



David Tvildiani Medical University

“AIETI” Medical School



Biomedical and Healthcare Sciences Doctoral
Educational Program

The program is aimed on the third stage medical education, by graduation of which the graduate receives an academic doctor diploma in medicine.

Teaching process is conducted in Georgian language (teaching and assessment with English components).

A person holding a master degree in medicine sciences can be admitted to the program is based on open competition selection.

The program's aim is – individual research direction in depth study based integrative delivery of knowledge and skills necessary for future independent scientific and academic work in biomedicine and health sciences.

Employment area – biomedical and health academic and scientific work.

The program is 3 years long, which is concluded by scientific work (dissertation) defense.

The scientific component consists of:

- An up to date bibliography and completed literature review.
- Data collection
- Research resource work
- Data analysis and result discussion
- Formation of articles and dissertation chapters
- Final preparation of dissertation and its defense

The obligatory prerequisite of dissertation defense is existence of highly valuable scientific theoretical and clinical results and completion of the learning courses and activities representing the 30 ECTS credits. The graduate receives an academic doctor diploma in medicine upon defense of the dissertation.

The learning is based on interdisciplinary approaches and covers such scientific problem as: structural basis of norm and pathology, factors forming disease management strategies, professionalization of highest medical education. Accordingly the program is executed in three directions:

- Normal and pathological processes: structural, molecular, biologic and functional basis, which itself is separated into two sub-directions:
 - Modern use and future perspectives of biomarkers.
 - Human organism molecular and cellular response to pathologic processes.
- Factors defining etiology, clinics and treatment, also prevention, screening and epidemiology of diseases.
- Scientific basis of medical education innovatory development

The program is oriented on the whole spectrum of medical problems, including the aspects of higher medical education.

Research covers such topics as: cancer, diabetes, cardiovascular, infectious, immune and other diseases; MD education professionalism teaching strategy.

The educational program execution considers:

- ✚ Theoretical learning:
 - ❖ General modules.
 - ❖ Structured scientific disciplinary modules:
 - By research direction;
 - By research methodology;
 - By discipline.
- ✚ Dissertation research, which follows the following stages:
 - ❖ Practical work distributed by semesters;
 - ❖ Planned literature review, by semesters;
 - ❖ Scientific conference presentation plan;
 - ❖ Plan on publication and writing of articles;
 - ❖ Dissertation writing and preparation for defense.
- ✚ Academic activity:
 - ❖ Teaching of some course in MD program;
 - ❖ Tuition of students in scientific unions;
 - ❖ Supervision of student research projects.
- ✚ Performance of a project in medical education research (elective).

The learning format considers:

- Obligatory and elective theoretic courses (electives are structured according to the research direction, methodology and specialty).
- Seminars
- Laboratory work
- Participation in “journal club”
- Independent research
- Teaching in MD program (participation in a course teaching and/or tutoring of a student scientific group and/or Supervision of student research projects).

Study plan

Learning component is designed according to PhD students' qualification and experience. Together with the supervisor and PhD committee, the PhD student forms an individual plan of credit performance.

General study courses:

- Epidemiology and biostatistics – 5 credits;
- Medical research process and technologies – 2 credits;
- Bioethics – 2 credits;
- Pedagogy – 3 credits;
- Psychology – 3 credits;

Together with the supervisor the PhD student forms a discipline based course credits (15 credits in total) performance plan based on the following choice:

- Based on the scientific direction, which principally considers participation in lectures and seminars on the researched topics;
- Based on the research methodology, which considers in depth study of the methodologies proposed by the research project (for example: biochemical, immunologic, histologic, etc.)
- Disciplinary directions (for example: cardiology, obstetrics, etc.) based, which considers lecture-seminar work in actual topics from scientific point of view (it is obligatory to have the principle supervisor and PhD committee approved credit performance, but also possible to cover credits in related disciplines).
- Teaching in MD program; participation in a course teaching and/or tutoring of a student scientific group

The research component is formed together with the principle supervisor and considers:

- Research work written down according to a calendar based timetable – data collection, methodology work, data analysis, etc.
- Scientific literature search, review (indicating quantity), with referats checked by the supervisor;
- Participation in university, national and international scientific conferences and presentation of research findings of the topic.

Learning outcomes

Disciplinary competencies

A1. Fundamental model knowledge of the discipline:

- Widening and modification of the existing knowledge
- Full theoretical base study of the chosen research direction.

A2. Learning the research methodologies according to the topic.

A3. Use of modern technologies to obtain and analyze evidence based information:

- Medical literature critical evaluation skills, forming and differentiating appropriate conclusions ;
- Electronic database independent work and data obtaining.

A4. Skills to use appropriate statistical analysis and control tools.

A5. Critical analysis of data and result interpretation skills.

A6. Scientific quest skills: literature bibliographic search, literature study and selection.

A7. Research design development and implementation:

- Idea formation;
- Topic selection, confirming its relevance and innovatory features;
- Defining the research objectives;
- Defining the research object;
- Selection of appropriate research methods;
- Work planning (empiric and theoretical stages);
- Data collection, sampling, evaluation;

- Data grouping and systematization;
- Text work, result discussion/evaluation;
- Development of conclusions.

A8. Research presentation:

- Oral and poster presentation skills;
- Writing of scientifically proven articles and argumentation.

A9. Learning skills.

General/transferable skills

Basic academic skills:

B1. Problem identification, presentation and solving skills

B2. Critical and analytic thinking

Personal and transferable skills:

C1. Digital technology and statistical methods use skills;

C2. Transferable skills necessary for various work environments – oral and written communication, team working, person motivation, etc.

C3. Independent learning skills.

C4. Personal and team decision responsibility skills.

Teaching, learning and evaluation

Program teaching and learning system considers the context of the research topic, step by step progress and demonstration of the students' individual learning progress. The PhD student uses various forms of learning to reach his goals, including active learning, which is evident and is reachable while working in academic teams, also by participation in international events.

Teaching methodology:

- Interactive lectures/seminars to develop knowledge in the area (A1, A2, A3, A4, A5);
- Laboratory teaching and research project work to develop knowledge and skills, also, basic academic skills and personal transferable skills (A1, A2, A3, A4, A5, B1, B2, C1, C2, C3, C4).
- Work meetings and seminars for disciplinary, research and independent learning knowledge/skills enhancement (A1, A2, A6; B1, C1, C2, C3, C4).
- Respective texts/research article work and dissertation thesis use to achieve most of the learning objectives (A1, A2, A3, A4, A5, A6, A7, A8 B1, B2, C1, C3, C4).

Evaluation system covers both the program considered learning outcomes and separate components of PhD student education. Both intermediate format and final, total evaluation:

- MCQ and short answer question evaluation (A1)
- Reports for seminars and work meetings, evaluation of ability to use/manage and interpret data. (A2, B1).

- Analysis, synthesis and criticism is evaluated by a written report (A1, A2, A3, A4, A5, C1, C2, C3, C4), team work (A1, B1, C1, C2), critical evaluation (A1, A3, B2, C1, C2, C3, C4) and dissertation (A1, A3, A6, B1, C1, C2, C3, C4).
- Individual and crucial interpretation skills are evaluation according to the dissertation (B2).
- Teaching skills are evaluated by curriculum plan, conducted lectures, practical lessons, student scientific work supervision/tuition (A8).

Evaluation of the teaching courses is done according to the following rule:

a) positive marks of five kinds:

a.a) (A) excellent –91% and more of the maximum mark;

a.b) (B) very good - 81-90% of the maximum mark;

a.c) (C) good - 71-80% of the maximum mark;

a.d) (D) satisfactory - 61-70% of the maximum mark;

a.e) (E) enough - 51-60% of the maximum mark;

b) two kinds of negative marks:

b.a) (FX) did not pass - 41-50% of the maximum mark, which means, that the student requires more work, and is allowed to give an exam one more time after independent work.

b.b) (F) Failed - 40% and less of the maximum mark, which means that the students work was not enough, and must hold the course one more time.

Evaluation of the dissertation work is done according to the following rule:

a) excellent (*summa cum laude*) – perfect work;

b) very good (*magna cum laude*) – result is better than every requirement;

c) good (*cum laude*) – result is better than some of the requirements;

d) medium (*bene*) – result is satisfying every requirement

e) satisfactory (*rite*) – results are according to the requirements despite the gaps.

f) insufficient (*insufficienter*) – result is not according to the requirements due to the gaps;

g) totally not satisfactory (*sub omni canone*) – result totally not to the requirements.

Points A to E are satisfactory and upon receiving them the PhD student obtains a diploma of an academic doctor in medicine.

Point F the PhD student can present his work for defense one more time with one year

Point G the PhD student loses his right to present the same thesis again for defense.

Quality assurance

Program design and learning outcomes/competencies, as well as curriculum content and structure and constantly evaluated and analyzed. Internal and external expert evaluation of existing and implemented dissertation projects.

Necessary human and material resources:

- Educational program forming and controlling organs – academic and dissertation councils;
- Program implementation organs – doctoral committee and rectors council;
- scientific-research programs primary expertise – experts' board;
- scientific-research programs evaluation and biomedical ethics aspect – ethics committee;

- scientific supervision of PhD students;
- Professors – teachers for the teaching content of the program;
- Supporting personnel for specialized laboratory practical skills learning;
- Teaching equipment (auditoria, learning material demonstration means, etc.);
- Experimental and clinical bases, professional organizations to perform the scientific component – based on memorandums on cooperation in research and doctoral programs and institutions involved in implementing individual doctoral projects.