such as puzzles and mini-CEX tests Key FeaturesKF	Does - shows Gives how - does - knows how
7	Clinical skills	All internship courses	Internship	Assessment based on checklist, direct observation of skills Practical, logbook, structured clinical objective test, and mini-CEX	Does - shows how - does

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Table 5: Master plan for internship exams based on expected competencies from general medicine and Miller's pyramid

Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
1	Communication skills	Internship for all courses	Internship	Structured objective clinical test Observation in real conditions Mini Cex	Shows how does
2	Patient care (diagnosis, treatment, rehabilitation)	Internship for all courses	Internship	Teacher to student grade based on checklist, direct observation Practical skills-logbook-structured objective clinical test, clinical reasoning tests: puzzle and trait test Key wordsMini-CEX, KF	Does - shows Give how - knows How
3	Health promotion and Prevention in the health system and The role of the doctor in it	Internship for all courses	Internship	Logbook, project	does
4	Individual development, continuous learning, student-centered education, preparing materials for mornings and presenting them in meetings in person and virtually	Internship for all courses	Internship	Evaluating student performance in Journal Club and reporting Morning with a checklist	does
5	Professional commitment, ethics and medical law	Internship for all courses	Internship	Observation in real conditions and case log	Does - shows How to give

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Row	Capabilities	Relevant lesson		Evaluation method	Performance level based on the pyramid Miller
		Course name	Semester		
		Longitudinal integration of ethics courses in Major groups			
6	Decision-making skills, Reasoning and problem solving	Internship of all courses in various clinical areas (clinic, room) surgery, inpatient wards, etc.)	Internship	Structured Objective Clinical Test, Logbook, Clinical Reasoning Tests: Puzzle and Key Features TestKF, Mini-CEX	Shows how does-knows how-does
7	Clinical skills	Internship for all courses	Internship	Teacher to student grade based on checklist, direct observation Practical skills - logbook - structured objective test Clinical, Mini-CEX	Does - shows how - does

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Table 6: Assessment methods in the general medical education program based on Bloom's domains

Student evaluation methods in the general medicine program	Skill area	- Written tests (multiple choice, essay, true/false tests) - Clinical reasoning tests (including questions) PMP and SC, Puzzle, KF - Electronic exams in cyberspace - Evaluating students' assignments, work reports, and individual and group projects. - Questions and answers from students in educational situations (laboratory, rotations in medical departments,17 In the morning,18Clinic9and1...) . - Assigning points to the way the biography is presented in the morning report and the accompanying article - Assigning points to participation in group discussions in the discussion forum in the Navid system - Completing assignments in the Navid system on time, taking class exams in the Navid system, attending classes Virtual online, midterm exam, final exam - Using cadavers, casts, and radiological bones to assess learners' knowledge
	Attitudinal field	- Student attitude assessment questionnaire - Presenting sheets20From the teacher to the student at the end of each lesson or educational program and its completion anonymously. By students and delivered to professors - Observation of the student's professional behavior by the professor in various educational situations in interaction with professors, team personnel Treatment, patients and students at different levels - Observing and applying the opinions of assistants regarding student performance
	Cognitive domain	- (Example: OSCE Clinical Competency Test) - (Example: OSLE Practical Laboratory Tests) - (Assessment of achievement of expected skills) log book - Observing the student's clinical performance (record writing, writing a biography,off, on, service note, order (Performing procedures, progress note, service note) - Using cadavers, casts, and radiological bones to assess learners' skills

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The design processes for medical school exams in the general medicine curriculum include the following two processes:

- The process of designing electronic and non-electronic written exams -
- The process of designing proficiency tests

A- The process of designing electronic and non-electronic written exams

1) First, the two-dimensional test table is created by the course leader and their fellow teachers based on the learning objectives and the level of involvement of these objectives. The entire course content is compiled. After preparation, this table is provided to the person in charge of group exams.

2) The person in charge of group exams will conduct a general review of the two-dimensional tables received from the course supervisors and, if necessary, send them to the supervisor. The relevant lesson provides feedback.

3) The course leader and their fellow professors will prepare the exam questions according to the two-dimensional exam table, and based on the question identification form (or format). provided by the University Examination Center). The question identification form can be seen in Appendix No. 1 of this document. Note: It is mandatory to mention the source of the question with the page number when designing the question.

4) In the next step, in order to comply with the principles of question design, each professor designs questions using checklists such as the Millman checklist. The questions will be reviewed and any necessary corrections will be made. All questions, along with the question ID, will be provided to the responsible person. The lesson is placed. The Millman checklist is given in Appendix No. 2.

5) In addition to reviewing the question IDs and completing the entire exam review checklists, the course supervisor also checks the questions for accuracy. The question and key are scientifically examined, the absence of repeated questions, and compliance with the two-dimensional table of the exam. In this regard, After reviewing, the course instructor provides the necessary feedback to the professors who designed the questions so that they can make corrections if necessary. They should take action. After completing the design and review of the questions, the exam file is prepared by the course supervisor. The exam file includes: The two-dimensional table of the test, and all questions in the form of a birth certificate and a general Millman checklist for the entire test. At the end This step of the test design process is where the test ID is completed and signed by the course administrator. The test ID form is in the format Appendix 3 is included at the end of this document.

6) The next step includes quality control of the test file in terms of the presence and completeness of all forms and signatures by the group manager/test manager. The group will be. After reviewing this file, if corrections are needed, it will be returned to the course leader. Then he/she (Course supervisor) provides the finalized questions to the faculty exam supervisor (or test center expert) when the exam is held. Will place.

A summary of this process can be seen in Appendix 4.

B- The process of designing skill tests

1) First, the two-dimensional test table is prepared by the course leader and his/her fellow teachers based on the learning objectives in the skill area and based on The above tables, which specify the methods of student assessment in the field of capabilities and the degree of involvement of these goals in the overall The course content is compiled. After preparation, this table is provided to the person in charge of group exams.

2) The course leader and their fellow professors design the exam questions according to the two-dimensional exam table and based on the question identification form. They will.

3) In addition to checking the question IDs (question bodies, examiner's guide, etc.), the course supervisor will check for the absence of repeated questions and their consistency. The test is reviewed with a two-dimensional table. In this regard, after reviewing, the course supervisor will ask the professors to design the questions. Provides necessary feedback to correct them if necessary. After completing the design and review of the questions, The exam file is prepared by the course instructor. The exam file will include the two-dimensional exam table and the question ID. At the end of this step of the test design process, the test ID form is completed and signed by the course administrator. Test ID Form It is included as Appendix 1 at the end of this document.

4) The next step includes quality control of the test file in terms of the presence and completeness of all forms and signatures by the group manager/test manager. The group will be. After reviewing this file, if corrections are needed, it will be returned to the course leader. Then he/she (Course supervisor) provides the finalized questions to the faculty exam supervisor (or test center expert) when the exam is held. Will place.

Monitoring and evaluating tests

Due to the special importance of academic achievement tests, it is important to examine them for the quantitative and qualitative characteristics necessary to ensure accuracy. Accuracy and fairness in assessment are essential for any learner assessment system. In this regard, the following processes are carried out to monitor tests.

A- Quantitative and qualitative review of tests in the relevant group

The course supervisor and the group exam supervisor in two stages, before and after the exam, to review the quantitative and qualitative aspects of the exam. They perform the following activities:

- Review before the exam: As explained in the previous section, during the exam design stage, the course supervisor and the instructor are responsible for The test, conducts a detailed review of the tests and their compliance with the test design principles, which are summarized in Appendix 4. The process is presented.

● Post-exam review: The University's Electronic Exam System (SEBA) reviews the quantitative characteristics of all exams. These features include the difficulty and accuracy coefficients of all questions and the entire test, the average scores of learners, the error The standard is Cronbach's alpha and the range of scores. University exam management for course administrators and development office administrators Faculty education has provided the possibility of accessing the results of test analysis by faculty, with a specific level of access. In this way, in the Faculty of Medicine, course administrators have access to the results of their own test analysis and the head of the Development Office They have access to the results of the analysis of all the faculty exams. Accordingly, the quantitative analysis and evaluation of the exams is carried out as follows: It will be.

After completing the exams, course administrators extract the results of their course exam analysis from the system and review them. If the test or a question has a problem (very low or negative accuracy coefficient, inappropriate difficulty coefficient or range of scores) inappropriate, etc.), by referring to the test file and determining the relevant question designer, the problem was further investigated and, while Feedback to the relevant question designer is documented for correction in future course exams.

B- Quantitative and qualitative review of tests in the Education Development Office and the Scientific Examination Committee

As explained in the above section, university exam management is for course administrators and faculty education development office administrators. This allows them to access the results of the test analysis by faculty with a specific access level. The following processes are followed in the Faculty Education Development Office to monitor the tests:

● The Faculty Educational Development Office should review all aspects and features of the exam for two courses from each educational group in a structured manner. Randomly review each semester and provide feedback to the course leader and question designer, as well as guidance for correcting the question. Present the results to the test committee. This includes reviewing the quantitative analysis (using the results of the analysis by the test system from including difficulty coefficient and clarity, etc.), qualitative analysis (using checklists and two-dimensional tables), and scientific review (review of Expertise in the accuracy of questions and keys can be done in coordination with the group exam supervisor or course supervisor (some questions can be done).

● The Faculty Educational Development Office reviews the quantitative analysis results of all midterm and final exams and at the end Each semester, the results of the test analysis in the Saba system are entered into Excel and sorted. Tests Those whose clarity coefficient is less than 0.2 or difficulty coefficient is less than 0.3 or more than 0.7 are selected and examined. The committee will review the results and submit a general report to the examination committee. In addition, the exams that students object to will be The students' objections have been submitted in writing to the Development Office and have been subject to a quantitative and qualitative review, and the results are as follows: It is presented to the examination committee for further review.

- The exam committee meets every two weeks in the Medical School Educational Development Office. After further review of the exam in The examination committee provides verbal feedback to the course supervisor and the group examination supervisor, and then the minutes are sent to the relevant group. The examination committee for the Deputy General Physician includes a representative from the Center for Medical Education Studies and Development, responsible for: The group exam supervisor, the course supervisor are present. The exam review committee includes the EDO, the evaluation unit supervisor, and the EDO. Review of quantitative analysis (using the results of analysis by the test system, including difficulty and discrimination coefficients, etc.) and qualitative analysis (using Using checklists and two-dimensional tables) and scientific review (specialized review of the accuracy of the question and key with the coordination of the responsible person) Group or course leader tests) Some questions can be done.

Note 1: If the Faculty Examination Scientific Committee encounters any ambiguity or challenge regarding the qualitative and quantitative analysis of the examination and addressing the problems arising from it, it can seek help or guidance from the Student Evaluation Unit in the Management of Studies and Development of University Education. Receive it as needed.

Note 2: The Faculty Education Development Office, considering the problems and shortcomings of the examined exams, will organize the necessary empowerment workshops. He foresees and plans.

Process for handling student protests

- After the exam, if the professor wishes, students will be provided with access to the questions and answer sheets, and if not, If the professor wishes, access will be provided to 5 to 8 student representatives; in this case, students must submit their objection within Within 2 working days of holding the exam through the SAMA system or in writing, by providing a reference and explaining the reason for the objection. The course supervisor and the transcript should be delivered to the relevant group manager.
- The course supervisor is required to stop the permanent recording of grades and provide the necessary response within 3 working days, if it is an individual response. Notify the student representative through SAMA and, if it is a group,
- If a significant number of students (as determined by the faculty's vice president of education) are not satisfied with the response received, the professor in charge The course must stop recording grades permanently, and within 3 days of receiving the second objection, a person must be present in the presence of the group director. The questions will be answered by the faculty members of the department (selected by the department director), a student representative, and 2 of the top incoming students. The form will be reviewed in person and the results will be announced to the student representative.

Note: If the professor who is the subject of the objection is the department director, the meeting will be held in the presence of the faculty's vice president of education.

- The results of the meeting and the items reviewed must be documented and, in addition to being reflected to the department director and the faculty's vice president of education, included in the file. The test is recorded.
- If students are not convinced after this investigation, they can submit their objection to the Faculty Examinations Committee (Office of the Academic Affairs Committee). Faculty Development) will submit and send a copy of this objection to the group director and course coordinator.
- In this case, after receiving the letter of objections, the course administrator will record the score until the results of the review are determined by the academic committee of the exam. The school must stop.
- The Faculty Examination Scientific Committee is required to review the results of quantitative analysis, qualitative analysis (using the Millman checklist and two-dimensional table) And review the scientific review (specialized review of the accuracy of the questions and key) of the exam.
- If the test proves to be problematic, the matter will be discussed in a meeting attended by the head of the faculty's scientific examination committee, the course supervisor, The teacher who designed the questions, the person in charge of the group tests, and, if necessary, an expert in the field of the test subject, should be examined. Based on these analyses, a response to the objection will be announced within 4 days.
- If, in the opinion of the Academic Examination Committee, the student's objection is without reason and without sufficient evidence, the committee will take action. Appropriate (deductible scores, failure to address subsequent requests and objections, additional tests, additional projects, etc.) are anticipated and operationalized. It will be done.
- The result of the review can be declared as rejection of the objection, acceptance of the objection with deletion of the question, or re-examination. The conclusion should be made in the form of It will be a meeting and sent to the teaching team and the teacher.
- If the exam proves to be problematic, the exam committee will send the results to the faculty dean so that necessary measures can be taken. (Reminder to the teacher/introduction of the teacher to participate in empowerment courses, etc.)

Determining the exam passing score

It is the minimum score that a student can achieve to pass the exam. The current passing score for the exam is Considering the announcement of the Ministry of Health regarding the minimum passing score for students, the fixed score method is used. In this method, if a student In general and basic courses, if you can answer half of the questions, it is good enough and you will be declared passed. For specialized courses, if A student who can answer 60% of the questions will be declared a passing grade.

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Executive management of exams in the faculty

The executive management of the exam is divided into four sections: skill tests, in-person electronic tests, non-face-to-face electronic tests, and Paper-based exams are coordinated. The responsibility for coordination lies with the Faculty-level Exam Executive Committee and is divided into the following sections: The executive instructions for non-face-to-face electronic exams are developed and implemented by the Medical Sciences Assessment Organization. Universities, the academic version of which will be approved by the Educational Council with the necessary changes and communicated to the faculties. For For in-person electronic exams and paper-based exams, the following items must be coordinated and implemented.

- Developing the exam schedule in educational groups and sending it to the exam executive committee.
- Reviewing the exam schedule in the executive committee in terms of timing, overlap, and number of exams
- Coordination of the test location and, if necessary, coordination with the Shahid Soleimani Electronic Testing Center
- Coordination of supervisors and those responsible for each test
- Conducting the exam according to the specified schedule (electronically or on paper)
- Preparing the minutes of each exam, and reporting any violations in the exam minutes.

How to deal with students with academic failure

The Faculty Academic Progress Committee is working to deal with these students. The following process is being implemented in this committee:

1- Receive the names of probationary students and faculty dropouts separately from the university's vice chancellor. Match

2- this list with the names of probationary students and faculty dropouts through faculty education. Invite probationary

3- students to visit faculty education and introduce an advisor by selecting the student. Advisor interviews the student and

4- completes the relevant forms to determine the cause of the student's dropout.

5- Inviting students on probation to see counselors in the faculty counseling office through the faculties' education or student affairs. (Currently, due to the current circumstances, individual students on probation and academic failure are contacted through the medical faculty counseling office.)

6- After contacting the students, if necessary and at the discretion of the relevant experts, counseling sessions are arranged for them. Following up

7- on the work of the counselors after visiting or making a phone call with the students, and if possible, taking the necessary steps to solve their problem by the faculty advisor and education professor.

8- Prepare a report of the actions taken in the relevant table.

9- Providing results and feedback on the status of probationary students at the core of medical school academic progress

10- Following up on the status of students by the faculty advisor to ensure the effectiveness of the services provided to students.

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Exam security

The professor in charge of the relevant course is responsible for collecting questions from the instructors, organizing and possibly correcting them, and finalizing the questions. He/She is responsible and obliged to deliver it to the training expert at the designated time.

Questions must be provided in special, sealed packaging with a confidential seal on the envelope for non-electronic exams. Faculty (responsible for faculty exams) should be placed.

To upload questions to the medical system, the professor or course supervisor is required to submit the questions at least 48 working hours before the exam. Upload the key to the Teb system according to the format. It is important to note that the settings in the system used Learners' access to test questions should be chosen in such a way that they do not have any access to the questions until the exact start time of the test. Be.

On the day of the exam, the education experts are required to provide the necessary cooperation for the exam. The subject teacher/representative of the relevant educational group is required to be present at the exam venue during the exam and, after the exam is completed, to hand over the answer sheets (except in the case of exams).(which can be corrected at the faculty). Questions in the faculty question bank and MCQ section The relevant educational group will be archived. For comprehensive and regional exams, the Exam Protection Unit is responsible for following up on exam protection from the stage of approval by professors who designed the questions, supervising typing and copying, and holding the exam, announcing the results, and storing the questions in an appropriate location. The set of measures taken by the Exam Protection Unit are as follows:

- Control of entry and exit of candidates in the exam
- Creating a safe space for test questions as a repository and installing anti-theft doors, locks, and CCTV cameras in the repository
- The presence of the security representative and the person responsible for exam security at all stages of the exam, controlling its implementation, and securing the exam.
- Installing blocker devices in the exam space,
- matching photos of exam candidates
- Checking the qualifications of exam invigilators
- Complete supervision of the process of preparing, typing, and maintaining questions in internal and employment exams, and compliance with quarantine-related issues and laws.

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Support for a comprehensive student evaluation system

To support the comprehensive student evaluation system, the following activities are carried out in the field of empowering faculty members and encouraging active professors: The scope of the tests is:

A- Empowering teachers

The process mentioned in the above section aims to improve the quality of faculty exam questions and requires the preparation of professors and teaching groups, which the Faculty Education Development Office and the Medical Education Studies and Development Center will familiarize professors and teaching group managers with. These programs are presented in the form of faculty empowerment programs (Empowerment Regulations). Faculty members of Isfahan University of Medical Sciences in the 2019 edition of the skill courses. In these programs, each of the faculty members Newly arrived academics receive initial training on exams (5 hours) and in addition, in this program, professors must They must have the necessary training in this area to be promoted from assistant professor to associate professor (6 mandatory hours) and from associate professor to professor (6 mandatory hours). The list of these empowerment workshops is provided in Appendix 5.

B- Encouraging professors active in the field of exams

Professors are encouraged for their activities in the field of student assessment based on the following:

- Based on the approvals of the University's Educational Council, the members of the faculty present in the Faculty's Scientific Examination Committee are in accordance with the Participation is equivalent to activity inThey will receive EDC points.
- According to Note 4, Article 104 of the Regulations for the Recruitment of Faculty Members, approved in May 2012, regarding the equivalence of activities Faculty members of educational development centers inAs an equivalent educational unit for consideration in EDO and EDC promotions Annually and promotion, and based on the approvals of the Medical Education Studies and Development Center of Isfahan University of Medical Sciences, examples include: Training development activities, which are considered equivalent to educational activities, include planning and reviewing processes and tools. Comprehensive assessment and design and supervision of performance tests.is that any (Mini-cex, DOPS, …24 hours of activity The equivalent of one educational unit is allocated to it.
- Based on the evaluation guidelines for educational research activities and paragraph 6, article 2, of the regulations for the promotion of university faculty Approved in August 2019, professors who have innovations in the field of evaluation can use research points to promote Use it often.
- Professors who innovate in areas of medical education, including student assessment, can improve their process. Send to the Motahari University Festival Secretariat. These processes can be completed after judging if the required points are obtained.

As an accepted or superior university process, and if it earns points in a national festival, it can be used as a process A national winner will be selected and awarded. The selection process can also be based on the evaluation guidelines. Educational research activities should be used to promote the status of professors.

- According to the regulations of the Distinguished Professor of Education approved by the 69th Educational Council of Isfahan University of Medical Sciences dated 1/25/1400, Launching and participating in the implementation of new methods in evaluating learners and discipline in implementing evaluation Students and participation in designing questions in the relevant group are the criteria for selecting top teaching faculty.

Providing feedback to students

Providing feedback to students after conducting academic progress tests is done in the following ways:

- Providing quantitative test results in the SAMA system
- Providing written and descriptive feedback in response to student objections in the SAMA system by the instructor
- Providing descriptive feedback in response to student objections by members of the examination committee
- Providing written and descriptive feedback to students in response to assignments and projects in student formative assessment
- Providing written and descriptive feedback in the portfolio, logbook, and case log system for clinical students
- Providing verbal feedback after administering the ASCII tests to clinical students
- Providing verbal feedback to students after observing student activities in workplace assessments
- Providing individual feedback to students by advisors

Access to test files and results

If someone wants to use the test file, results, and test process, they will be granted access to these items under the following conditions: It will be possible:

- He/She must be a member of the practical staff, a student, or an employee of Isfahan University of Medical Sciences.
- If he/she has an approved research plan at Isfahan University of Medical Sciences or a letter from the Vice Chancellor for Education or The Medical Education Studies and Development Center of Isfahan University of Medical Sciences should have a place to review the exams.
- If the results are publicly published without mentioning the name of the student or professor.
- When publishing articles, the intellectual property rights of Isfahan University of Medical Sciences must be respected by mentioning the name of Isfahan University of Medical Sciences.

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It should be noted that if this person is outside of Isfahan University of Medical Sciences and wants to use the folder of tests, results, and processes of this university's tests for a research project, their request must first be submitted to the Vice President for Research and then through Correspondence with the Vice Chancellor of Education of the University, their request will be reviewed by the University's Educational Council. If they agree to do so, His/her plan in this council must be in correspondence with the Faculty of Medicine, and in this case, he/she meets the first condition. In addition, the second condition (public publication of the results without the name of the student or professor) must also be met, and the acknowledgement of the cooperation of Isfahan University of Medical Sciences must be included in the publication of the article. This person must have cooperation from Isfahan University of Medical Sciences to carry out the plan.

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Attachments

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Appendix 1) Question ID

Identity card multiple choice questions

Name of the relevant lesson/topic	
Name and surname of the person in charge of the lesson	
Question designer's name and surname	
Question taxonomy	
Question stem	
Deviation options	
Correct option	
Question reference includes book, chapter, and page.	

Identity card descriptive questions

Name of the relevant course/topic	
Name and surname of the person in charge of the lesson	
Question designer's name and surname	
Question taxonomy	
Question stem	
Key points to answer the question	
Question reference includes book, chapter, and page.	
The score for this question	

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True and False Questions ID Card

Course name	
Name and surname of the person in charge of the lesson	
Question designer's name and surname	
Question taxonomy	
Question stem	
Correct answer	
Question reference includes book, chapter, and page.	

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Insertion location Question code

ASCII test ID

Station duration: Relevant area:

Question type Critical☐ Non-living☐

Question body)(Stem

Checklist**"Checklist"**

Row	Questions	Criteria	Student performance
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
Plural			

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Patient scenario

Specialized equipment required:

Please write the examiner's guide in this section:

Source of the question: Book: Printing: Pages:	Question designer: Name and surname: Academic rank: Mobile number: Fax number: Email address:

The question is scientifically verified and consistent with the source. Name, surname and signature of the person responsible for the review:

The question is scientifically verified and consistent with the source. Name, surname and signature of the person responsible for the review:

The question is scientifically sound and consistent with the source. Name, surname and signature of the group leader:

The question is structurally approved. Name, surname and signature of the person responsible for reviewing the question:

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Appendix 2) Millman Checklist

Millman checklist (for the entire test)

Row	Items	Yes	No
1	The questions are clear and concise, and words that learners can understand are used (no use of words or symbols). (abbreviation)		
2	None of the questions contain more than one issue or topic in a single question.		
3	In all questions, the main content is written in full in the body of the question.		
4	In fill-in-the-blank questions, a period is placed at the end of the question body.		
5	None of the questions contain additional information.		
6	The words used in the body of the questions and options are correct in terms of spelling and composition.		
7	Negative words are highlighted or underlined in the body of the questions.		
8	In none of the questions are both the question body and the options negative (double negative).		
9	The option "all of the above" or "none of the above" was not used in the questions.		
10	There are no guiding constraints in the question options (maybe, usually, never, always, etc.).		
11	The options for all questions are short, and the correct option is not shorter or longer than the other options.		
12	None of the questions used confusing options (e.g., A is correct but C is incorrect).		
13	The question options complement the question text in terms of grammar and wording.		
14	The four options for each question are written vertically below each other.		
15	The question options are consistent with each other in terms of length, vocabulary, sentence structure, content, and topic complexity.		
16	In all questions, repetition of content in the options has been avoided.		
17	The unit of measurement is mentioned in the questions where required.		
18	In the options where numbers are given, the numerical order is followed.		

All questions were reviewed using the above checklist and there were no structural errors in the questions.□

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Appendix 3) Exam ID Card

Test ID

Row	Item	Explanation
1	Course name	
2	Test date	
3	Test type	Midterm/End of semester Formational/compressional
4	Name and surname of the person in charge of the lesson	
5	Names and surnames of instructors by course section	
6	Type of exam questions	Multiple choice/ True or false/ Essay/ Other (please specify)
7	Number of test questions	
8	The passing score in the exam () MPL	

Signature of the course supervisor

Signature of the person responsible for group exams

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Appendix 4) Electronic and non-electronic test design process

Preparation of a two-dimensional test table by the course administrator and instructors

↓

Review of the two-dimensional table by the group test supervisor and feedback to the course supervisor

↓

Designing questions by course instructors in the question ID form according to the final two-dimensional table

↓

Completion of the Millman Kelly Exam Checklist by the course instructor

↓

Scientific control*Questions and feedback to designers by the course instructor

↓

Preparing the exam file and completing the exam ID form by the course administrator

↓

Quality control**Exam file by the group exam supervisor and providing feedback to the course supervisor

↓

Preparation of the final exam file by the course supervisor

*Scientific control means checking the completeness of the question identification forms and checklists, the absence of repeated questions, Matching the two-dimensional table and scientific control is the correct answer.

****Quality control of the test file means the completeness of all test file documentation and test ID.**

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Appendix 5: List of faculty empowerment workshops in the field of student assessment based on the faculty empowerment regulations]

Faculty Empowerment Program, especially for new faculty members

Area title	Workshop title	Mandatory	Optional	Clock		Description
				In person	non In person	
Valuation Educational	Generalities of evaluating academic progress, knowledge, and test design Multiple choice	-		5		5 hours Mandatory
	Introduction to testing software: Najma	- (For Member Hey - you Scientific Clinical)				
	Essay and short answer tests		-	2		
	Tests(... OSCE design, implementation and)		-	4		
	Solution-based tests:CEX DOPS mini		-	2		

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Faculty member empowerment program in the field of educational evaluation, specifically for faculty members applying for promotion from Assistant professor to professor

Area	Workshop title	Mandatory	Optional	Clock		Description
				In person	Absent	
Educational evaluation (6 hours required)	Familiarity with comprehensive exam management software (Najma)		-	3		Required clinical faculty members
	TestsOSCE design, implementation and . . .)		-	5		
	Final workplace-based exams: DOPS-mini CEX		-	3		Required clinical faculty members
	Clinical reasoning tests:PMP		-	2		Required clinical faculty members
	Clinical reasoning tests: - CRP CIP Puzzle		-	3		
	Assessment tools in the field of attitude		-	2		
	360 degree evaluation		-	2		
	Getting to know accreditation		-	2		
	Familiarity with electronic exam software		-	2		
	Generalities of evaluating academic progress, knowledge acquisition, and designing multiple choice tests	-		6		If they have not experienced any misfortune before
	Essay and short answer tests		-	2		
	Kirkpatrick Evaluation Model		-	2		

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Faculty member empowerment program in the field of educational evaluation, specifically for faculty members applying for promotion From a scientist to a professor

Area title	Workshop title	Mandatory	Optional	Clock In person	Absent	Description
Valuation Educational (6 hours required)	Evaluation modelCIPP		-	4		
	Evaluation modelAccreditation		-	4		
	Clinical reasoning tests:KF		-	2		
	Clinical reasoning tests:PMP		-	2		
	Clinical reasoning tests:DOPS / mini-cex		-	2		