განათლების ხარისხის განვითარების ეროვნული ცენტრი
NATIONAL CENTER FOR EDUCATIONAL QUALITY ENHANCEMENT

Accreditation Expert Group Report on Higher Education Programme

Doctoral program in Physics University of Georgia

Date(s) of Evaluation: November 8, 2019

Report Submission Date: December 8, 2019

Tbilisi 2019

HEI's Information Profile

Name of Institution Indicating its Organizational Legal Form	The University of Georgia LTD
HEI's Identification Code	205037137
Type of Institution	University

Higher Education Programme Information Profile

Name of the Programme	Physics
Level of Education	Doctoral Studies
Qualification Granted Indicating Qualification Code	Doctor of Physics, PhD 0533
Language of Instruction	Georgian
Number of Credits	180 ECTS
Programme Status (Authorized/ Accredited/New)	Accredited

Expert Panel Members

Chair (Name, Surname, University/organization/Country)	Miguel AF Sanjuan University Rey Juan Carlos, Department of Physics, Madrid, Spain
Member (Name, Surname, University/organization/Country)	Revaz Shanidze Tbilisi State University, Department of Physics, Tbilisi, Georgia
Member (Name, Surname, University/organization/Country)	Baqar Duadze Physics Master Student, Tbilisi State University, Tbilisi, Georgia

Accreditation Report Executive Summary

- **General information on the education programme**

  The PhD programme in Physics of the University of Georgia attempts to provide an education in research in Physics, with a focus on research in a research project along with a thesis advisor in a specific field of Physics. The programme objectives are focused in research, providing teaching skills and also giving some knowledge on management of a research project.

  The programme contains a total of 180 ECTS, from where 120 ECTS are devoted to research and 60 ECTS from learning courses. 40 ECTS are mandatory courses on general physics and other auxiliary subjects which are common to all PhD programs and 20 ECTS are chosen among a list of optional subjects with more specialized subject matters.

  The idea of the programme is to provide research skills to the students that could eventually make of him a scientist, a teacher or getting a job in a company where the learned skills could fit.

  A Doctoral Program in Exact, Natural Sciences and Computer Science has been functioning since 2014 at the School of Science and Technology. Later In 2018, after the creation of the Institute of mathematics, the Academic Council of the School decided to conduct doctoral programs separately in mathematics, physics and computer science. Consequently, the current Physics program is new, and is based on a part of a previous doctoral program, which was designed to award a doctoral degree in Physics. The program is designed for persons interested in Physics. Currently, there is only one student in the program with partial dedication. Apparently there is no alumni. The programme is offered in Georgian language.

- **Brief overview of the accreditation site-visit**

  The site-visit took place on November 8, 2019. Before this date the experts' panel receive the self-evaluation report, the syllabi of the subjects and other material related to either the programme or the evaluation process. On November 7, 2019, the expert's panel had a meeting at the NCEQE headquarters where certain strategies were planned with respect to the best organization of the site-visit.

  During the visit the expert's panel had the chance to meet and interview the University Administration, the Self-evaluation tea, the programme directors, the academic staff, one student, prospective employers, and the possibility of visiting different facilities of the University. Everybody that we interviewed were very kind and helpful, providing at any moment all the necessary information and responding to the many questions raised by the experts' panel.

  The expert's panel expressed the gratitude for all their help, and wish to reiterate it now again.

- **Summary of education programme's compliance with the standards**

  The PhD programme in Physics of the University of Georgia is designed to provide an education at the highest level to conduct research in Physics and to create new knowledge. The course structure is well organized and provides enough matters for this objective. The teaching and

learning methods seem to be also well organized, and according to the information gathered the organization of the courses are well established, as the syllabi also show its contents. Facilities for the students as what concern lecture rooms, instalations and services are good.

Teaching, professional, and material resources are enough for the objectives of the PhD programme.

Finally the University possess an internal and external quality system that basically complies with the requirements.

- Summary of Recommendations

Make it clear the number of articles mandatory to get the PhD Degree. And include a course on Research methodologies, and the art of writing scientific, and scientific presentations in English. Finally, the Thesis report should be written in English. This definitely would contribute to spread the scientific results of Georgian PhD students to the world.

It is important to increase the numbers of physics books in the UG library. In particular it is of the most importance to add new text-books and monographs dedicated to modern research in Physics.

It is extremely important reconsider the objectives of the programme and focus on theoretical physics, mathematical modeling and computer sciences. This is founded in the fact that this is basically the education of the faculty members involved in the PhD Programme. Furthermore, this will help to plan an interdisciplinary programme including Physics with the possibility to attract a higher number of students.

It would be necessary to better define the objectives and avoid any confusion with respect to what are the goals. There is a sort of contradiction as seen in the Self-evaluation report concerning the role of Physics and Mathematics.

An important suggestion for the programme is to concentrate on those fields where the faculty is devoted, that is, theoretical physics, computational science and applied mathematics. With this in mind, the learning outcomes will be improved and certainly it will help the graduate students to better off the opportunities to find a better job, and incrementing the number of options in the labor market.

- **Summary of Suggestions**

  Among the different suggestions needed for improvement of the PhD Programme in Physics we can mention:

  In different parts of the self-evaluation report there appears confusing information concerning the number of articles that are mandatory to receive the PhD Degree (In one part it says 2 and in another is says just 1). It is suggested making this clear and specify clearly whether they have to be published or just presented for publication, what changes strongly the issue. The suggestion would be to clearly specify that one or two papers are needed to have been published before getting the degree.

  Concerning the syllabi of the courses, we suggest that the number of references should be reduced. It is suggested about five good references per course. A big number of references is not helpful for the students.

- **Summary of best practices (If Applicable)**

- **In case of accredited programme, summary of significant accomplishments and/or progress (If Applicable)**

Compliance of the Programme with Accreditation Standards

1. Educational programme objectives, learning outcomes and their compliance with the programme

A programme has clearly established objectives and learning outcomes, which are logically connected to each other. Programme objectives are consistent with the mission, objectives and strategic plan of the institution. Programme learning outcomes are assessed on a regular basis in order to improve the programme.

1.1 Programme Objectives

Programme objectives define the set of knowledge, skills and competences the programme aims to develop in graduate students. They also illustrate the contribution to the development of the field and the society.

Descriptive summary and analysis of compliance with standard requirements

The objectives of the PhD Physics programme are concentrated on the general idea of conducting scientific research and to create new knowledge. This is evidenced by developing scientific research and analytical thinking, to pursue objectives in a research scientific problem as well as implementing and managing a scientific project. According to the information gathered by the self-evaluation as well as by the interviews on the site-visit, the programme is focused as well in preparing students to become professionals in research and teaching. The programme offers courses in this direction teaching the students in pedagogy of physics, as well as offering courses on management of scientific projects and more specific research activities in more focused and specialized courses. There are some confusion with respect to the programme objectives and what is expressed in the programme objectives in the self-evaluation report, where there is an incidence on becoming a lecturer in mathematical disciplines and increasing the awareness of mathematics in particular in society. It is surprising that no mention is given to Physics, when the programme is devoted to Physics.

Evidences/indicators

- Self-evaluation report
- Interviews

Recommendations:

It would be necessary to better define the objectives and avoid any confusion with respect to what are the goals

Suggestions for programme development:

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☐ Complies with requirements

☒ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

1.2. Programme Learning Outcomes

- Programme learning outcomes describe knowledge, skills, and/or the sense of responsibility and autonomy, students gain upon completion of the programme;
- Programme learning outcomes assessment cycle consists of defining, collecting and analysing data;
- Programme learning outcomes assessment results are utilized for the improvement of the programme.

Descriptive summary and analysis of compliance with standard requirements

The perspectives of the programme are to educate students specialized in Physics with a deep knowledge in basic Physics and a good ability to conduct research independently. Furthermore, the programme itself intends to educate PhD students to become mostly members of a higher education institution, besides learning research skills and management techniques for scientific projects. It seems that the programme is defined so that the graduated student might have skills to be hired as a teacher, as a researcher or in a company. From this perspective, it would really good to concentrate on those fields where the faculty is devoted, that is, theoretical physics, computational science and applied mathematics. This will create a student with enough knowledge to be well received in diverse labor options.

Evidences/indicators

- Self-evaluation Report
- Site-visit
- Interviews

Recommendations:

A suggestion for the programme is to concentrate on those fields where the faculty is devoted, that is, theoretical physics, computational science and applied mathematics. With this in mind, the learning outcomes will be improved and certainly it will help the graduate students to better the opportunities to find a better job, incrementing the number of options.

It is extremely important reconsider the objectives of the programme and focus on theoretical physics, mathematical modeling and computer sciences. This is founded in the fact that this is basically the education of the faculty members involved in the PhD Programme. Furthermore, this will help to plan an interdisciplinary programme including Physics with the possibility to attract a higher number of students.

Suggestions for programme development:

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☐ Complies with requirements

☒ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Educational programme objectives, learning outcomes and their compliance with the programme		X		

2. Teaching methodology and organization, adequate evaluation of programme mastering

Programme admission preconditions, programme structure, content, teaching and learning methods, and student assessment ensure the achievement of programme objectives and intended learning outcomes.

2.1. Programme Admission Preconditions

Higher education institution has relevant, transparent, fair, public and accessible programme admission preconditions.

Descriptive summary and analysis of compliance with standard requirements

In principle, the prerequisites for the admittance is to have a Master degree or equivalent degree. However, there is no specification about which Master degree, in particular, there is no specification that a master degree in Physics is mandatory. Furthermore a written concept of a relevant research topic for the doctoral programme, and a document proving a B2 (Intermediate) level of English is required. This point, though interesting has the difficulty that a new student has not a real idea of a relevant research topic to carry out at this stage of the process. Additionally, to be able to do it in Physics is very difficult due to the specialization of the field. It would be more reasonable to wait for this to be done after some time when the student might have a more mature opinion of what would be possible to do, and with which help he can count from the faculty.

Evidences/indicators

- Self-evaluation Report
- Interviews

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

The requirement of a written concept of a relevant research topic for the doctoral programme as a prerequisite to be registered in the PhD programme is questionable. Indeed, it is important to fulfill this issue at one moment of the process, but not a prerequisite, because this would imply that students need to have a very clear idea of the research activities to be done before the courses and the appropriate education would be received.

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.2 Educational Programme Structure and Content

Programme is designed according to HEI's methodology for planning, designing and developing of educational programmes. Programme content takes programme admission preconditions and programme learning outcomes into account. Programme structure is consistent and logical. Programme content and structure ensure the achievement of programme learning outcomes. Qualification to be granted is consistent with programme content and learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

The program has 180 ECTS, from which 60 ECTS correspond to learning courses and 120 ECTS corresponds to research. There are 20 ECTS courses based on elective specialized courses. From the 60 ECTS courses the student is expected to learn some teaching skills in Physics, and some management knowledge for research projects. From the 20 ECTS elective courses are more specialized in Physics research topics. In any case, the options are rather limited. The evaluation of the courses follow standard way of considering different activities on the side of the student, which is considered good. The students have to publish two articles (published or

presented for publication), and an oral presentation at an international conference. We would suggest being more specific on this point, since there is a strong difference in having published a paper or simply having it presented for publication. Very important for this issue as well is to take into account the number of years (three years) that the PhD program has.

Evidences/indicators

- Self-evaluation Report
- Site-visit
- Interviews

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

In different parts of the self-evaluation report there appears confusing information (In one part it says 2 and in another is says just 1) concerning the number of articles that are mandatory to receive the PhD Degree. I suggest making this clear and specify clearly whether they have to be published or just presented for publication, what changes strongly the issue. The suggestion would be to clearly specify that one or two papers are needed to have published before getting the degree.

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.3 Course

- Student learning outcomes of each compulsory course are in line with programme learning outcomes; Moreover, each course content and number of credits correspond to course learning outcomes;
- Teaching materials listed in syllabi are based on the core achievements in the field and ensure the achievement of intended programme learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

The courses are well described, and structured. The syllabi explain with clarity the objectives of the courses. The number of references should be reduced. It is suggested about five good references per course. A big number of references is not helpful for the students. Concerning the number of credits of the different subjects, there are 3 subjects with 5 ECTS which are sub jects apparently common to other PhD programs. Then there is one subject with 10 ECTS (Management of Research Projects) and another one with 15 ECTS (Featured chapters on General Physics). Even though this last subject can be interesting, it is difficult to justify it as a subject for a PhD level. The three optional subjects correspond to specialities of the faculty. The number of credits is alright and the evaluation method agrees with the learning outcomes.

Evidences/indicators

- Self-evaluation report
- Interviews
- Syllabi

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

The number of references in the syllabi of the subjects should be reduced. It is suggested about five good references per course. A big number of references is not helpful for the students.

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.4 The Development of practical, scientific/research/creative/performance and transferable skills

Programme ensures the development of students' practical, scientific/research/creative/performance and transferable skills and/or their involvement in research projects, in accordance with the programme learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

The students receive courses, but they start doing research from the very beginning of the programme. There is a contradiction in the self-evaluation report, since at this point it indicates that the student has to publish one article when previously it was said that two were mandatory. This should be clarified.The research project by itself has a total of 120 ECTS. As it is designed the programme this period of 120 ECTS is done at the same time as the students follow the rest of 60 ECTS. According to the information gathered in the self-evaluation report and interviews, the student has to write a project to start research before starting the programme. This sounds bizarre, since this would imply that the students has a clear of idea of what to do before starting courses, or that he has no more choices than the ones that the faculty involved in the programme can afford. And since the number of faculty involved is limited, limited are also the options for the student to follow. It is not clear how this assignement is done, as to whether the student possess enough freedom to choose or whether it is offered to him a list of topics to choose. Among the group of mandatory courses, there is no course on research methodology. The course on management is indeed interesting, but it is unclear whether this would be benefitial for the student to carry out research. Perhaps it would be much more useful to receive courses on how to write research articles in English for international competitive journals, and how to deliver good talks and seminars in English at International Conferences and Workshops. The Thesis report should be written in English. This definitely would contribute to spread the scientific results of Georgian PhD students to the world.

Evidences/indicators

- Self-evaluation Report
- Interviews
-

Recommendations:

Make it clear the number of articles mandatory to get the PhD Degree. And include a course on Research methodologies, and the art of writing scientific, and scientific presentations in English. Finally, the Thesis report should be written in English. This definitely would contribute to spread the scientific results of Georgian PhD students to the world.

Suggestions for programme development:

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☐ Complies with requirements

☒ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.5 Teaching and learning methods

Program is implemented using student centered teaching and learning (SCL) methods. Teaching and learning methods correspond to the level of education, course content, student learning outcomes and ensure their achievement.

Descriptive summary and analysis of compliance with standard requirements

Most part of the programme concerns independent research by the student. 60 ECTS are devoted to courses, either mandatory or more specialized optional courses. The general ideas of the programme are good and well expressed. The justification of some courses for a PhD level is questionable. There would be needed courses on research methodology and the art of scientific writing and scientific presentations in English. The options of the students to carry out research are rather limited due to the small number of faculty. In spite of all this, it would be necessary to assure a minimum of students to achieve these objectives and plans.

Evidences/indicators

- Self-evaluation report
- Interviews
- Syllabi

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Non-binding suggestions for programme development

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.6. Student Evaluation

Student evaluation is conducted in accordance with established procedures. It is transparent and complies with existing legislation.

Descriptive summary and analysis of compliance with standard requirements

The evaluation of the optional courses, that constitute a 20 ECTS credits, what means that the students may choose only two out of them since each one has 10 ECTS credits, is the same. According to the syllabi, they receive 40 points for final exams and the student has two colloquium exams of 30 points each, that seem to be all of them mainly oral exams. Among the compulsory subjects, Project management follows the same pattern described earlier, as well as Featured Chapters in General Physics. The evaluation of the other three subjects is more related to presentation of written reports, oral presentations and supervision of the PhD student. Basically the evaluation methods are well described and transparent with the standard requirements.

Evidences/indicators

- Self-evaluation report
- Interviews
- Syllabi

Recommendations: Proposal(s), which should be considered by the institution to comply with requirements of the standards
Suggestions for programme development: Non-binding suggestions for programme development
Best Practices (if applicable): o Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes
In case of accredited programme, significant accomplishments and/or progress o Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)
Evaluation o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard ☒ Complies with requirements ☐ Substantially complies with requirements ☐ Partially complies with requirements ☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Teaching methodology and organization, adequate evaluation of programme mastering	X			

3. Student achievements and individual work with them

HEI creates student-centered environment by providing students with relevant services; programme staff ensures students' familiarity with the named services, organizes various events and fosters students' involvement in local and/or international projects.

3.1. Student support services

Students receive appropriate consultations and support regarding the planning of learning process, improvement of academic achievement, employment and professional development.

Descriptive summary and analysis of compliance with standard requirements

The students of the University of Georgia have the opportunity to receive the necessary information, consultations and assistance from both administrative and academic staff in order to plan the teaching process and improve the effectiveness of the teaching process according to the existing requirements of the faculty and the university.

The administration of the PhD programme has the wish to establish international cooperation and opportunities for the students. The main observation has been that so far there is only one student with partial dedication, what makes these future plans as good plans for the future but not realities right now. In particular a cooperation with CERN was mentioned.

Furthermore, the students are required to write at least two papers in internationally recognized journals, however it seems that this has not yet taken place already, and there was no information about the help that the student can receive from the side of the faculty for this to become true.

At the University of Georgia there is an electronic student information service that allows the student to see the results of the assessments and to communicate with the course teacher through an electronic message. The student also has the opportunity to receive information on current processes and news at UG.

Students are given surveys that allow them to summarize and evaluate their semesters, subjects, lecturers and teaching methods. Express their wishes for improvement in any aspect.

The university promotes its graduates in employment. Most notably, most of the university staff are graduates of the very same university.

Evidences/indicators

The self-evaluation report

The interview with academic staff and the student

The online system "MY UG"

The student employment center

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Clarify the international cooperation in real cases for concrete students in the framework of the goals of the PhD programme. Furthermore, to make it much more clear what kind of help would be expected from the students in order to achieve the goals of writing at least two papers in high impact international Physics journals.

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

3.2. Master's and Doctoral Student supervision

Master's and Doctoral students have qualified thesis supervisors.

Descriptive summary and analysis of compliance with standard requirements

The University of Georgia announces a doctoral program in physics at the beginning of the autumn or spring semester. The topic, title and head of the project are pre-selected. The student has 2 months from the date of admission to collect the documents and submit them to the university. The student is also required to make a presentation in advance of his /her ideas for the project.

An advisory board is created to manage the PhD student's academic research activities. While working on a doctoral thesis, the student is in constant contact with the supervisor, does research under the constant supervision from mentor and periodically reports on the results of his / her work.

A PhD thesis supervisor assists the student in publishing two or more scientific articles in the Scopus or Thomson Reuters reference journals.

Evidences/indicators The self-evaluation report Provisions on doctoral and master studies The interview with academic staff and the administration
Recommendations: Proposal(s), which should be considered by the institution to comply with requirements of the standards
Suggestions for programme development: Non-binding suggestions for programme development
Best Practices (if applicable): o Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes
In case of accredited programme, significant accomplishments and/or progress o Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)
Evaluation o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard ☒ Complies with requirements ☐ Substantially complies with requirements ☐ Partially complies with requirements ☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Student achievements and individual work with them	☒			

4. Providing teaching resources

Programme human, material, information and financial resources ensure programme sustainability, its effective and efficient functioning, and achievement of intended objectives.

4.1 Human Resources

- Programme staff consists of qualified people who have necessary competences in order to help students achieve programme learning outcomes;
- The number and workload of programme academic/scientific and invited staff ensures the sustainable running of the educational process and also, proper execution of their research/creative/performance activities and other assigned duties. Balance between academic and invited staff ensures programme sustainability;
- The Head of the Programme possesses necessary knowledge and experience required for programme elaboration. He/she is personally involved in programme implementation;
- Programme students are provided with an adequate number of administrative and support staff of appropriate competence.

Descriptive summary and analysis of compliance with standard requirements

Staff of the physics doctoral (PhD) program in UG consists of 4 physics professors at the School of Science and Technology professor in applied mathematics and professors (education sciences) and (English language and literature). All professors have necessary competence and can help the students of the program in their fields of competence.

The program staff are from UG, with no invited professors or scientists.

The program has 3 co-directors. They occupy high positions in UG (prof. is a vice-rector and prof. is a dean of School of Science and Technology). All co-directors possess necessary knowledge and experience required to lead this program. All of them have at least one scientific publication in last 5 years, which proves their competence.

Currently program has only one doctoral student with partial dedication, who is supported by an adequate number of administrative and support staff. This makes the sustainability of the program questionable.

Evidences/indicators

Self-evaluation report, CV of the academic staff, site visit (interviews with staff, co-directors)

- Component evidences/indicators including relevant documents and interview results

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Non-binding suggestions for programme development

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

4.2 Professional development of academic, scientific and invited staff

- HEI conducts the evaluation of programme academic, scientific and invited staff and analysis evaluation results on a regular basis;
- HEI fosters professional development of the academic, scientific and invited staff. Moreover, it fosters their scientific and research work.

Descriptive summary and analysis of compliance with standard requirements

According to self-evaluation report, UG evaluates the academic staff of the program annually and analyzes obtained results. The procedures for evaluation of the academic, scientific and invited staff (currently there is no invited staff in the program) are established and are used on a regular basis. For example, special questionnaires for students are used for this purpose. However, in a current case it is rather difficult to draw certain conclusions, as the program has only one doctoral student.

The University supports the professional and academic development of the involved staff. To encourage participation of the academic staff in the research projects, UG supplements salary in accordance to the number of articles published in peer-reviewed scientific journals. UG supports establishment of the local research institutes, for example mathematical institute

Evidences/indicators

Self-evaluation report, site visit (interviews UG administration)

- Component evidences/indicators including relevant documents and interview results

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Non-binding suggestions for programme development

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

4.3. Material Resources

Programme is provided by necessary infrastructure and technical equipment required for achieving programme learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

School of Science and Technology is located in a modern UG building, designed for the University and well-equipped with the needed resources for teaching and research. Almost all auditoriums have information technology equipment (projectors, computers, wireless internet). Auditoriums are designed for both small and large groups of students. Same building hosts UG library, which has a large hall for students and provides them with the necessary text-books. Section of the physics books in the library, however, is rather small, which is not a surprise, as the School of Science and Technology has no dedicated BSc or MS programs in physics. But this is a serious handicap for the correct education of PhD students in Physics.

UG library offers students also electronic resources, including Elsevier - a global information service for science.

Evidences/indicators

Self-evaluation report, site visit (interviews UG administration)

- Component evidences/indicators including relevant documents and interview results

Recommendations:

Section of the physics books in UG library needs additional text-books and books dedicated to modern research. This is a serious handicap for the education of a PhD stduent in Physics.

Suggestions for programme development:

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☐ Complies with requirements

☒ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

4.4.Programme/faculty/school budget and programme financial sustainability

The allocation of financial resources stipulated in programme/faculty/school budget is economically feasible and corresponds to programme needs.

Descriptive summary and analysis of compliance with standard requirements

The program budget is part of the School of Science and Technology budget. It includes funds for development of the school infrastructure. Development of the common UG infrastructure, such as library, technical and IT resources are funded from the central UG budget.

Salary of the academic staff in UG is above the level maintained in the state universities. In addition, academic staff involved in the program regularly participates in teaching and research grant competitions. Research in

Georgia is mainly funded with a help grants from the Shota Rustaveli National Science Foundation of Georgia (SRNSFG). The doctoral program includes 10 ECTS course "Management of Research Project", which is focused on developing of the skills of the doctoral students in formulating research project and preparing proposals for funding in national, as well as international grant competitions.

On a current level the doctoral program is financially sustainable. In general programs in theoretical, mathematical or computational physics requires less financial resources, in comparison to the programs in experimental physics. Therefore focusing on these topics (most of the academic staff of the program are theoretical physicists) could ensure financial sustainability of the program.

Evidences/indicators

Self-evaluation report, site visit.

- Component evidences/indicators including relevant documents and interview results

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

In general programs in theoretical, mathematical or computational physics requires less financial resources, in comparison to the programs in experimental physics. Therefore, focusing on these topics (most of the academic staff of the program are theoretical physicists) could ensure financial sustainability of the program.

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Providing teaching resources	X			

5. Teaching quality enhancement opportunities

In order to enhance teaching quality, programme utilizes internal and external quality assurance services and also periodically conducts programme monitoring and programme review. Relevant data is collected, analysed and utilized for informed decision making and programme development on a regular basis.

5.1 Internal quality

Programme staff collaborates with internal quality assurance service(s) available at the higher education institution when planning the process of programme quality assurance, creating assessment instruments, and analysing assessment results. Programme staff utilizes quality assurance results for programme improvement.

Descriptive summary and analysis of compliance with standard requirements

The doctoral program was developed in a close collaboration with UG Quality Assurance Service. Evaluation of learning outcomes is based on direct and indirect assessment methods used in UG QA service. These methods aimed at continuous improvement of the program and promotes competitiveness of graduates in the employment market.

Although all the methods of QA service are in place, it is difficult to assess their efficiency, as currently only one student is involved in the program.

Evidences/indicators

Self-evaluation report, site visit

- Component evidences/indicators including relevant documents and interview results

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Non-binding suggestions for programme development

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

5.2 External quality

Programme utilizes the results of external quality assurance on a regular basis.

Descriptive summary and analysis of compliance with standard requirements

Self-evaluation report of the program defines two main methods for evaluation of external quality assurance: graduate employment rate and assessment of graduate evaluations using qualitative and quantitative techniques.

UG is working with the potential employers (governmental and private organizations) to define the needs of labor market and identify the skills and abilities which are necessary for employment of the program graduates. The survey of the labor market is conducted once in every 3 years. To improve the doctoral program, staff, courses, teaching methods and corresponding references are evaluated biennially. In every 3 years UG doctoral program in physics will be compared with the analogous programs at competitive universities.

Information gathered from these methods will be used to update the program and improve the outcomes.

Evidences/indicators

Self-evaluation report, site visit

- Component evidences/indicators including relevant documents and interview results

Recommendations:

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Non-binding suggestions for programme development

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

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☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

5.3. Programme monitoring and periodic review

Programme monitoring and periodic review is conducted with the involvement of academic, scientific, invited, administrative staff, students, graduates, employers and other stakeholders

through systematically collecting and analysing information. Assessment results are utilized for programme improvement.

Descriptive summary and analysis of compliance with standard requirements

Self-evaluation report states, that for the monitoring and periodic review of the doctoral program a certain mechanism was developed. The mechanism includes surveys for the program students, academic and invited staff, potential employers and alumni. The doctoral program will be monitored and reviewed by processing information collected from these surveys. Program improvements will be based on the results of monitoring and periodic review.

Above information from the self-evaluation report is rather general and not includes details of the developed mechanism. It is not very clear who was involved in this process.

Evidences/indicators

Self-evaluation report, site visit

- Component evidences/indicators including relevant documents and interview results

Recommendations

Proposal(s), which should be considered by the institution to comply with requirements of the standards

Suggestions for programme development:

Non-binding suggestions for programme development

Best Practices (if applicable):

- Practices, which prove to be exceptionally effective and which may become a benchmark or a model for other higher education programmes

In case of accredited programme, significant accomplishments and/or progress

- Significant accomplishment and/or progress made by the programme after previous accreditation (If Applicable)

Evaluation

o Please mark the checkbox which mostly describes your position related to the programmes compliance with this specific component of the standard

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Teaching quality enhancement opportunities	X			

Enclosed Documentation (If Applicable)

HEI's Name: The University of Georgia

Higher Education Programme Name: Physics PhD Programme

Number of Pages of the Report: 30

Programme's Compliance with the Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
1. Programme objectives are clearly defined and achievable; they are consistent with the mission of the HEI and take into consideration labour market demands		X		
2. Teaching methodology and organization, adequate evaluation of programme mastering	X			
3. Student achievements and individual work with them	X			
4. Providing teaching resources	X			
5. Teaching quality enhancement opportunities	X			

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