

Report on the Revision of Assessment Mechanisms and Effectiveness Analysis: Implementing Stakeholder Recommendations in the 'General Medicine'

Program: General Medicine (MD)

YSMU

Introduction

This document outlines the structural and methodological reforms within the "General Medicine" educational program, which were initiated in response to rigorous internal and external evaluations and assessment results. Developed in collaboration with international experts and based on the analysis of feedback from internal and external stakeholders, these changes aim to harmonize the curriculum with global medical standards (WFME). The report details the University's transition to a modular learning system and the implementation of a multi-component assessment framework—utilizing tools such as Virtual OSCE and Artificial Intelligence—to improve the effectiveness and validity of learning outcome verification.

- ② Context and Objectives: Working with a group of international experts in the field of education contracted by the University, analyzing the results of surveys conducted among internal and external stakeholders, and basing the approach on the new policy for assessing the learning outcomes of the "General Medicine" educational program, the mechanisms for assessing the educational program's learning outcomes have been improved. The goal was to align them with medical professional standards (WFME, ESTS).
- ② Transition to Modular System: The University transitioned to a modular learning format starting in 2023. From the 2025-2026 academic year, students in years I-V of the "General Medicine" educational program are studying under this format, and from 2027, education across all years of the Faculty of General Medicine will be fully implemented through the modular system.
- ② Assessment Methodology: To assess the acquisition of module learning outcomes by students in the "General Medicine" program, a multi-component assessment system is applied. The assessment format for each module is derived from the characteristics of the subjects included in the module and verifies the achieved learning outcomes according to subject curricula.
 - Weighting Structure: From the 2023-2024 academic year, in courses implementing modular learning, the learning outcomes are generally assessed with a weighting of 20% for practical skills and 80% for theoretical knowledge.
 - Shift in Weighting: Starting from the 2nd semester of 2024, assessment in several modules ("Human Anatomy," "Allergology and Clinical Immunology," "Fundamentals

of Research," "Dermatology," "Rheumatology," "Infectious Diseases," etc.) is carried out with knowledge assessment ratios of 30/70, 40/60%, and 50/50%. By 2027, the development plan envisages gradually ensuring this proportion in the remaining departments as well.

- ❑ Practical Skills Assessment (Pre-clinical Years I-III): Practical skills have increased within the multi-component assessment format in various theoretical medicine modules:
 - Approaches: These include identification of anatomical structures (bones, skull, wet specimens, moulages, images) in Human Anatomy; preparation and microscopy of histological specimens (slides) using light, UV, and fluorescent microscopes, and the use of "Flipped-classroom" methods in Histology.
 - Microbiology: Includes preparation of smears and cultures, staining, bacterioscopic examination of pathological material, isolation of pure cultures, and identification based on morphological, tinctorial, cultural, biochemical, and antigenic properties.
 - Psychology: Teaching involves blitz quizzes on psychological topics, role-playing games, group work, and presentations on independently selected topics based on scientific literature.
 - Resources: To improve practical skills training, the University has acquired a significant amount of new educational aids over the last 2 years.
- ❑ Infrastructure for Skills Development:
 - "Lancet" Center: A 450 m² surgical skills transfer operating room (including a surgical block, auditorium, and student rooms) has been fully renovated and furnished for students to improve surgical skills outside of class hours.
 - Simulation Center: Acquisition and assessment of practical skills are conducted at the patient's bedside and in a simulation center equipped with modern educational equipment (robot-simulators, trainers, etc.).
- ❑ Clinical Assessment Formats:
 - Mini-CEX & DOPS: Since the 2nd semester of 2022, these formats are used for assessing practical skills in all clinical modules.
 - Virtual OSCE: In the second semester of the 2025-2026 academic year, a Virtual OSCE format will be added to traditional assessment methods in several clinical departments. The share of practical skills assessment will increase to 40% (up from 20%). Virtual OSCE uses computer software to test skills in anamnesis taking, objective examination, interpretation of clinical-laboratory tests, and clinical reasoning regarding diagnosis and treatment tactics.
 - OSPE: The Objective Structured Practical Exam (OSPE) format has been successfully introduced in the Departments of Propaedeutics of Internal Diseases and Thoracic Surgery and will be introduced in General Surgery and other departments.
- ❑ Clinical Modules Content (Years IV-VI):
 - Therapeutic Modules: Skills include skin assessment, auscultation (lung/heart), ECG, interpretation of lab and radiology data, justification of diagnosis and treatment

(including non-drug approaches), and presentation of research based on medical history.

- o Surgical Modules: Carried out at the bedside or simulation center, skills include demonstrating symptoms of acute appendicitis/cholecystitis, hernia cough impulse, transillumination, interpreting cholangiography, endoscopic images of ulcer bleeding, and X-rays of perforations.
- o Obstetrics: Students earn points for IUD insertion, fetal heart auscultation, delivery in cephalic presentation, and external obstetric examination. Skills are assessed using checklists where 6-10 specific actions are valued at 0.05-0.1 points each.

📋 Performance Thresholds and Statistics:

- o Passing Threshold: Under the modular format (started 2024-2025), a student must earn at least 50% of the maximum practical points (2.0 - 5.0 points) to qualify for the theoretical exam. Students with less than 50% must clear the deficit via a make-up procedure before the first retake period.
- o Impact: Analysis over the last 2 years shows improved performance; for instance, performance indicators in separate modular courses increased by 1.2% to 10.7% in the 2023-2024 winter session compared to the previous year.

📋 Artificial Intelligence Integration:

- o Doctor Lex: The University, in collaboration with AI services, developed a trilingual program (Doctor Lex) for individual training in clinical modules. It includes clinical case discussions ranging from simple to complex, evaluating solution accuracy, sequence, timing, cost, and errors.
- o Student Feedback: Surveys indicate high interest in the tool (which can generate up to 1 million cases) and a desire to apply it to theoretical medicine subjects as well.

📋 Final Attestation (State Exam):

- o Structure: The final attestation for "General Medicine" follows a multi-component, three-stage format overseen by the State Final Certification Commission.
- o Stage 1 (OSCE): Since the 2022-2023 academic year, practical abilities are assessed in the simulation center via OSCE. A student passes if the sum of grades for sub-tasks across all stations is at least 5.1 out of 10 (51%).
- o Stage 2 (Test) & Stage 3 (Oral): Theoretical knowledge is tested electronically in computer auditoriums (Stage 2), followed by an oral examination to assess clinical reasoning (Stage 3). Failure in Stage 1 or 2 bars participation in the next stage. Failure in Stage 3 results in a "not passed" grade for the entire module regardless of previous scores.

Main structural transformations

As a result of some significant inconsistencies identified through ongoing evaluation and periodical researches, immediate modifications were made to the syllabi after appropriate discussions, without deferring to the end of the reporting period.

General Structural Changes

- ❑ Renumbering: The numbering of modules across years 1–6 has been modified.
- ❑ differentiation: Distinct numerical designators have been established for subjects sharing the same title across years 1–6 (e.g., Module 1: Human Anatomy 1; Module 3: Human Anatomy 2; Module 4: Human Anatomy 3, etc.).

Year 1 Changes

- ❑ Module Restructuring (Semester 1): Module 2 has been removed and merged into Module 1. Additionally, the subject "Clinical Anatomy" has been renamed Topographic Anatomy.
- ❑ Subject Clarification: The subject "Foreign" has been specified as Foreign Language (English).
- ❑ Biochemistry/Chemistry (Semester 2): The subject "Medical biochemistry/Medical chemistry-2" has been renamed Medical Chemistry-2.
- ❑ History Module (Semester 2): The course "History of Armenian Civilization with History of Medicine in Armenia" has been separated into two distinct components:
 - History of Armenian Civilization (1 credit)
 - History of Medicine in Armenia (1 credit)
- ❑ Elective Courses 1 (Semester 2): The following electives have been introduced:
 1. Public communication skills in medicine
 2. Representational skills in medicine

Year 2 Changes

- ❑ Renaming (Semester 3): The subject "Physiology" has been renamed Human Physiology.
- ❑ Renaming: "Medical Parasitology" has been renamed Basics of Parasitology.
- ❑ Curriculum Migration (Semester 4): Module 8 - Social Science 1 has been added to the 2nd year (moved from the 3rd year). It includes:
 - Basics of Psychology (1.5 credits)
 - Medical Psychology (1.5 credits)
- ❑ Elective Courses 2 (Semester 4): The following electives are available:
 1. Basics of Sexology
 2. Communication skills in Medicine

Year 3 Changes

- ❑ Clinical Medicine 1 Consolidation (Semester 5): Two separate modules were merged into a single module containing the following subjects:
 - Propaedeutics of Internal Diseases I (4 credits)
 - General Surgery with Surgical Technique I (4.5 credits) (Note: Surgical technique corresponds to Operative Surgery)
 - Propaedeutics of Childhood Diseases (1 credit) (Moved from 3rd year, 6th semester)
- ❑ Curriculum Migration (Semester 5): The subject Health Law has been added (moved from the 6th year). Components include:
 - Human Rights (0.5 credits)
 - Medical Law (1 credit)
- ❑ Clinical Medicine 2 Consolidation (Semester 6): Two separate modules were merged into a single module containing the following subjects:
 - Propaedeutics of Internal Diseases I (5 credits)
 - General Surgery (6 credits)
- ❑ Elective Courses (Semesters 5 & 6):
 - Elective Courses 3 (Semester 5): Advanced research skills, Leadership in medicine, Conflict management in medicine, Herbal treatment in medicine.
 - Elective Courses 4 (Semester 6): Artificial intelligence in medicine, Basics of Neuroscience, Herbal treatment in medicine, Developmental psychology.

Year 4 Changes

- ❑ Subject Clarification (Semesters 7 & 8):
 - Surgery I: Sub-units clarified as Abdominal Surgery I and Abdominal Surgery II.
 - Obstetrics and Gynecology I: Sub-units clarified as Obstetrics I and Obstetrics II.
- ❑ Renaming (Semester 7): "Clinical neurosciences" has been renamed Clinical Neurology.
- ❑ New Module (Semester 8): A new Urology and Andrology module has been established, comprising:
 - Urology (2.5 credits)
 - Andrology (0.5 credits)
- ❑ Elective Courses 5 (Semester 8):
 1. Clinical Sexology
 2. Health of Child

Year 5 Changes

- ❑ Subject Clarification (Semesters 9 & 10):
 - Surgery II: Sub-units clarified as Thoracic Surgery, Cardiac Surgery, and Vascular Surgery.

- Obstetrics and Gynecology II (Semester 9): Sub-unit clarified as Gynecology I.
Requirement: 1 day attendance at the Simulation Center.
- ☐ New Module (Semester 9): A distinct Traumatology and Orthopedics module has been created, comprising:
 - Traumatology (3 credits)
 - Orthopedics (1.5 credits)
- ☐ Children's Diseases 2 (Semester 9): Requirement: 1 day attendance at the Simulation Center.
- ☐ Module Restructuring (Semester 10): The Head and Neck Diseases module now includes:
 - Head and Neck (1.5 credits)
 - Eye Diseases (3 credits)
 - ENT Diseases (3 credits)
- ☐ Elective Courses 6 (Semester 9): Medical ecology, Yoga, Emotional Intelligence, Nutrition, Sports medicine, Gerontology.

Year 6 Changes

- ☐ Subject Clarification (Semesters 11 & 12):
 - Surgery III: Sub-units clarified as Abdominal Surgery III, Abdominal Surgery IV, Colorectal surgery and small proctology, and Endocrine Surgery.
 - Obstetrics and Gynecology III: Sub-units clarified as Gynecology II, Obstetrics III, and Gynecology III.
- ☐ Forensic Medicine Modifications (Semester 11): Changes implemented to the Forensic Medicine course:
 - Forensic Medicine (3 credits)
 - Clinical Morphology (1.5 credits)
- ☐ Elective Courses 7 (Semester 11): Laboratory diagnostics, Virology, Medical tourism, Tropical diseases.
- ☐ Simulation Center Requirements (Semester 12): Students are required to attend the Simulation Center according to the following schedule:
 1. Cardiology (1 day)
 2. Pulmonology (1 day)
 3. Abdominal Surgery (1 day)
 4. Thoracic Surgery (1 day)
 5. Obstetrics and Gynecology (1 day)