PhD Educational Program

Program Title

ინფორმატიკა

Informatics

Faculty

ინფორმატიკისა და მართვის სისტემების ფაკულტეტი

Faculty of Informatics and Control Systems

Program Head/Heads

Professors: Gia SURGULADZE, Lili PETRIASHVILI, Nugzar AMILAKHVARI

Qualification to be Awarded and the Extent of the Program in terms of Credits

PhD in informatics PhD degree will be awarded upon completion of the study component (not more than 60 ECTS credits) and the research component of the educational program. Duration of education is not less than 3 years.

Teaching Language

Georgian

Prerequisite for Admission to the Program

- Master's or equivalent academic degree with specializations in informatics, engineering, exact and natural sciences, economics;   - Persons wishing to enroll in the program must submit: a research project, where the purpose and direction of the applicant's research are outlined;   - It is compulsory to present a certificate/document confirming the knowledge of the English language at least B2 level. The applicant, who cannot present the said certificate, is obliged to pass the test in the computer center of GTU in the English language. Applicants who have received one level of higher education in English are not required to pass an exam or present a

certificate;

- In case of receiving a positive assessment in the English language, the applicant goes through an interview with the faculty temporary committee; during the interview, scientific publications and/or inventions, participation in scientific conferences, trainings and other experience of educational/research activities, confirmed by relevant prints, patents, certificates, deeds, etc. will be taken into account. The procedure for admission to PhD studies and enrollment conditions are given on the university's website.

- Enrollment in the educational program is also possible on a mobility basis, in accordance with the order No. 10/N of the Minister of Education and Science of Georgia dated February 2, 2010 "Rule of transfer from a higher educational institution to another higher educational institution".

- Applicants will also be admitted to the educational program on the basis of internal mobility. The terms and procedures of internal mobility are established by the order of the university Rector and the information is posted on the university's website.

Program Description

PhD educational program "Informatics" represents a combination of educational and scientific/research components, the learning outcomes of which correspond to the generalized learning outcomes of the 8th level of the qualification determining the difficulty of the qualification in the framework of the national qualifications.

The program is compiled using the European credit transfer system ECTS. 1 credit is equal to 25 hours, including contact and independent work hours. The distribution of credits is presented in the program curriculum.

The educational component of the program consists of compulsory and elective courses, which the doctoral student must take in the first and second semesters. The vcapacity of compulsory educational courses is 30 credits, the capacity of elective educational courses is 30 credits, the total educational component equals to 60 credits.

The implementation of the research component is envisaged from the 2nd semester, and its stages, in order, are: project/prospectus; colloquium 1; colloquium 2; colloquium 3; preliminary defense of the thesis; Completion and defense of the thesis. Each stage of the research component is a compulsory prerequisite for the next stage.

The research component is assessed once, at the defense of the thesis in the final assessment.

The academic year consists of two semesters - fall and spring. The academic year schedule, dates of interim and final/additional examinations are set at the beginning of each semester by the Rector's order based on the Instructions for Managing the Educational Process at Georgian Technical University, available on the GTU website.

Program Objective

The objective of the PhD program is to prepare competitive specialists/researchers with highly qualified and in-depth knowledge who will be able to:

1. Obtain modern scientific-research experience and high-level knowledge of the scientific directions of informatics for the implementation of independent scientific research;

2. Generate new knowledge, ensure its innovative use and dissemination in various fields;

3. Develop computer systems and calculating/computing environment design, provide their software and consumer applications;

4. Define problem-oriented methods, algorithms and models, establish the research process in a qualified manner, increase the effectiveness of critical analysis;

5. Master the methods of systematic evaluation of research results based on scientific news and determination of logical conclusions for their further development and practical application, including in an interdisciplinary perspective;

6. Conduct scientific-research and pedagogical activities in the field of informatics.

Learning Outcomes/Competences (general and professional)

1. **Possesses** a deep knowledge of existing research methods in the field of informatics and the creation and use of information systems supporting decision-making, which provides the opportunity for their further improvement and creation of new knowledge;

2. **Defines** the main principles and directions of informatics, information acquisition and processing problems, the latest methods and approaches for their solution;

3. **Analyzes** the technological processes of various research objects and, in order to improve organizational management, determines the need to develop appropriate supporting intellectual methods, algorithms and software;

4. **Justifies** the validity of using scientific research methods, such as: system analysis and modeling, risk assessment and decision-making, big data processing and intelligent analysis, development of software systems and data management, system security, etc.;

5. **Uses** modern research and analytical methods, algorithms and software oriented to the creation of new knowledge to identify systems and obtain optimal results

6. **Realizes** the need to use the scientific direction of informatics for effective management and operational analysis of organizational processes, with safe methodologies and international standards;

7. **Develops** software, modern development methods and solves organizational management tasks in various fields based on information and communication technologies;

8. **Participates** in local/international projects and research works; presents research results to a wide audience in local and international thematic discussions and makes effective decisions based on the experience gained;

9. **Shares** the experience of others, adheres to the norms of ethical and professional responsibility, presents research results in an argumentative manner, at the level of standards necessary for an internationally referral publication;

10. Independently plans and directs the educational process **using** innovative methods and new technical means. **Creates** appropriate educational and scientific-methodical material for the purpose of didactics of modern education technologies and informatics.

Methods of achieving learning outcomes (teaching-learning)

☒ Lecture ☒ Seminar (group work) ☒ Practical ☒ Laboratory
☐ Scientific and thematic seminar ☒ Independent work ☒ Consultation
☒ Research components ☒ Structure of the thesis ☒ Thesis defense

In the learning process, depending on the specifics of a particular study course program, the following activities of the teaching-learning methods are used, which are outlined in the relevant study course programs (syllabi): discussion/debate, collaborative work, case study, brain storming, demonstration, induction, deduction, analysis, synthesis, oral or verbal work, writing work, observation, explanation, action-oriented learning, project development and presentation.
Activities corresponding to teaching-learning methods are provided on the website of the Georgian Technical university.

Student's Knowledge Assessment System

Mastering the issues provided by the programs (syllabi) of the educational courses determined by the educational program is assessed with a 100-point system. The PhD student is considered to have passed the educational course if he/she gets 51 or more points as a result of the mid-term evaluations and the final exam. In case of receiving at least 30 points in interim assessments, the PhD student will be allowed to take the final exam. The doctoral candidate must accumulate at least 21 points in the final exam.

Assessment of the educational component:

Positive grades are:
- (A)-Excellent - 91-100 points;
- (B)-Very Good – 81-90 points;
- (C)-Good – 71-80 points;
- (D)-Satisfactory – 61-70 points;
- (E)-Sufficient – 51-60 points.

Negative grades are:
- (FX) - Failed to pass – 41-50 points, which means that the student needs more work to pass and   is allowed to take an additional exam once with independent work;
- (F) - Failed - 40 points or less, which means that the work done by the student is insufficient and he/she will have to study the subject again.

In case of FX, an additional examination is scheduled no later than 5 days after the announcement of the results. The grade received at the additional examination is not summarized with the grade received at the final assessment.

Assessment of the research component:

Five positive and two negative assessments are used for the evaluation of the doctoral thesis.
Positive assessments are:

a) with the highest praise (summa cum laude) - excellent performance, 91-100 points;

b) with great praise (magna cum laude) - result exceeding the requirements in all parameters, 81- 90 points;

c) with honor (cum laude) - a result that exceeds the requirements, 81 – 90 points;

d) satisfactory (bene) - an average level work that meets the basic requirements; 61 – 70 points;

e) sufficient (rite) - a result that, despite its shortcomings, still meets the requirements, 51 – 60 points.

Negative assessments are:

a) insufficient (insufficienter) - an unsatisfactory level work that cannot meet the requirements due to significant deficiencies in the work, 41-50 points;

b) completely unsatisfactory (sub omni canone) - a result that completely fails to meet the requirements , less than 41 points.

The assessment of the scientific-research component of the PhD educational program is done once, with a final assessment.

Fields of Employment

State and private structures that need highly qualified specialists in information technology and computer modeling. Higher educational, scientific-research, production, economic and other institutions.

Human and material resources needed to implement the program

The program is provided with appropriate material resources: educational materials, library, computer classes and laboratory base.
Additional information about the program head and implementers can be found in the attached documents.

Number of attached syllabi: 23