DOC.1
INITIAL ACCREDITATION OF SCHOOLS FOR ADVANCED STUDIES
EVALUATION PROTOCOL

Summary

SECTION A. INITIAL ACCREDITATION REQUIREMENTS (MINISTERIAL DECREE 439/2013)

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
STRUCTURAL REQUIREMENTS	- In-school residence, namely the availability of appropriate accommodation facilities (e.g. University colleges) for the number of students enrolled to study at the school and specifically a number of beds within the school or available on the basis of agreements with external accommodation facilities not less than the number of pre-doctoral students envisaged. - Availability of teaching and scientific facilities such as classrooms, libraries and laboratories appropriate for the educational activities and the type of research subjects envisaged. - Economic and financial sustainability of the school's activities	GSSI provides residential and accommodation facilities for 70 students in three different locations. While this number was initially sufficient to accommodate all students, it does not seem to be in line with the current (102 students) and perspective numbers (120 with, additionally, the increase of the duration of the programs from 3 to 4 years). Some documents mention financial support for students' accommodation, but it is not clear whether this support is given to the remaining students to allow them to rent their housing in the market. Meanwhile, a non-profit foundation that comprises GSSI, University of L'Aquila and municipality of L'Aquila is being created to rent housing at moderate cost to students, staff and visitors of GSSI. We also did not find any assessment of the quality of housing and their suitability to students' needs. Moreover, there is no evidence whether residential structures obtained accreditation from other public or private entities. It looks also that GSSI does not have a canteen for students. Do they receive food vouchers? Also in this case there is no assessment of the quality of the services provided. Study and research space for students seems adequate as students have individual working places, a personal computer and access to libraries, labs and other research facilities. Also in this case there is no assessment of the quality of such resources. Financial indicators were not provided. GSSI seems to have ensured a steady government funding which seems in line with the development plans of the Institute. But is this source of funding secured in the long term? Are there also other stable funding sources?
STUDENTS	- Selection admission procedures, including foreign languages, aimed at encouraging the development of an international student body; - a minimum number of 150 duly enrolled students in pre-doctoral courses, where these are offered, - 100 in doctoral or postgraduate courses, where these are offered.	The Institute enrols only post graduate doctoral students on the basis of a competitive call for applications. Selection has a first screening stage based on CV's, recommendation letters, research projects, dissertation summaries (with some variation among different PhD programmes) and then short-listed applicants undergo an interview. Selection criteria seems up to international standards, however they are not specified in details and may vary for different PhD programmes. While the majority of applications are from foreign students more than half the enrolled students are Italian. We remark that the ratio between admission applications and available places is low. For instance, in the 2017/2018 academic year from the 1486 applications only 67 were

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
		admitted, with a ratio of only 4.5%. GSSI is encouraged to increase this ratio increasing the amount of grants offered. There also seems to be a decrease in the number of PhD scholarships throughout the years, although funding for PhD scholarships (Copertura finanziaria triennale delle borse di studio) is increasing.
TEACHING STAFF [1]	- The indicator relating to the number of students per faculty member for pre-doctoral courses is calculated as the ratio between the number of regular students enrolled in pre-doctoral programmes and the number of professors employed by the school (full, associate or adjunct professors in accordance with Article 6 of Law No 240/2010) or 100% available on the basis of agreements with other universities. The student/faculty member ratio should not be less than one faculty member every ten students. - The indicator for doctoral courses is based on the total number of students enrolled in doctoral courses divided by the total number of tenured faculty members (full, associate or adjunct professors in accordance with Article 6 of Law No 240/2010) or 100% available on the basis of agreements with other universities. For doctoral ad postgraduate courses, that ratio should not be less than one teacher every eight students. - The number of research assistants and researchers should not be less than double the number of professors (full and associate)[2]. The calculation includes full, associate and adjunct professors and those available 100% under agreements.	GSSI faculty consists as of today (15th October 2020) of 14 full professors and 7 associate professors. Thus, the criterion of at least one faculty every eight PhD students if fully satisfied. Among the professors the gender imbalance is quite important, as only one full professor and two associates are female. It also seems that only one professor is not Italian. Promoting more gender and cultural diversity in the faculty should be a priority in faculty development plans. In the same date there are 26 "ricercatori" (assistant professors) and the data base declares 44 "assegnisti di ricerca" (post-docs), therefore the total of research assistants and researchers is 80, well above the double of the number of professors (21). The distribution of faculty across the scientific disciplines of the Institute seems well balanced. We did not find information on the number and distribution of lab technicians. We assume that most technicians are in the INFN lab to which GSSI has access, but are there also other technicians directly enrolled by GSSI and in other labs?

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[1] Namely the maximum amount of teaching that can be provided. These requirements define the student/teacher relationship and the minimum number of research staff, assistants and researchers.

[2] The number of researchers and research assistants may include these individuals even if they are associated with other bodies providing they operate full-time at the school under specific agreements.

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
STUDENT'S SERVICES	- Availability of mentoring programmes for pre-doctoral students and placement for the entire student population; - Availability of mobility funds for pre-doctoral students to be defined for each undergraduate class for which supplementary tuition activities are offered by Schools for Advanced Studies; - Availability of mobility funds for doctoral students intended to encourage participation of students in research activities and research teaching both nationally and internationally on a scale at least equal to that required for students in Universities doctoral courses (Article 9(2) and (3) of Ministerial Decree No 45/2013); - Requirement that all places for doctoral/postgraduate courses are covered by study grants or an equivalent endowment (see Ministerial Decree No 45/2013 and subsequent Ministerial Memorandum No 0011677 of 14 April 2017 "Guidelines for accreditation of doctoral courses").	Each Ph.D. student has an advisor and each subject area has at least two designated tutors to give students personal and academic guidance, and mentoring should be guaranteed. Therefore, mentoring seems appropriate. An in-house career service for students at GSSI does not exist yet, but a career office should be established within the next three years. So far the Institute has been using off-campus initiatives (job fairs, etc.). Although the Institute is still very young it would be useful to have information on the kind of jobs students find after completing their PhD. Concerning international exchanges, GSSI is part of the ERASMUS network. Each school has a list of international schools with agreements on student exchange and most faculty members have close ties with other schools not on this list. These personal contacts should facilitate other exchanges. No specific information about incoming students is given, but the link "international students" on the web page contains basic information about visa, permesso di soggiorno, health insurance and tax codes. The school offers an increase of 50% on the salary for research periods abroad (at most 18 months). Overall, each subject area has EUR 100.000 to support international travel. However, a list of students who took part in any kind of exchange programme seems to be missing.
TEACHING	- Whether supplementary teaching for students in undergraduate and Master's degree programs is provided, the conclusion of agreements with universities that have obtained an accreditation grade of at least C - "satisfactory" under Ministerial Decree No 987/2016 (Article 3(3) and Article 10(2); - The appropriateness of supplementary tuition provided by the School within each basic course in relation to the undergraduate courses that may be taken at the same time by the school's students. This involves identifying the classes related to the undergraduate courses that may be taken by students admitted to a specific basic course, grouped by uniform discipline/subject according to research area.	The school should provide more information about teaching and quality assessment related to teaching. In particular, information on the courses and seminars given in the most recent academic years was not provided. PhD programs should offer at least 150 hours of taught courses in the first year. Although some information on courses is available on the Institute's website, we were not given an overall view of number of courses, hours taught, syllabi structure and coordination, students' learning assessment methods, etc.. Also in some cases instead of 150 hours there is mention of 150 CFU. All this should be clarified with detailed information. Also, a teaching quality monitoring system seems not to be in place. Finally, PhD students can teach up to 30 hours per year. How many of them do take this opportunity?

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
	- The requirement for pre-doctoral students to attend at least 50 hours on average per year of educational activities provided by the school within the specific academic class[3] and at least 20 hours of teaching provided outside that class in order to promote an interdisciplinary approach to study; - The requirement for doctoral students to actually attend at least 150 hours of teaching in total over the entire duration of the course specifically provided by the school for these students and intended to expand their knowledge base, where applicable through specific interdisciplinary methods, and specialist preparation through development of original research programmes[4];	

Preliminary evaluation Section A

The committee was very positively impressed by what GSSI has achieved in its rather short life since foundation. It has a growing, high quality faculty of professors, researchers and post doc with excellent profiles and highly active in the international research communities. The recruitment of students for the four PhD programmes complies with the international standards. Facilities for research and for the daily life of students and faculty seem appropriate, though the committee was not given detailed information.
This notwithstanding, the committee outlines some weak points and, especially, issues that require additional information:
- Housing, food and study and research facilities: is the number/size enough for all present and future students? No quality assessment was provided.
- The declared numbers of professors and researchers do not coincide with the numbers of the official ministerial data base (https://cercauniversita.cineca.it/) why? Also, more information on lab technicians would be useful.
- The vast majority of the senior faculty (full and associate professor) is composed by Italian males, actions to improve internationalization and gender balance should be undertaken.
- Finance: please provide financial indicators. Are current funds sufficient to ensure the planned growth of the Institute. Can other stable sources of funding be envisaged?
- It looks like funding is increasing but the number of PhD scholarships is decreasing, why so?
- International student exchange programs: please provide number of incoming and outgoing students with countries of origin and destination.
- The number of PhD students and PhD scholarship could be increased.

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[3] The term academic class refers to the various internal divisions of Schools, sometimes called classes, in other cases institutes or other terms.
[4] This offer includes various types of educational activities not limited to hours of classroom teaching. It may also refer to doctoral teaching provided by other university and research institutions providing it forms part of an overall organic programme approved by the school's governing bodies.

- Courses: please provide information on number of hours, syllabi, fit with overall programme, students' assessment methods, teaching quality assurance.
- In general, all the quality monitoring and assurance area is still underdeveloped in the Institute.

Comments to the preliminary evaluation- Section A

STRUCTURAL REQUIREMENTS

Until 2019 GSSI used to provide all students with accommodation in three different buildings, located in different parts of the city.

In 2019 these leases have been dismissed and a single building located inside the campus has been rented, the "Grand Hotel" (https://www.gssi.it/institute/services-facilities/item/2454-studentato). The student house in the Grand Hotel is composed of single and double apartments, supplied with a private bathroom, a private and fully equipped cooking corner, desk, wardrobe and TV. Linen and towels are weekly provided. A wide open space, a common laundry room, equipped with three washing machines and dryers, and a 24h reception service complete the building. The Grand Hotel is reserved to first-year students. The others are provided with a financial contribution of € 350,00 monthly gross amount to rent an accommodation autonomously.

To improve its residential offer, GSSI is establishing a non-profit foundation (named "Ferrante d'Aragona") with L'Aquila Municipality and Università degli Studi dell'Aquila in order to create a University College to host all the GSSI students from the academic year 2021/22 on. The College will manage the real estate of the Municipality, made of apartments, mainly located in the city centre, fully restored after the 2009 earthquake. This initiative has been recently approved and financed with 4.3 million euro by the Italian Government with resolution CIPE n. 17/2020. It will prevent real estate speculation, accelerate the recovery of the urban centre, and increase the attractiveness of the city of L'Aquila for qualified human capital.

Regarding the other main facilities, the GSSI community, students included, has access to a canteen service, in a large mess hall placed inside the campus, open at lunch from Monday to Friday (https://www.gssi.it/institute/services-facilities/item/2455-mensa). The canteen can also be reserved for social dinners and recreational events organized by the community. In addition, the PhD students receive lunch vouchers (1 per day, working days) that can be spent in the canteen, in supermarkets and many dining facilities.

Regarding the study and research facilities, GSSI has an internal library with over 1000 texts and has joined the CARE-CRUI convention for access to electronic resources (https://library.gssi.it/). Astroparticle Physics PhD students can also use the services of the INFN computer center and have access to the Gran Sasso National Laboratories (https://www.youtube.com/watch?v=rkKPHwrchVc&feature=youtu.be). All PhD students can use the resources of the data center of the University of L'Aquila.

Each student is provided with an individual workstation, for study and research activities, and a personal computer. An educational laboratory designed for the Social Sciences needs is also available.

Regarding the teaching facilities, each classroom is equipped with both blackboards and video projector with screen and it is equipped to record and broadcast online lessons. Each building of the campus has wide and well-lit open spaces and comfortable common areas (https://www.gssi.it/institute/services-facilities/item/2450-edificio-ex-isef).

Regarding the economic and financial sustainability, the 2020 budget and the 2020-2022 three-year budget guarantee the balance between revenue and expenditure. It should be noted that both budgets were released and approved before the adoption of the law n. 162/2019, that increased the GSSI stable funding from 8 to 12 million euro.

A process of raising awareness, among internal stakeholders, on the issues of planning and responsible use of resources was already started in 2019. The Scientific Areas are involved in the budgeting process, with a view to integrate strategic activities (teaching, research and third mission), economic and financial sustainability. The strengthening of the administrative support services for research, already initiated and consolidated throughout the year 2020, is the first concrete result of this organizational change.

The significant increase of FFO has ensured a long-term economic and financial sustainability and the continuation of GSSI strategic activities, in continuity with the process of efficiency and accountability started in 2019.

Added to this is the remarkable capacity of GSSI to attract external funding, for an amount of approximately 18 million euro in the last triennium, as evidence of the international competitiveness of each scientific research area. The full list of funded research projects is available at https://www.gssi.it/research-area/research-projects.

STUDENTS

The decrease of the number of PhD students in the last two years comes from the choice to increase the duration of the PhD program from 3 to 4 years, in order to align it with the international best practices. After a long-term planning, the Government board decided, within the same budget, to invest more in the completeness and quality of the program than in the number of students. Starting from the next academic year, if accredited, the Institute will be able to rely also on the additional funding provided by the MUR to all universities for doctoral scholarships and therefore increase their number.

TEACHING STAFF AND GENDER EQUALITY

Promoting gender diversity in the academic community is recognized as a priority in faculty development plans and will be a specific objective of the next Strategic Plan, to be achieved through the following steps:
  - conducting an impact assessment to identify the gender bias;
  - identifying and implementing strategies to correct the bias;
  - monitoring progress and results.
Addressing gender imbalances in decision making processes will be the first step of the route, in order to raise awareness among stakeholders and government boards.

Regarding the consistency of the faculty, the lecturers appearing on the website are those who have taught or are teaching courses at GSSI and include lecturers from other universities, who take an active role in the didactics of the PhD programmes.

TECHNICAL STAFF

The technical staff consists of 7 technologists. Two of them are dedicated to logistics and safety issues, the other 5 are IT technicians, of which two are dedicated to computing and network services and three to software development and simulations and modelling for research activities.
The GSSI also makes use of the technicians and technical services of the INFN Gran Sasso Laboratory for the research activities of the physicists.

STUDENTS' SERVICES

Thanks to the collaboration with the alumni association, GSSI follows the students' careers, monitoring their occupational paths: the employment rate of the alumni, currently reported to be approximately 100%, testifies the success of the GSSI doctoral programs.
The full list of GSSI students is available at https://www.gssi.it/people/students. As it can be seen, international students make up about 45 % of the total GSSI PhD candidates.

A specific section of our website, "Studying at GSSI" (https://www.gssi.it/education/studying-at-gssi), is dedicated to the services offered to our international students in order to help them sort out the administrative requirements of their arrival and stay in Italy.

Regarding the activities abroad and the exchange programmes, a high number of students receive the increase of the scholarship for research periods abroad: 25 students in 2018, 24 in 2019, with a sharp contraction in 2020 (only 12 students), due to the restrictions imposed by the covid-19 pandemic.

GSSI has a global allocation of funds to support students' missions, as a substantial part of the larger investment program for research activities. In 2019, more than 130 research trips have been authorized and financed after approval by the PhD Coordinators, in line with previous academic years. The trend has been essentially the same in the first quarter of 2020, until the pandemic lockdown has forced the scientific community to replace in-person, often face-to-face, meetings with remote online work.

TEACHING

Regarding the teaching activities, in compliance with the Italian regulation on Universities and with GSSI rules, each PhD course has autonomous rules and guidelines, that are summarized below.

ASTROPARTICLE PHYSICS

All the information concerning courses, syllabi, calendar can be found on the GSSI web site at this link:

https://www.gssi.it/education/astroparticle-physics-education/courses-physics-education

Teaching contents and hours

All the students are required to attend 6 pillar courses (a total of 180 hours) and at least 5 short courses (50 hours more), chosen among 24 short courses (240 hours). The academic calendar be found on the GSSI web site at this link:

https://www.gssi.it/education/astroparticle-physics-education/academic-calendar-physics-education

Students' learning assessment

Student's learning assessment methods include oral exams and/or short talks and discussions. For some courses we also ask students to prepare a written report/exercise on a specific topic.

The used ranking system is the standard ECTS grading scale, based on the class percentile of each and every student in the relative examination, looking at how he/she performs relative to other students in the class. Following this logic, ECTS system classifies students into the following broad groups: A (10%): outstanding performance without errors; B (25%): above the average standard but with minor errors; C (30%): generally sound work with some errors; D (25%): fair but with significant shortcomings; E (10%): performance meets the minimum criteria; FX: Fail – some more work (i.e. re-sit) required before the credit can be awarded; F: Fail – considerable further work is required.

AP Area also offers a program of Seminars and Physics Colloquia. Those events are listed in the GSSI web site.

See for instance this link: https://www.gssi.it/seminars/seminars-and-events-2020/itemlist/category/200-seminars-physics-2020 for 2020 events.

As far as the quality assessment of teaching is concerned, this assessment is carried out consistently with the guidelines provided by the committees of the GSSI (*Nucleo di Valutazione, Commissione Paritetica*).

In particular, during this academic year students were provided with a google-survey link through which they have been asked to fill an anonymous "student satisfaction questionnaire".

The answers are used to improve our course content and teaching quality.

Students teaching opportunities

In order to reach the mission of targeting high quality international research, typical of a School of Advanced Studies like the GSSI, the Doctoral Program in Astroparticle Physics shares with other Doctoral Programs within the GSSI the choice of not allowing students to carry out teaching activities during their doctoral time. This is also consistent with the fact that offering teaching opportunities outside the GSSI would clash with the recommendation that GSSI students are requested to concentrate on their activities within the GSSI itself. Furthermore, the GSSI does not have pre-doctoral courses resulting in a lack of students to be taught who are not their peers.

However, we offer our students the opportunity to give their contribution in our outreach programs. Most of them are very happy to do that, and the average time spent is about 15 hours/year.

MATHEMATICS IN NATURAL, SOCIAL AND LIFE SCIENCES

Detailed information about the teaching and seminar activities for the current and the past two academic years that the doctoral students are required to undertake are contained in the "Courses Organization and Content" files, available at the institutional website: https://www.gssi.it/education/mathematics-education/courses-maths-education

Teaching contents and hours

The document above contains detailed information about the courses' organization and content. As detailed there, the PhD program in Mathematics at GSSI is made of four pillar courses, several short courses and department colloquia.

Each pillar course consists of 60 hours of lectures, plus potential laboratories and projects preparation. Thus, the four pillar courses alone consist of more than 240 hours of lecturers in the first year. First year students are required to attend all courses and colloquia. Moreover, for the four pillar courses they are asked to pass a qualifying examination. These examination methods may vary across the four courses and are chosen at the discretion of the individual lecturers. Instead, the grading system is uniform and described in detail below.

The topics of the short courses and the colloquia may vary from one academic year to another and are offered by internal and visiting lecturers. Short courses and colloquia cover a wide range of topics which directly connect to active research areas of interest for the GSSI faculty board.

As the organization of short courses and colloquia typically need to be coordinated with external visiting scientists, this is particularly difficult this year due to the current pandemic situation. This is the reason why that part of the "Courses Organization and Content" file for 2020-21 is still in a preliminary status.

As illustrated in the "Courses Organization and Content", students are assessed using the ECTS grading scale, based on the class percentile of each and every student in the relative examination, looking at how he/she performs relative to other students in the class. Following this logic, ECTS system classifies students into the following broad groups: A (10%): outstanding performance without errors; B (25%): above the average standard but with minor errors; C (30%): generally sound work with some errors; D (25%): fair but with significant shortcomings; E (10%): performance meets the minimum criteria; FX: Fail – some more work (i.e. re-sit) required before the credit can be awarded; F: Fail – considerable further work is required.

Students' learning assessment

Concerning the quality assessment of teaching, analogously to the other three doctoral schools and consistent with the guidelines provided by the relative committee at GSSI (*Nucleo di Valutazione*) we are in the process of preparing a google-survey to be given to the students at the end of each course. With this survey students will be asked to fill an anonymous "student satisfaction questionnaire". The answers collected through this questionnaire will be used to build up a synthetic marking of the lecturers' teaching, on the basis of which the Coordinator of the Program will take strategic decisions about the organization of teaching for the next year.

Moreover, since their very first year, students are assigned tutors to which they can ask questions and provide feedback about the school and lecturers, for example. This is an important form of on-going monitoring of teaching quality which can help inform the coordinator of potential issues and thus decide to take potential corrective actions, together with the teaching committee as a whole.

Students teaching opportunities

GSSI is an international centre of doctoral training which does not have pre-doctoral courses where PhD students could teach to others than their peers. Moreover, students at GSSI are expected to carry out research at the highest international standards and, to this end, it is our opinion that students should focus their activities within the GSSI, increasing potential cross-fertilization and collaboration among their fellows as well as the several postdocs and faculty. For this reason, we share with the other three doctoral programs the choice of not allowing students to carry out teaching activities during their doctoral studies outside the institute.

COMPUTER SCIENCE

Detailed information about the teaching and seminar activities that the doctoral students are required to undertake are contained in the "PhD Rules" file, available at the URL https://sites.google.com/gssi.it/csgssi/ph-d-program.

Teaching contents and hours

The syllabi of the immigration and core courses are available at the URL https://sites.google.com/gssi.it/csgssi/ph-d-program/2020-2021. Starting from that page, it is possible to see the syllabi of the previous two academic years.

Students' learning assessment

Students are assessed using a grading scale based on the class percentile of each and every student in the relative examination, looking at how she/he performs relative to other students in the class. In particular, our system classifies students into the following groups.

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
>96%	>92%	>89%	>86%	>82%	>79%	>76%	>72%	>69%	>66%	>62%	>59%	>0

Concerning the quality assessment of teaching, in 2018 the students of cycles XXIX-XXXIII were asked to fill a Google-survey. In particular, for each of the following statements, the students were asked to quantify their degree of agreement between 1 and 5.

· The immigration courses were useful to obtain a good overview of the research areas in computer science covered at the GSSI.
· The core courses were useful to obtain a good overview of the research areas in computer science covered at the GSSI
· The advanced courses were a good source of inspiration for potential research topics
· The quality of the courses was good.
· The variety of the courses was good.
· The workload in the immigration courses was appropriate.
· The workload in the core courses was appropriate.
· Having a tutor from the beginning of the first year was useful to me.
· The offer of seminars and guest talks was good.

The students were also asked to say whether they had any suggestion for improving the first year of studies, whether there was anything they liked particularly about the first-year PhD studies in CS at the GSSI, and whether there was any other comment/suggestion they'd like to provide.

In 2020, in order to take into account the suggestion of a committee of students and teachers, a modified and expanded version of the survey was designed, and the students of cycles XXXIV-XXXV were asked to fill this survey. The new version of the survey contained ten sections.

The first section contained the following four statements concerning the global evaluation of the teaching.

· The overall quality of the courses was good.
· The overall workload of the courses was good.
· I received internal support and help in order to write my thesis proposal.
· The offer of seminars and guest talks was good.
· I attended the majority of the seminars and guest talks.

For each statement, the students were also asked to explain their answer. They were also asked to give any general suggestion (e.g. interesting courses to add, courses to change, suggestions on how to improve services, etc.).

The next three sections concerned the three immigration courses of the three pillars. For each course, the following three statements were asked to be evaluated.

· The course was a good introduction for the research area of the pillar.
· The course was well organized (timetable and program).
· The workload for the exam was appropriate to the course.

The students were also asked whether they have any specific consideration on the course.

The next three sections concerned the core courses of each pillar (without distinguishing between one core course and the other). For each pillar, the following three statements were asked to be evaluated.

- · The courses have added relevant in-depth information to the research area related to the pillar.
- · The courses were well organized (timetable and program).
- · The workload for the exams was appropriate to the courses.

The students were also asked whether they have any specific consideration on the courses of the pillar.

The last three sections concerned the advanced courses of each pillar (without distinguishing between one advanced course and the other). For each pillar, the following two statements were asked to be evaluated.

- · The variety of the advanced courses was good.
- · The quality of the advanced courses was good.

The students were also asked whether they have any specific consideration on the courses of the pillar.

The results of the responses will be analysed by a committee formed by teachers and students, and a report will be delivered by the end of 2020.

Students teaching opportunities

GSSI is an international centre of doctoral training which does not have pre-doctoral courses where PhD students could teach to others than their peers. Moreover, students at GSSI are expected to carry out research at the highest international standards and, to this end, it is our opinion that students should focus their activities within GSSI, increasing potential cross-fertilization and collaboration among their fellows as well as the several postdocs and faculty.

REGIONAL SCIENCE AND ECONOMIC GEOGRAPHY

Detailed information about the teaching and seminar activities that doctoral students are required to undertake are contained in the Graduate Program Handbook for the academic year 2020-2021, available along with the Handbooks of the previous academic years (the most recent ones) at the institutional web-site: https://www.gssi.it/education/regional-science-economic-geography

Teaching contents and hours

The Handbook contains a number of internal and external hyperlinks that detail the synopsis and the syllabus of the courses, their coordination in terms of convenors and lecturers, and the relative teaching hours. As the Handbook illustrates, in the first year, students are required to take 5 mandatory disciplinary courses, of 30 hours each, two mandatory methodological courses, still of 30 hours each, plus 4 optional courses of 20 hours each, for a total of 290 hours in the first year. In addition to courses, the Handbook also illustrate the seminars that complete the program, including multi-disciplinary seminars jointly organized with the other PhD Programs at the GSSI, and a direct link to the Seminar Series that the faculty of GSSI has been holding from its constitution and that has turned into a webinar series from the burst of the Covid19 pandemic.

Students' learning assessment and teaching quality assessment and monitoring

The Handbook illustrates that students are assessed using the ECTS grading scale, based on the class percentile of each and every student in the relative examination, looking at how he/she performs relative to other students in the class. Following this logic, ECTS system classifies students into the following broad groups: A (10%): outstanding performance without errors; B (25%): above the average standard but with minor errors; C (30%): generally sound work with some errors; D (25%): fair but with significant shortcomings; E (10%): performance meets the minimum criteria; FX: Fail – some more work (i.e. re-sit) required before the credit can be awarded; F: Fail – considerable further work is required.

As far as the quality assessment of teaching is concerned, this assessment is carried out consistently with the guidelines provided by the relative committee of the GSSI (*Nucleo di Valutazione*). In particular, at the end of each and every course, students are provided with a google-survey link through which they are asked to fill an anonymous "student satisfaction questionnaire" (reported at the end of this document). The answers collected through this questionnaire are used to build up a synthetic marking of the lecturers' teaching, on the basis of which the Coordinator of the Program and the Director of the Social Sciences area take strategic decisions about the organization of teaching for the year to come.

The Program also have a system of on-going monitoring of the teaching quality, implemented by collecting and acting on the feedbacks and assistance-requests that students provide to the two tutors and on the info they provide to the Teaching Committee in occasion of the "Intermediate Meetings" of each and every year of the Program (see the Handbook for details). On the basis of these inputs, the Coordinator decides about the eventual corrective actions to take after having been convocated and heard from the Teaching Committee.

Students teaching opportunities

In order to reach the mission of targeting high quality international research, typical of a School of Advanced Studies like the GSSI, the Doctoral Program in Regional Science and Economic Geography shares with the other Doctoral Programs at the GSSI the choice of not allowing students to carry out teaching activities during their doctoral time. This is also consistent with the fact that offering such a teaching opportunity outside the GSSI would clash with the recommendation students are provided to concentrate on their activities within the GSSI itself and with the fact that, internally, the GSSI does not have pre-doctoral courses where PhD students could teach to other than their peers.

Final evaluation – Section A

The "virtual" (because of the Covid-19 pandemic) visit of GSSI by the CEVS consisted of three full day meetings with governing bodies, faculty, students and alumni representatives in which all aspects subject to the CEVS' evaluation were carefully scrutinized and discussed with the relevant counterparts. All in all, the visit confirmed and strengthened the preliminary evaluation made by CEVS that GSSI, in spite of its relatively short life, has already established itself as an important international research institution, formed by a highly qualified and committed group of professors, researchers, PhD students and administrative staff, with good infrastructure and strong links with the international research communities but also active in the national domain and with strong links with the city of L'Aquila, where GSSI can give a valuable contribution to the post-earthquake reconstruction. The strong ties with the Gran Sasso National Laboratory, a leading research facility at the national and international levels, are a key asset which makes GSSI very attractive for PhD students and researchers worldwide. Below are our more detailed comments on each topic of our evaluation:

STRUCTURAL REQUIREMENTS: Currently GSSI offers either accommodation (in the former "Grand Hotel" residence) or a rental subsidy (which seems in line with the housing costs in the city of L'Aquila) to all PhD students. A newly constituted foundation together with the municipality and the University of L'Aquila will provide more student housing in the near future, with the objective of directly accommodating all students.

Food is available in a nearby cafeteria (hosted in the adjacent building of the Regional Assembly) which is only open for lunch and food vouchers are also given to students. Extending opening hours for the evening meal is currently under consideration and is encouraged by CEVS after having assessed users' interest.

Concerning the spaces for research and study, the situation is generally quite good, although some students have complained that the yearly space rotation among students creates some temporary friction and some students remain without a working place for some weeks at the beginning of each academic year. This has become more likely after the extension of PhD duration from three to four years, which by the way is unanimously appreciated by students. Also in this case, the Institute has plans for future expansion in nearby buildings which should improve the current situation.

More importantly, since many physics students work regularly at the Gran Sasso National Laboratory (GNSL) premises, which are located about 20 km away, a shuttle service should be provided connecting the two locations. Currently students who do not have a private car take about 2 hours for the round trip with public transport.

Financial indicators seem appropriate: the Institute has a stable funding (FFO) from the Italian government which will likely increase and seems adequate to sustain the Institute's activities and its development plans.

STUDENTS: GSSI only admits doctoral students to its four currently active PhD programs with a competitive selection process. All PhD programs last four years and attract a considerable number of applications from all around the world. Student selection procedures slightly differ among the programs, but all of them comply with the international standards, with an initial screening based on CV's, undergraduate study record, research statement and recommendation letters, followed by interviews to short listed candidates.

The CEVS committee remarks that the number of admitted students has decreased with the increase from 3 to 4 years of the duration of the programs. CEVS encourages the Institute, after this consolidation phase, to increase the number of admitted students.

We suggest that the Institute may also consider modifying the time schedule of the call for applications and the selection procedure as they are currently not aligned with most international standards. Such delay may in fact be causing a possible loss of good potential candidates, mainly at the international level. We know that the Institute is already considering a double deadline procedure in order to implement a more suitable timeline for the application procedure, this may be a good option.

Moreover, we recommend that PhD students be given the opportunity to do some teaching. We realize that, since GSSI is only offering doctoral courses, it is difficult to involve PhD students at GSSI, however, there might be opportunities in teaching undergraduate courses at the University of L'Aquila or other nearby universities that the Institute may want to explore. This should not be set as compulsory but as an opportunity for those PhD students who are interested in teaching.

TEACHING STAFF: GSSI has currently a permanent faculty of 14 full professors, plus a temporary professor on leave from the Gran Sasso Lab, 7 associates professors, 25 assistant professors: 14 with a non-tenure track position and 11 with a tenure track position. This faculty complies with the regulations on the required ratio between faculty and students and is still expanding. In addition, PhD programs also involve a considerable number of external faculty both for teaching and student supervision.

All members of the Faculty of GSSI have excellent research and teaching profiles and are well positioned in the international research community.

We noticed however a strong gender and nationality bias in the faculty especially at the senior level. Currently among the 21 full or associate professors only 3 are female and only one does not have Italian nationality. We urge GSSI to take action to improve both balances, though we acknowledge that the nationality bias might be more difficult to correct given the relatively non-competitive contractual terms that the Italian public university system offers. Moreover, interviews confirmed that most the laboratory technicians are hired by and work in the Gran Sasso National Laboratory to which the GSSI has access. GSSI may consider enrolling directly some technicians for the other labs of the School.

STUDENT'S SERVICES: The students we interviewed are generally satisfied with the quality of the supervision offered by GSSI. Each Ph.D. student has at least two designated tutors for personal and academic guidance. Therefore, mentoring seems appropriate.

Health care and psychological support should instead be offered to students on a more structured and regular basis. Also, foreign students should be given more support in their initial settlement phase, especially with the bureaucratic requirements (often only available in Italian) for their resident permit and registration with the National Health System. Italian language courses should also be offered in a more timely manner, as soon as students arrive to start their courses.

An in-house career service for students at GSSI does not exist yet but there are plans to establish it within the next three years. So far the Institute has been using off-campus initiatives (job fairs, etc.). Moreover the Alumni network could be further exploited to streghten contacts with external stakeholders and to promote GSSI placement activities.

Concerning international exchanges, GSSI student are encouraged to spend some part of their study period abroad and their scholarship is increased by 50% for such a period (maximum 18 months). GSSI is part of the Erasmus network. Data provided show that in the years 2018-20 most students had the opportunity to participate in conferences,

summers shoolcs and to visit other national and foreign research institutions. Each of the four PhD programs has a list of foreign universities or research institutes with agreements on student exchange. CEVS committee encourages GSSI to promote and increase official agreements with international research institutes. Most faculty members have also close ties with other institutes not on this list. Joint supervisions or supervisions by professors external to GSSI are not uncommon.

Some students complain that the expenses for these periods of visiting abroad have to be advanced by them and refunds may take a long time, putting them under financial stress. The Institute should take measures to address this issue.

Finally, the social sciences PhD program has recently been redesigned and has changed denomination from "Urban Studies and Regional Science" to "Regional Science and Economic Geography". Some students enrolled in the previous program and whose research focuses on urban studies have complained that this line of research is being somehow neglected by GSSI and the quality of supervision has been negatively affected. Appropriate measures should be implemented for students enrolled in the discontinued program in order to ensure the most effective supervision to complete their PhD.

TEACHING: All PhD programs have a rather intensive series of courses concentrated in the first year. At least 150 hours of taught courses are offered to each student. The overall course architecture seems generally well designed, with a good mix among more general and more specialized courses and some PhD programs (notably the one in computer science) have developed a particularly well structured course offer.

However some students (most notably those in the Regional Science and Economic Geography PhD) have pointed out that when students come from diverse backgrounds it could be appropriate to offer a more diverse and tailor-made course offer in order to bring them all to approximately the same level. Currently some courses are too easy for students with a given background and difficult for those with a different one.

GSSI has an ambition for interdisciplinarity, but this is hardly reflected in the course structure and syllabi. We advise the Institute to make an additional effort to promote cross-fertilization among the PhD programs, giving students incentives to attend also some courses outside their programs and possibly designing courses offered to several programs, perhaps jointly taught by instructors belonging to different areas.

In addition, all students should be given right at the beginning of their study a clear indication of the courses they are expected to attend, their examination requirements and how and when the exams will take place. This is important both to give students a clear ex-ante indication of what it is expected from them and to allow them to plan their schedules and activities well in advance, especially for international students.

Finally, GSSI is encouraged to consider, in some areas, to establish industrial PhD programs and to achieve the excellence seal "International Doctorate".

SECTION B. THE SCHOOL'S STRATEGIC AND PLANNING DOCUMENT

The planning Document sets out the School's aims and strategies for educational and research offers, the specific approach to QA a well as the role and position of the School in the national and international contexts. The document must indicate the basic choices, objectives and corresponding priorities that guide policy choices made by the School, the mission that the school identifies for itself within the national university system, and how it is positioned within the international landscape, specifying the role assigned to the school's doctoral and pre-doctoral programmes, if present, how they relate to choices made in terms of research and infrastructure, the consistency of those choices and priorities and achievement of the stated objectives. The document must demonstrate the school's economic and financial sustainability and all resources relating to teaching for the school's educational activities when it is fully on-stream. The CEVS should then check the consistency of the School's strategies, objectives and means (see Guidelines page 20).

NB: Strategic and Planning Documents might change across Schools which are free to organise its contents and structure (template not provided)

CONTENTS	CEVS EVALUATION
STRATEGIC VISION, OBJECTIVES AND SCHOOL ORGANISATION	GSSI has a clearly stated mission that specifies the Institute's role as a business incubator for the L'Aquila area in particular and the whole of Italy in general. Three subject areas (astrophysics, computer science, mathematics) have been chosen since they are closely related to the areas of expertise of the nearby INFN labs and the fourth area (urban studies) has a specific relation to the rebuilding of the L'Aquila area as a role model for rebuilding areas that were hit by disasters. Appropriate strategic plans exist. The documents "Piano strategico aggiornamento 2019" and "GSSI 2030" contain a concise (and very challenging) vision of what the school wants to achieve in the years to come. The "Piano strategico aggiornamento 2019" formulates goals in teaching, research and third mission and specifies strategies to pursue them. The time frame of this latter plan is very ambitious and it is likely that a few initiatives could have suffered from the COVID 19 pandemic, in particular in relation with third mission and public involvement. It would be helpful to know if and to what extent these objectives are being or will be revised. As already mentioned, the Institute does not have currently a career office, but its opening is planned for the near future. So far students who have completed their PhD's are said to have found a job within a year, but numbers are probably still very limited given that the Institute is very young and details on the kind of jobs they find are not provided. The organization of the school's hiring is consistent with its mission. The school is doing an excellent job in recruiting and acknowledges openly that in some areas (computer science in particular) competition is fierce and that specificities of the Italian system (salary cap) may have a negative impact on the success.

CONTENTS	CEVS EVALUATION
	Diversity is included in the objectives of the strategic plan, but no mention to gender equality is made, and the Institute has clearly to improve in this direction, especially as far as senior faculty is concerned.
	The structure of the faculties is a one-to-one image of its mission statements and therefore perfectly set up to reach the scientific objectives. The only critical point, as the Rector himself points out, is that more administrative staff is needed, especially in order to support the process of application for grants and the management of acquired grants.
	The governance of GSSI complies with Italian norms and regulations and includes Rector, Evaluation Committee, Scientific Committee, Board of Auditors, Administrative Council, Academic Senate, General Directorate and Institute Council responsible of the four scientific areas. A clear description of the dedicated roles of each committee is not provided as it probably refers to the law and the Statute of the Institute, but it would be nice to have a clearer picture.
	As to administrative personnel, the Institute is currently understaffed and plans to increase its number are mentioned in the available documents. However, policies for administrative and technical staff (recruitment, career, type of qualifications and competences required) are not available.
	The document "SMVP-GSSI_2019.pdf" for "Sistema di Misurazione e Valutazione della Performance" provides guidelines for the evaluation of its organs.
POLICIES AND STRATEGIES FOR QA	Quality assurance (QA) and quality management (QM) are recognized as important components of the school and the school has begun to formulate goals and criteria for their measurement. However, as of now, the Institute has not yet implemented procedures for QA and QM.
	Three documents are listed on the web page, "Piano strategico aggiornamento 2019", "Piano integrato 2020-2022, and "Report GSSSI 2030". These documents cover a wide range of topics in research, teaching and third mission and offer goals and instruments for validation. The institutional side of the evaluation is not discussed in detail. It seems that further documents on the internal structure are not (easily) available.
	There are four actors in the areas, one of them, the Presidio di Qualità, still being established. The other three are already implemented. The role of Nucleo di Valutazione is to monitor spending, research outcome, teaching and good practice in administration. The Commissione paritetica docenti-studenti monitors teaching and services offered by faculty (both permanent and non permanent), corresponding indicators and runs teaching evaluations. The "Comitato scientifico" monitors research and teaching on a horizon of three years and its advancements and further developments.
	The Commissione Paritetica Docenti Studenti is in charge of evaluations and the "Riepilogo Generale" reports about the first (ever) online questionnaire in 2020. The online questionnaire was filled only by 50% of the students which seems not enough in consideration that the population of students is small and made only of PhD's who are probably deeply involved in the life of the Institute.

CONTENTS	CEVS EVALUATION
INTERNATIONALISATION	The document "GSSI 2030" states clearly that the main goal is to expand the international faculty and the international student body and to develop into "a Centre of scientific excellence and international attraction". Thus internationalization is a top priority and all recruiting (both faculty and students) is aimed at achieving true diversity on campus. At present, the number of foreign faculty members, especially among professors, is very low. Also the majority of PhD students is Italian. Which kind of strategies does the Institute plan to adopt in the near future in order to make GSSI more international? No information about joint degrees seems to be available. Each subject areas has contracts with other top universities and strong ties to even more schools through personal contact of the faculty. Students are encouraged to spend time abroad and have sufficient funds for spending time at other Italian schools or abroad. However, according to "Riepilogo Generale" about 50% of the students did fill out the online questionnaire and of those roughly 50% declared to be involved in international activities. This corresponds to 25% of the student body. All four areas are participating in European Horizon 2020 projects ("GSSI 2030 (p2)"). One of the key factors for internationalization in teaching is the small number of permanent faculty on campus and the large number of visiting personnel at all stages of an academic career. The large number of applications from abroad testifies that both reputation and visibility of calls of the school are remarkably high despite the young age of the school itself.

Preliminary evaluation Section B

The Institute has a clearly stated and ambitious mission and ambitious development plans, which present a very interesting and challenging combination of international academic excellence and impact on the local and national community. Synergies with the local INFN labs and the peculiarity of the city of L'Aquila, recently hit by a devastating earthquake, provide the bases for the line of activities respectively in the astrophysics, maths and computer science areas on one side and the regional science and economic geography on the other.

Weak points that require additional information:
- Governance: role of each committee (Italian law, Statute of the Institute, other internal rules). How are these committee selected and appointed?
- Policies for administrative personnel are not specified.
- The quality monitoring and assurance area is still underdeveloped in the Institute. In particular the Institute should implement policies that ensure a wider participation of students in filling the questionnaire for the Commissione Paritetica. Furthermore, the School should implement a system of surveys to seek the opinions not only of students but also of faculty, technical and administrative staff.
- Internationalization: provide numbers on international exchanges and activities. The number of foreign permanent faculty seems extremely low, are there policies envisaged to increase this number in the near future?

- Gender balance is not mentioned as a strategic objective.
- Whereas synergies between astrophysics, maths and computer science are quite clear, the regional science and economic geography area of research and teaching seems a bit detached from the rest of the Institute. Are there policies to promote synergies also for this fourth area?

Comments to the preliminary evaluation - Section B

STRATEGIC VISION, OBJECTIVES AND SCHOOL ORGANISATION

The Strategic Plan 2019 outlined the GSSI mission and objectives, based on the long-term strategies defined by the triennial planning, both in academic and administrative fields: http://amministrazionetrasparente.gssi.it/images/pdf/Aggiornamento%20piano%20strategico%202019.pdf; http://amministrazionetrasparente.gssi.it/media/k2/attachments/gssi-piano-strategico-2018.2020.pdf)

The plan was ambitious but, despite the Covid-19 emergency, great progress has been made in each strategic area: all of the defined objectives have been achieved or will be implemented within the end of 2020.

GSSI does not yet have a structured Career Office, but in 2020 has taken the first critical steps to create it. Benchmarking with successful organizational models and taking budget constraints into consideration, GSSI has identified the career development activities to implement as a priority for its community of PhD candidates and early career researchers:

- mapping of the training needs of PhDs and Researchers, in order to select the most urgent services;
- support for job search/career planning advice, both for academic and non-academic paths;
- support for managing stress and anxiety through psychological support, counseling and training;
- tracking the careers and collecting statistics in order to measure the impact of the activities.

These essential actions will find room in the next strategic plan, together with an adequate recruitment program to create a dedicated service.

According to the triennial planning for recruitment, that will be approved by the Consiglio di Amministrazione within the end of the year, in 2021 GSSI is planning to hire at least 5 new administrative members to reinforce the services in the following fields:

- Placement and Career Development;
- Internationalization and related strategies;
- Student services.

GOVERNMENT BODIES

The GSSI Government bodies are composed and nominated according to the Italian laws on Universities (especially law n. 240/2010) and GSSI regulations (Statute and rules on the functioning of the government bodies).

Academic Senate

According to the law n. 240/2010 and the art. 9 of the GSSI Statute, the Academic Senate is an elective body responsible for the academic strategies and the coordination of teaching and scientific activities.

It is composed by the Rector (Chair of the board), the Directors of the Scientific Areas, two elected representatives of the PhD students and a maximum number of 7 representatives of professors and researchers, of whom at least one researcher (https://www.gssi.it/institute/organization).

The Director General takes part in the meetings as secretary of the body.

Board of Directors

According to the law n. 240/2010 and the art. 8 of the GSSI Statute, the Academic Senate is an elective body responsible for the academic strategies and the coordination of teaching and scientific activities.

The Board of Directors (Consiglio di Amministrazione in italian) is the GSSI governing body, responsible for the strategic guidelines and the financial sustainability of the Institute. It is composed by the Rector, who presides over it, two personalities with proven experience in the management field, one representative of INFN designed by its President, one elected representative of the PhD students (https://www.gssi.it/institute/organization).

The Director General takes part in the meetings as secretary of the body.

School Council

According to the art. 10 of the Statute, The School Council (Consiglio di Istituto) is the advisory body of the School composed by all the professors and researchers. It gathers the roles held by the Department Councils in the Universities, such as nominating the committees of the selection procedures for the recruitment of the academic staff and appointing the selected candidates.

CULTURAL BALANCE

While GSSI is very attractive for international talents in postdoctoral positions (https://www.gssi.it/people/post-doc), the competition with foreign Universities for the recruitment of professors and researchers turns out to be tough, due to the often non competitive conditions of Italian salaries. However, what we cannot offer in terms of salary, we will try to compensate in terms of trust, openness regardless of nationality, cultural background or sexual orientation, adequate funding for research activity and opportunities for career development. We do not give positions of privilege to senior faculty and we offer to our younger colleagues the same support that other institutions reserve for scholars with already well-established careers.

Reducing the cultural gap in academia is a challenge that GSSI will have to face through targeted strategies in the next recruitment program.

POLICIES AND STRATEGIES FOR QA

The GSSI Quality Assurance System has been completed with the appointment of the Quality Assurance Unit in October 2020 and it's now running at full capacity (https://www.gssi.it/quality).

The Quality Assurance (QA) is the set of planning, management and self-assessment procedures of the activities carried out by the GSSI community for the purpose of achieving the objectives of teaching, research and third mission.

Through the Quality Assurance System (SAQ), the Governing bodies and the actors involved in the various levels of the organization support the Quality Assurance procedures in line with the guidelines identified in the Strategic Plan.

It is structured through the participation of the following bodies:
- Quality Assurance Unit (Presidio di Qualità)
- Scientific Committee (Comitato Scientifico)
- Evaluation Committee (Nucleo di Valutazione)
- Student-Professor Joint Committee (Commissione paritetica docenti-studenti)

Quality Assurance Unit (Presidio di Qualità)

The Quality Assurance Unit has the task of supervising the performance of the GSSI quality assurance procedures, for the pursuit of the teaching, research and third mission objectives based on the guidelines formulated by the Governing Bodies.

The Unit is nominated by the Rector and is composed according to the guidelines defined by the Evaluation Committee: a Full Professor as President, one representative for each Scientific Area, two representatives of the administrative staff.

The Quality Assurance Unit is composed as follows:
- Prof. Fernando Ferroni, Full Professor s.s.d. FIS/01, Chair
- Prof.ssa Elisabetta Baracchini, Associate Professor s.s.d. FIS/01
- Prof. Paolo Antonelli, Associate Professor s.s.d. MAT/05
- Prof. Ugo Rossi, Associate Professor s.s.d. M-GGR/02
- Prof. Gianlorenzo D'Angelo, Associate Professor s.s.d. INF/01
- Dott.ssa Eleonora Ciocca, administrative staff, Head of the Teaching and Research Area
- Dott.ssa Sabrina Ciancone, administrative staff

The Quality Unit has been nominated in October 2020 and is starting its activities these days.

Scientific Committee (Comitato Scientifico)

The Scientific Committee is an international advisory body of control and evaluation of the GSSI scientific activity, as foreseen by the GSSI Statute. It meets twice a year, analysing the progress and development of the Institute scientific activity, and producing a written report with recommendations for the future. The last report of the Scientific Committee is available in attachment (attachment n. 4).

The Committee is made up of 6 members. Its components are appointed by the Academic Senate on the proposal of the Rector, chosen from among exponents of the international scientific community of high scientific reputation in the sectors of activity of the GSSI.

The members of the Committee are the following:
• Fabrizio Barca (Economist, Italy - Chair)
• Riccardo Barbieri (Emeritus Professor, Scuola Normale Superiore Italy)
• Barry Barish (Nobel Laureate, California Institute of Technology USA)
• Simona Iammarino (London School of Economics UK)
• Alfio Quarteroni (Ecole Polytechnique Lausanne CH)
• Sanjit Seshia (University of California at Berkeley USA).

Evaluation Committee (Nucleo di Valutazione)

The Evaluation Committee has the task of verifying the correct management of public resources, the productivity of research and teaching, as well as the impartiality and good performance of administrative actions ex-post. In particular, according to art. 11 of the GSSI Statute, the Committee "evaluates the administrative management, the quality and effectiveness of the teaching offer, the actions to support the right to study, verifying, also by means of comparative analysis of costs and performance, the productivity of teaching".
Composition:
● Roberto Aloisio, GSSI Full Professor s.s.d. FIS/02 - Coordinator;
● Francesco Ciardiello, Direzione Generale per il coordinamento, la promozione e la valorizzazione della ricerca - MIUR – Rome - external component;
● Pietro Di Benedetto, Director General of the University of L'Aquila - external component;
● Marco Modica, GSSI Researcher TDB SECS-P/06 - internal component;
● Guido Proietti, Full Professor of the University of L'Aquila s.s.d. INF/01 - external component.

Student-Professor Joint Committee (Commissione paritetica docenti-studenti)

The Student-Professor Joint Committee has the task of annually drawing up a comprehensive report for each PhD course which considers the overall educational offer, with particular reference to the results of the survey on students' opinions, highlighting any specific problems of individual PhD courses.
The Joint Committee has the following composition:
● Marica Branchesi, representative of the Scientific Area of Physics - Coordinator;
● Andrea Ascani, representative of the Scientific Area of Social Sciences - Secretary;

- **Paolo Antonelli**, representative of the Scientific Area of Mathematics;
- **Gianlorenzo D'Angelo**, representative of the Scientific Area of Computer Science;
- **Leandro Silveri**, student representative for the PhD Course on Astroparticle Physics;
- **Boris Shakarov**, student representative for the PhD Program on Mathematics in Natural, Social and Life Sciences;
- **Simone Fioravanti**, student representative for the PhD course on Computer Science;
- **Carlo Caporali**, student representative for the PhD course on Urban Studies and Regional Science.

INTERNATIONALIZATION

For the Academic Year 2019/2020, as stated in the accreditation reports, each Scientific Area has activated numerous collaborations with international Universities and research Centers:

Astroparticle Physics:
- University of Chicago;
- University of Belgrade;
- Chalmers University of Technology.

Mathematics in Natural, Social and Life Sciences:
- Massachusett Institute of Technology;
- University of Chicago;
- University of Zurich;
- SISSA Trieste;
- Courant Institute.

Computer Science:
- University of Oxford;
- Athens University of Economics and Business;
- Université Paris Diderot;
- ISTI-CNR;
- Università degli Studi dell'Aquila.

Regional Science and Economic Geography:
- London School of Economics;

- OECD;
- Ohio State University;
- Newcastle University;
- Utrecht University.

Thanks to the international composition of the Academic Boards, each PhD course can constantly maintain effective these valuable collaborations.

Regarding the international research activities of the PhD students, a full list of missions and activities abroad conducted in the last 3 years students can be found in attachment (attachments n. 1, 2, 3).

INTERDISCIPLINARY APPROACH IN SOCIAL SCIENCES

During its first years of operation as an independent University, GSSI already took significant steps to foster interdisciplinarity, focusing on research topics where excellence can only result from collaborative cross-disciplinary efforts, such as data science and smart communities.

In particular, the Social Sciences and the Computer Science Areas are working together to detect and analyse emerging social phenomena and they have organized joint seminars, produced co-authored papers, and submitted successfully joint grant proposals. Funding from the Minister of Research has recently been exploited to hire, by "attraction" (from relatively more developed regions) and "mobility", four new researchers who are now working on the topic of Smart Cities and Communities and Cultural Heritage.

As a main strategy for the future, as stated in the GSSI 2030 report, the Social Sciences Area aims to strengthen the cross-disciplinary collaboration with hard sciences, especially in the field of collecting and elaborating data, with the knowledge that interdisciplinary collaboration is required to develop tools and methods that lead to further advances in research programs.

More in general, to support the development of cross-disciplinary activities, GSSI created the *Centre for Urban Informatics and Modelling* (CUIM), which integrates contributions from all four scientific areas into research projects focused on the L'Aquila territory. Thanks to these research activities, GSSI became a member of the National CINI Laboratory on smart cities. GSSI is also a co-founder of the REDI Consortium (*REsilience after DIsasters*), together with the University of Camerino and two major national research institutions, INFN (Fundamental Physics) and INGV (Geophysics). This initiative involves the Social Sciences Area and the GSSI's role as a competence centre in a region that is sensitive to earthquakes and it represents a commitment towards the issue of social and economic resilience after a natural disaster.

It is worth to mention that within CUIM, at the end of 2016 an interdisciplinary group involving GSSI researchers of all areas created OpenDataRicostruzione (https://opendataricostruzione.gssi.it/home) a free online portal that supports public accountability by featuring granular data relative to all publicly funded reconstruction works for damages caused by the 2009 L'Aquila earthquake. CUIM is now ready to put online OpenData L'Aquila, a new free portal featuring extensive smart city data relative to numerous areas, such as environment, commerce, culture, energy, mobility, public safety, government budgets, tourism, etc.

Final evaluation – Section B

GSSI has a clearly stated mission that specifies the Institute's role both as an international research centre and as a business incubator for Italy and L'Aquila area in particular. Three subject areas (Astroparticle Physics, Computer Science and Mathematics) have been chosen since they are closely related to the areas of expertise of the nearby Gran Sasso National Laboratory, while the fourth area (Regional Science and Economic Geography) has a specific relation to the rebuilding of the L'Aquila area as a role model for rebuilding areas that were hit by disasters.

Below are some more detailed comments on each topic subject to evaluation:

STRATEGIC VISION, OBJECTIVES AND SCHOOL ORGANISATION: The GSSI strategic plan is very ambitious and offers both a short term perspective and a challenging long term one. Some of the targets included in the short term perspective are likely to be affected by the Covid-19 pandemic, but on the whole the degree of fulfilment of the plans seems to be achieved.

The strategic plan mentions the possibility of extending the scope of the Institute to include also undergraduate teaching, following the model of the other three Italian Scuole Superiori: Normale, Sant'Anna and IUSS. The CEVS Committee believes that this change could considerably increase the impact of GSSI on the national and local communities, but also warns that it will put heavy demands on structures, facilities, faculty and governance. In that event in fact accommodation will be needed in a college for all undergraduate students, as well as more space for teaching and study. In addition a much closer cooperation with the University of L'Aquila will be required and the internal organization and governance will have to be modified with the creation of "classes" managing undergraduate teaching.

The current governance structure is in line with Italian laws and regulations and reflects the small size of the Institute. A more decentralized structure may become necessary if the Institute keeps growing in the near future and, especially, if it moves also to undergraduate teaching.

As already mentioned, the Institute does not currently have a career office, but its opening is planned for the near future. So far students who have completed their PhDs are said to have found a job within a year, especially thanks to the "informal" connections that GSSI's faculty members have with potential employers (mainly universities and research institutes), also thanks to the still limited number of students who have completed their studies, given the fact that the Institute is very young. Therefore a career office with qualified personnel is needed in order to keep this high employability record also in the future.

The organization of the school's hiring is consistent with its mission. The school is doing an excellent job in recruiting and openly acknowledges that in some areas (computer science in particular) competition is fierce and that the specificities of the Italian hiring system (rather lengthy and bureaucratic public competition) and the relatively unfavourable contractual conditions (low salaries as compared to many other countries) may have a negative impact on the implementation of successful hiring strategies.

In this respect, we advice GSSI to formulate a clear faculty development plan coordinated among the different areas, in order to promote a balanced growth of the Insitute and including both new positions and internal promotions.

GSSI is currently understaffed for what concerns administrative personnel. The Institute is aware of this fact and has plans to hire a considerable number of employees with administrative duties. We urge the Institute to take action and hire personnel with suitable qualifications and experience.

POLICIES AND STRATEGIES FOR QA: GSSI has only recently started implementing a quality assurance plan. The relevant committees (Presidio di Qualità, Commissione paritetica docenti-studenti, Nucleo di Valutazione, Comitato Scientifico) have been appointed and are operational. However many of the processes that are required to make quality assurance working on a regular basis and in a smooth manner are not yet institutionalized and formalized. Students' response to questionnaires on teaching evaluation is still too small and should be brought close to 100% given the small number of students (for instance conditioning access to exams or the following year to the completion of the survey). Other surveys to seek the opinions of faculty, students and technical and administrative staff are not carried out in a regular and formalized manner. Also, it has not been clarified

who is formally in charge of processing the information collected through surveys and how and under the responsibility of whom the Institute will take corrective measures in response to such questionnaires.

More in general, information collection and validation must be improved, both for internal monitoring and for external reporting. The latter concerns both the information requirements given by the Ministry, ANVUR and other Italian governmental agencies, but also the need to improve the visibility of GSSI at the international level. Somehow, GSSI does not have the visibility it deserves, and should: improve its web site, increase the visibility of its outputs (mainly research), design a strategy for promoting and achieving higher international reputation and visibility (rankings, education fairs, media, etc.).

The Institute's governing bodies are aware that they have to take measures to catch up and align with the best national and international standards in quality assurance. CEVS does urge them to take action in order to reach such standards before the next round of evaluation.

The Institute is also currently lacking an Ethics Code of Conduct. CEVS encourages GSSI to approve one as soon as possible, to put in place all the procedure to be followed in case of alleged violations and to appoint a Rector's delegate with responsibilities on this matter.

We also remark that the "evaluation committee" (Nucleo di Valutazione) in its current composition is formed only by members of either GSSI or the University of L'Aquila (with the exception of the component appointed by the Ministry of Universities and Research). As the committee is approaching its end of term and a new one will have to be appointed, we recommend ensuring a more diverse composition of the committee.

A Rector's delegate for equal opportunities should be appointed, possibly expanding the mandate of the current delegate for disabilities.

INTERNATIONALISATION: One of the strategic objectives of GSSI is to develop into a centre of scientific excellence and international attraction and to attract an international faculty and an international population of students. Indeed the Institute is active in the international research community: all the members of the faculty, in spite of being Italian in the vast majority, have an international background and strong connection with the international research community. As to students, the Institute attracts a good number of foreign students also from countries with solid and competitive domestic doctoral programs. Thus internationalization has been and is a top priority.

However, at present the number of foreign faculty members, especially among professors, is very low. We are aware that the Italian low salaries and the rather cumbersome recruitment systems make it very hard to recruit senior foreign top scholars, but the Institute should make a special effort in this direction, for instance offering sponsored temporary positions as "professore straordinario" or promoting long-term visiting positions

Also the majority of PhD students are Italian, though there is a good percentage of foreign students, which perhaps could be further increased by promoting the Institute abroad (e.g. participating in education fairs).

Finally, the Institute is encouraged to develop a strategy to increase its international visibility and possibly enter the international rankings, which could represent a valuable means to attract more international qualified students and possibly also faculty.

Collaborations with foreign universities both at the level of PhD programs and in research projects are generally very good. The latter have materialized in several international research projects including a good number of European Horizon 2020 projects.

As to PhD programs, however, the Institute might consider increasing the number of formal agreements for student exchanges, co-supervision and possibly joint PhD degrees with some top foreign institutions.

Agenzia Nazionale di Valutazione del
sistema Universitario e della Ricerca
anvur National Agency for the Evaluation of
Universities and Research Institutes

SECTION C. FURTHER COMMENTS, OBSERVATIONS AND RECOMMENDATIONS TO BE CONSIDERED FOR THE NEXT PERIODIC ACCREDITATION *

Section C
The CEVS Committee has greatly appreciated the impressive achievements that GSSI has attained in its relatively short life. GSSI has established itself as an international research centre and doctoral school, with a highly qualified, committed and growing faculty and capable of attracting good doctoral students and research projects within the international arena. GSSI has indeed the opportunity to become in the next 10 years or so a leading Institution in its areas.   Nevertheless, some risks and weaknesses are present and should be tackled by the Institute in view of the next period accreditation exercise and, more in general, to foster a continuous improvement process. Here are the CEVS' recommendations: All the Quality Assurance (QA) procedures must be implemented and developed. The relevant committees have been appointed and are operational. However, QA processes have to be institutionalized and formalized. Questionnaires and surveys to seek the opinions of faculty, students, alumni and technical and administrative staff must be carried out in a regular and formalized manner, and a high rate of responses must be ensured. Results emerging from these surveys should be publicly and widely disseminated with all stakeholders involved.   The Institute is also currently lacking an Ethics Code of Conduct. CEVS encourages GSSI to approve one as soon as possible, to put in place all the procedures to be followed in case of alleged violations and to appoint a Rector's delegate with responsibilities on this matter.   The "evaluation committee" (Nucleo di Valutazione) should have a less local composition.   Internal information collection and validation must be improved, both for its internal use for monitoring internal activities and also for external parties, such as the next periodic accreditation procedure. Also the visibility of GSSI at national and international level can be improved, with a better web site, increasing the visibility of its outputs (mainly research), and by designing a strategy for achieving higher international reputation and visibility (rankings, education fairs, media, etc.).   The gender and nationality balance of the faculty must be improved, especially at the senior level.   Faculty development plans should be made clearer and ensure a balanced growth among the different areas.   The number of PhD students could increase and more formal international agreements for exchanges, co-supervision and joint degrees could be made.   Some practical questions in students' life should be faced. In particular: more help to foreign students in their settlement phase, shuttle bus to Gran Sasso National Laboratory, easily accessible medical and psychological support preferably in English for international students, advance payment or faster reimbursement of their travel expenses.

Students should be given in advance clear indications of the courses syllabi, requirements, evaluation standards, and exam schedules, in order to allow them to plan their activities.

In all PhD courses there should be courses designed to bring students with different backgrounds to the same level.

The time line of the call for applications and selection of PhD students may be changed to align with the international standards.

The administrative staff must increase almost in all administrative areas. In particular a student career's office should be put in place.

To be noted that the initial accreditation concerns Schools that have already been operating for a long time. The data obtained so far permits an evaluation of the extent to which Schools comply with periodic accreditation requirements. The CEVS is thus invited to suggest and issue recommendations to the School's governing bodies on how to improve policies and performance in order to meet periodic accreditation requirements.

FINAL EVALUATION OF THE CEVS – INITIAL ACCREDITATION

X RECOMMENDATION FOR ACCREDITATION

☐ RECOMMENDATION FOR NON-ACCREDITATION