PhD Program Title - Computer Science

Awardable Degree – PhD in Computer Science

Supervisor of PhD Program: Full Professor **Gia Sirbiladze**

Work Place:Tbilisi State University, Faculty of Exact and Natural Sciences, Department of Computer Sciences .

Contact Information: (+995) 822 30-47-84, (+995) 899-58-86-58; gia.sirbiladze@tsu.ge,

PhD Program Description:

a) The Aim of the Program**:**

The significant role of computer in modern society requires PhD of Computer Science to have general understanding of computer science as well as deep knowledge of his/her partial-specialized direction to conduct scientific research independently.

PhD of Computer Science is the highest academic degree awarded in this field by Iv.Javakhishvili Tbilisi State University and main issue of it is to receive knowledge and modern scientific research experience, appropriate of third highest education level. The major component of the program is an innovation dissertation done with supervision of experienced researcher. Successful graduates are able to choose industrial or academia career, where they'll be quite successful armed with gained experience and professional skills.

At the department of Computer sciences of Iv.Javakhishvili Tbilisi state university faculty of exact and natural sciences, PhD fellow is able to conduct his/her research in the following directions (directions might be increased):

A. **Algorithms** (ACM Computing Classification System: F2. Analysis of Algorithms and problem complexity, F.2.1 Numerical Algorithms and Problems, F.2.2. Nonnumerical algorithms and problems)

B. **B. Information and Intellectual Systems** (ACM Computing Classification System: H-Information Systems; H.1.1-Systems and Information Theory-General Systems Theory; H.4- Information Systems Application- Decision Support Systems I.2- Artificial Intelligence; I.2.8-Problem Solving, Control Methods; I.2.4-knowledge Representation Formalisms and Methods; I.2.3-Deduction and theorem Proving; I.2.11-Distributed Artificial Intelligence. I.5-Pattern Recognition. I.6-Simulation and Modeling; I.6.1-Simulation Theory; I.6.7-Simulation Support Systems; I.6.8-Types of Simulation… K.6-Management of Computing and Information Systems H.2 DATABASE MANAGEMENT, H.2.1 Logical Design -Data models , H.2.2 Schema and subschema.

Information Security and Protection. (ACM Computing Classification System: E.3. Data Encryption, E.4. Coding and Information Theory)

Knowledge received during PhD study extends general and specialized knowledge gained in Master studies. Except of this PhD fellows are receiving skills of independent researchers in combination of ability to present their research results. (Publications in high level scientific magazines, international forums, conferences and etcetera)

b**) Upon successful completion of the course PhD Fellow must:**

1. Have knowledge of computer science fundamental conceptions, be able to use this knowledge to solve practical problems, also be able to deliver this knowledge to students.
2. Based on fundamental conceptions have solved difficult theoretical, industrial or applied scientific problem in area or in conjugate area of his/her specialization. The results of research should be Publisher at international level magazines or conference proceedings.
3. Be able to present his/her conclusions, research results and clearly sound them.

g) **Career opportunity areas for successful graduates:**

Specialization Computer science is quite dynamic and varied profession and thus is very actual and demanding on job-market. To successful PhD - it gives good opportunities of professional career building for research activities, academic activities, also various (Information, intellectual, industrial) system software development and design, software marketing and etcetera.

Professional workplace examples:

1. Educational and scientific-research positions at industrial and research institutions.
2. Software solution development companies;
3. New technology application industrial production and many more.

5. Requirements for candidates on PhD program acceptance:

To be accepter as PhD fellow master or equivalent academic degree in Computer Science, Mathematics, Physics or other technical field is required.

Education Component.

A) PhD Fellow Colloquium

PhD Fellow Colloquium is an open seminar, where PhD Fellow should present his/her research overview (research results, investigated literature, problems, solution ways and etceteras) in every January and June of each year.

Evaluation Commission, that consists of 3 people at least, mast attend the colloquium of PhD fellow. The supervisor of PhD fellow has to be a member of this commission. If supervisor is unable to attend the colloquium (because of some objective reasons), he/she has to present letter of evaluation on PhD fellow research activities.

Earlier then one month on the basis of co-agreement, Evaluation Commission Board is presented by PhD fellow supervisor and PhD program supervisor to computer science subject area section.

After attending PhD fellow Colloquium, commission observes his/her speech and the results presented and give appropriate scientific research credits.

B) Subject Table

PhD Education component consists of 4 mandatory subjects and Education practice. Subjects and Education-research credits are assigned in the following way:

#	Subject Name	Credit Distribution						
		I Semester	II Semester	III Semester	IV Semester	V Semester	VI Semester	Summary
1	Modern Teaching Methods (University)		5					5
2	Research Methods and ways	5						5
3	General Education Course for Scientific Directions: A,B,C.	5	5	5				15
4	Specialized Education course	10						10
5	PhD student's Colloquium		5	5				5+5
5	Assistance of Professor	5	5	5				15
6	Scientific Research	5	10	15	30	30	30	120
	Summary	30	30	30	30	30	30	180

Table 1: Education-research credit assignment

Material-Technical Basement for the Research

Program will be conducted on material-technical basement of the department of computer sciences (Faculty of Exact and Natural Sciences). Mainly academic personal of institution will be involved at the program. Classes with modern Technologies and Internet access will be provided for PhD fellow, also quite rich e-library (gathered with help of institute staff) is available for them.

Except of this all PhD fellows will be able to use material-technical basement of partner organizations (EM consultations and software, EMCoS). Company is well equipped with modern computer systems, with all necessary software installed. There is connection with two computer clusters.

- 3 GHz Network analyzer HP 8752A
- 10 GS/s Oscilloscope LeCroy WaveRunner 204Xi
- Several function Generators
- Oszilloscopes
- EMC Measurement Equipment
- Antennas

Number of PhD Fellows:
Maximum amount of available positions at the Department of Computer Sciences for PhD Fellows are 10.