

INITIAL ACCREDITATION OF SCHOOLS FOR ADVANCED STUDIES SISSA EVALUATION PROTOCOL

Summary

SECTION A. INITIAL ACCREDITATION REQUIREMENTS (MINISTERIAL DECREE 439/2013)	2
SECTION B. THE SCHOOL'S STRATEGIC AND PLANNING DOCUMENT	11
SECTION C. FURTHER COMMENTS, OBSERVATIONS AND RECOMMENDATIONS TO BE CONSIDERED FOR THE NEXT PERIODIC ACCREDITATION *	16
FINAL EVALUATION OF THE CEVS – INITIAL ACCREDITATION	17

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

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
STRUCTURAL REQUIREMENTS	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - The School, having only Ph.D.programs, is not required to provide lodging facilities. However, a housing office/service is anyway in place to help students in securing accommodation, though (at least on the basis of the information contained in the internal evaluation report) it does not seem to be used too frequently. Also the way it operates is not fully clear. Committee would like this aspect to be clarified during the visit. - Classrooms, libraries, computer facilities, etc. appear adequate to the number of students and well furnished (strangely American Physiological Society journals are not explicitly mentioned in the available list but we believe they are present). In the internal evaluation report, classrooms did not receive the highest score, though no specific complain was raised. Committee would like to get a clarification on this point during the visit. - Experimental labs are all in the neuro/bio area and seem to have all the main necessary facilities. Overall there are about 80 students in these areas but it's not clear how they divide among the individual labs if they are all experimental, etc. The equipment is described by grouping per activity type but it's not clear if it is shared across the labs, if some is of specific use in a lab, how access is organized (booking system?) and if some critical equipment exists that is overused by many causing possible delays. Are there maintenance contracts in place? Committee would like this aspect to be clarified during the visit. - The HPC centre is a very important part in supporting all activities. Committee would like to discuss about this Center during the visit. - Financial indicators are all very good, though slightly decreasing in the last few years. The budget forecast for this and next years is very healthy but has seen an increase in student costs that is being compensated by reducing operative costs and controlling to some extent research costs. In the long run this may damage the quality of the services and research; the governance is well aware of the possible problem, which is however also linked to the national funding situation.

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
STUDENTS	<ul style="list-style-type: none"> - Selection admission procedures, including foreign languages, aimed at encouraging the development of an international student body; - 100 in doctoral or postgraduate courses, where these are offered. 	<p>Selection procedures are up to international standards; success rate of applicants is of the order of 10% which is indeed very selective.</p> <p>About 30% of students comes from abroad, and from a wide distribution of countries. This is extremely good compared to Italian standards. Collaboration with ICTP in this regard is a plus.</p> <p>Admission exam for foreigners is always a critical issue due to travel and remote telematic oral sessions that are also difficult.</p> <p>The Committee would be interested to discuss the adoption of a selection procedure close to the UK/US one: selection is done based on paper submission, then for the few selected candidates an interview is arranged, and the school offers reimbursement of travel expenses as necessary (mainly if the interview cannot be done via skype/remote).</p> <p>Are the difficulties with selection of new PhD students the same across the different fields of the school?</p> <p>The training post-laurea fellowships are interesting also in this direction, but it would be nice to know how they will be organized, selected, etc.</p> <p>We could not find a detailed plan for the future evolution of positions in each PhD course; overall the number of students has been very slightly decreasing in the last 3 years, still well above 300 though. There have been some big cost variations in the biology related PhDs.</p> <p>Fellowships are increased during periods spent outside Italy.</p> <p>Numerosity well above of 100 students.</p> <p>All required numerical indicators are met, even if the amount of researchers / assistants per professor meets the requirements only to external researchers.</p> <p>In terms of faculty members the overall number is adequate to cover the three research areas although detailed data on how they are subdivided among the different areas/labs/PhD courses are lacking, making it difficult to judge if there are themes/teams understaffed.</p>
TEACHING STAFF ¹	<ul style="list-style-type: none"> - 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 	

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.

REQUIREMENTS	INDICATORS	REQUIREMENT EVALUATION
	<p>agreements with other universities. For doctoral and postgraduate courses, that ratio should not be less than one teacher every eight students.</p> <ul style="list-style-type: none"> - 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. 	<p>Committee asks for clarifications of these points during the visit.</p> <p>From the report of the internal evaluation committee it seems the student gave rather homogeneously good scores independently of the topic/course/project, with maybe slightly lower marks in the molecular biology field. If this also reflects some lack of personnel / competences is hard to assess without further data.</p> <p>The number of lab technicians, considering that only one of the three areas is involved in experimental activities, seems adequate. However, there are some discrepancies (the number is said to be 10 but, counting each activity the total would be 12); it's not obvious if a single technician is involved in multiple tasks? Also, it's not clear why some tasks (glassware maintenance) need 3 units compared to only 1 in others.</p> <p>Committee asks for clarifications of these points during the visit.</p> <p>The "scientific buyer" figure seems a very useful idea.</p> <p>Committee would like to hear some feedback from faculties, researchers and students on its operation.</p>
STUDENT'S SERVICES	<ul style="list-style-type: none"> - Availability of mentoring programmes for pre-doctoral students and placement for the entire student population; - 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 	<p>Appreciable efforts on Job Placement and mentoring with respect to traditional methods involving the students in the co-design efforts: the Committee would like to discuss this more in details during the visit.</p> <p>Good incoming mobility for researchers: 2018, 12 ERC, 7 Marie Skłodowska-Curie, 3 FET projects, etc..</p> <p>The School meets all requirements in terms of funding, mobility programs etc.</p> <p>The number of collaborations and agreements with local, national, and international entities to foster mobility, further traineeships, and future occupation opportunities is ample and diverse.</p> <p>There is indeed great attention by the School also towards the non-academic world.</p> <p>Incoming mobility for students: interesting agreement between SISSA and University Roma</p> <p>Outgoing mobility: availability of an excellent network of institutions, both national as well international</p>

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
	Ministerial Memorandum No 0011677 of 14 April 2017 "Guidelines for accreditation of doctoral courses").	Support available / student to travel to conferences looks (Not clear if the amount foreseen by Art.9 comma 3 of DM 45/2013 which regulates accreditation of PhD courses is made available to students. Committee asks for clarifications of these points during the visit. We would have liked to see more data on post-PhD career of the students (how many stay at Sissa for postdoc, how many stay in the academic world and with which roles etc.). We are not fully sure about the use of the TTO as job placement facility.
TEACHING	- 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 ³ ;	Details are lacking on how the study plan of the students is decided, assembled, formulated. The teaching regulations specify type and range of duration of courses for the first and following years but it's not fully obvious if the 150 hours of teaching are met just by lectures, or including hands-on ad-hoc research training, etc. Availability of interdisciplinary courses and laboratories is of paramount importance given the SISSA excellent heritage in the various field of research and teaching. However, it's difficult to judge the breadth and level of interdisciplinarity of the available courses and if students are encouraged to expand their study plan outside their respective field, given the excellent tradition that SISSA has in a number of fields of research and teaching. For instance, student stages among the various research groups are taking place during the first year? Also the role/involvement of the individual research groups in the PhD program is not clear. The Committee would like to receive detailed explanation on how quality teaching and courses are planned and implemented.

Preliminary evaluation Section A

³ 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.

SISSA management dedicates a large effort on selecting the best prospective students among those which apply, and to provide them solid training, good laboratories and selected opportunities to become members of the best teams among the research communities in the SISSA fields of research.

SISSA has been operating under stable conditions and with good economic indexes since several years, developing innovative methodologies in high education related fields, like job placement, pre-doctoral dissemination and interdisciplinary studies.

SISSA matches all the "initial accreditation requirements" identified by the ministerial decree 439/2013.

This situation, however, does not exclude the existence of trends/areas/issues which could be improved, in some cases even significantly.

During the analysis of the documents provided, the Committee identified several areas where

- a) there are some useful/essential information missing or need to be clarified;
- b) there are elements which are interesting and motivate deeper discussion.

These items have been identified as bold text in the Section A detailed table above and will be the subject of detailed discussion during the on site visit. We then request the SISSA management to identify the personnel and the students who could best address the questions which have been raised.

Comments to the preliminary evaluation- Section A

(to be completed by the School)

SISSA agrees on the preliminary evaluation by the Committee, that fully outlines the key aspects qualifying the School, but also its specific features.

SISSA also agrees on the fact that there is room for improvement in the activities aimed at pursuing its institutional mission: although the School has put into action a set of initiatives in this direction, their effects are not evident or fully expressed yet, and therefore do not emerge from the documentation transmitted to the Committee.

We have therefore organized an agenda of meetings following your request, so that the Committee has the opportunity to further analyze the aspects deserving clarification and to discuss in detail about possible improvements.

Final evaluation – Section A

(A) STRUCTURAL REQUIREMENTS

The SISSA PhD School is articulated in three core areas: Physics, Mathematics and Neuroscience. The first two are based on theoretical studies or numerical simulations, while the third one is mostly experimental. This implies substantial differences in the structural requirements as well as in the organization of the teaching courses.

The Committee has been overall impressed by the exceptional imprint of SISSA alumni on the european and international academic arena. This represents an outstanding value not only for the School scientific disciplines but also for the worldwide national projection in these research fields.

1. TEACHING AND SCIENTIFIC FACILITIES

Current availability of teaching and scientific facilities such as classrooms, libraries and laboratories is adequate for the educational activities and the type of research subjects envisaged; they are in general well furnished.

Experimental labs belonging to the neuroscience area are equipped with the needed facilities. Overall there are about 80 students in these fields. A well structured booking system helps the efficient use of the common equipment/facilities. Technical support staff appears adequate in most areas and well trained. Some understaffing of services needed by cognitive neurosciences, in particular for the operation of EEG and MEG, would, however, justify strengthening of the technical staff: the committee understands that new hirings have been proposed by the management to meet these demands. In this context rebalancing the existing technical support from neurobiology to the cognitive neuroscience should be also considered, with the goal to optimize the overall laboratory services.

In general the Committee feels that coordination among the Neuroscience and Neurobiology laboratories needs improvement.

The introduction of a "scientific buyer" to support purchasing of instrumentation and materials needed for research looks a promising idea and should be continued.

Facilities and office space reflect well the existing number of PI and students, and the existing space is therefore fully used. This may indeed be a limiting factor in the potential growth of the existing areas (to create the necessary space to host the planned new hirings of the "department of excellence" recently awarded in physics it will be necessary to cover one existing terrace) or the addition of new activities (e.g. the new Data Science courses). In general, an important goal of the management would be to keep all PIs on the main site. In order to cope with this situation plans for further on site expansion have been developed, based on the construction of a new building, which would significantly expand the space currently available. Their implementation, however, would require additional resources to cover the recurrent operation costs, estimated around one million €/year. Some activities are already based off campus, like the HPC centre based at the old SISSA location at the ICTP.

The HPC centre plays a very important part in supporting all PhD training activities: its relatively small size is justified by the fact that training activities do benefit by the flexibility of having such a centre under direct control of SISSA personnel. Research related scientific calculations are performed at large facilities like CINECA. The competence and knowledge related to HPC represent an important bonus for the School: the new SISSA master course in HPC is attracting a large number of students also from nearby regions and is quickly becoming a pillar in the School training activities.

The School, having only Ph.D. programs, does not provide lodging facilities. However, an efficient housing office is in place to help students in securing accommodation and is frequently used by the students relocating in Trieste. This service is functioning well and it has been praised by several students during the interviews.

2. ECONOMIC AND FINANCIAL SUSTAINABILITY

Most of the funding is public and comes from MIUR. Since 2016 financial indicators are healthy, though slightly decreasing in the last few years. In 2015, however a significant cut in the PhD program budget (about 30%) was suddenly applied, due to a change of the MIUR funding scheme parametrization for the Schools. SISSA managed to absorb it without major cuts in the number of PhDs, by reducing operative costs and controlling to some extent research costs; the School management should be praised for having been able to protect, in these circumstances, the School core activity. In 2019 the School had an additional cut of 0,4 M€, in spite of an overall increase of the budget dedicated by MIUR to the Schools: this budget erosion seems to continue in the forecast for the next two years. In the long run this may damage the quality of the services and research. The governance is well aware of the possible problem, which is however also linked to the national funding mechanism.

The Committee would like to stress this point: the overall School performances are excellent. In Italy SISSA has a unique international visibility both on PhD training as well on research. School strategies are optimized on the basis of continued discussions among the various bodies as well as of feedbacks from students and staff. The School standards are the highest. In spite of all of this, the budget keeps decreasing due to a parametric mechanism which seems rather blind to the School unique profile and, most important, does not allow the Government of the School to adapt its policies to the MIUR, mostly ex post, parametric budget subdivision.

(B) STUDENTS

1. SELECTION

More than 60 doctoral or postgraduate positions are offered each year. Selection admission procedures, all in English, are aimed at encouraging the development of an international student body. The overall student numerosity is around 300, well in excess of the required minimum of 100.

Selection procedures are up to international standards; success rate of applicants is of the order of 10%, which is indeed very selective. Depending on PhD Courses both written and oral exams are foreseen. Selections (e.g. in mathematics) are also based on the candidate master thesis.

About 30% of students comes from abroad, and from a wide distribution of countries. This is extremely good compared to Italian standards. Collaboration with ICTP in this regard is a plus as well as with other local institutes and Universities.

In order to cope with applications coming from all over the world, an effective, clever and flexible mechanism has been developed for foreign student evaluation. After receiving the applications, a "preselection" mechanism based on CV evaluation and skype interviews, identifies a small fraction of the foreign candidates who are considered most promising

They are frequently invited to SISSA for a stay which is of different duration (up to 3-4 months for experimental neurosciences, 1-2 weeks for Physics, just to participate to the selection for Mathematics): in this way these promising candidates coming from developing countries, will have a fair chance to pass the selection. Typically the number of preselected candidates is of the order of the available PhDs, but only a small fraction of the preselected students (of the order of 20%-30%) pass the final selection. The preselection mechanism, which requires a significant investment by the School, both in terms of budget and of human resources, is open to corrections and it is adapting to the different areas and PhD Courses; it is an essential ingredient to reach good results in the selection of international students, and it is quite unique at national and international level for its efficiency and flexibility.

The Committee considers the School selection process as one of the very positive elements of SISSA; it might be possible that it could be used as reference in other cases in Italy and abroad.

An additional element to strengthen the School attractiveness is given by small young grants, assigned, competitively, to projects proposed by the students: these grants give to students opportunities, early in their educations, of dealing with the responsibilities and challenges of all grants phases, from the conception of the proposal to the handling of the grant resources.

Another way to attract good students, from Italy and EU are the numerous collaborations which SISSA has with various master schools (Udine, Trieste, Roma3, Trento, Rovereto, Paris and the new course being established with Venice). These collaborations, which are mostly based on the contribution of SISSA with undergraduate fellowships and participation to teaching courses, are very valuable to let the School be known at national and international level.

(C) TEACHING STAFF

Indicators for doctoral courses (Article 6, Law N. 240/2010) are met even if the amount of researchers/assistants per professor passes the threshold requirements only thanks to external researchers. This is a potentially critical element: indeed the present vertical scheme (one PI, 1-2 PostDoc, about 3 PhD) seems to be matched more for theoretical physics and mathematical areas: a new scheme would be necessary to deal with the needs of the experimental area. In terms of faculty members the overall number is adequate to cover the three research areas: no appreciable understaffing has been observed in specific areas.

The last report of the internal evaluation committee shows that the students gave rather homogeneously good scores independently of the topic/course/project, with maybe slightly lower marks in the molecular biology field, which has been since closed (although not due to this reason).

(D) STUDENT'S SERVICES

The Committee appreciated the commendable efforts the School invests on Job Placement and mentoring activities, exploring new directions with respect to traditional methods and involving the students in the co-design efforts.

It is estimated that about 75% of PhD find their job within academia: not only this is a truly impressive figure, but several of the school alumni have reached outstanding positions, in particular, but not only, in Mathematics. This indicator shows that SISSA is having a real impact in academia at national and international level.

Since a few years there are placement activities also directed towards industry, like the PhD for PMI program: these activities are already providing some success stories. Also the master on HPC is an important educational activity which exhibits growing direct and positive effects into job placement within industry.

The School meets all requirements in terms of funding mobility programs. An ample and diversified number of collaborations and agreements with local, national, and international entities is able to foster mobility, increase the number of traineeships and offer future occupational opportunities. The outstanding academic network of the School gives the PhD students excellent mobility opportunities. The level of support available to students for attending conferences is excellent.

Several agreements with external master schools (Udine, Trieste, Roma3, Trento, Rovereto, Parigi and the new course being established with Venice), with SISSA providing fellowships, represent a form of pre PhD mobility which helps the School to attract good candidate PhD students.

Another important activity directed to support students education is the small young grants program, already mentioned in this report.

(E) TEACHING

The School' main goal is its intense, high quality, research related, teaching activity. In most courses, students are requested to attend much more than 150 contact hours, namely 500 hours for physics during the first phd year, 250 for mathematics and 150 for neurobiology (without including the time spent in the laboratories).

The PhD courses plans are designed to expand student knowledge base, through specific interdisciplinary methods, and development of original research programs. Phd courses are sometime very narrow in scope: it is then important to ensure the availability of interdisciplinary courses. The students develop a structured course plan together with their tutors who encourage them to expand their plan outside their respective fields. In particular in physics and mathematics the teaching is inspired by the Oxbridge model of 1 to 1 tutorial: students, postdocs and professors are interacting continuously and extensively through the courses and regular meetings.

Availability of interdisciplinary courses and laboratories is of paramount importance given the SISSA excellent heritage in the various fields of research and teaching. For this reason, additional efforts to involve students in interdisciplinary colloquia and courses would be justified, in particular in the area of cognitive neuroscience, both for reasons related to the specifics of this discipline as well as for reasons related to how this discipline has developed and is organized within the School. In addition it would advisable to organize

student stages among the various research groups during the first year of the courses.

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 as 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).

CONTENTS	CEVS EVALUATION
STRATEGIC VISION, OBJECTIVES AND SCHOOL ORGANISATION	<p>The School has an excellent positioning within Italy.</p> <p>The School has an ample tradition in competing at international level for grants and for attracting good junior and senior research staff and students.</p> <p>It is not clear, however, how the School does compare at international level on various standard comparative parameters which are standard in these comparisons (e.g. quality of the laboratory, support for networking, support for incoming, outgoing, participation to conferences, quality of everyday life, transportations and so on).</p> <p>The Committee would like to receive more information about this kind of comparison.</p> <p>The School has developed a Strategic Plan 2016-2020 which includes policy for ensuring the Quality of the Teaching Courses, of the Research and of the other related activities like outreach and TT, ISAC committee role in defining strategic directions.</p> <p>VISION lack of interaction at PI and studente level.</p> <p>There are areas which could interact more. There is a need for hiring across boundaries.</p> <p>NeuroBio and neuro science are kept small. Critical mass.</p>

CONTENTS	CEVS EVALUATION
	<p>May be the involvement of coordination of math and physics could be useful to provide a vision.</p> <p>The Strategic Plan and its implementation will be a topic for detailed presentation and discussion during the visit. In particular, the committee would like to hear about the verification steps of the effectiveness of the measures contained in the Plan.</p> <p>Feedback from the students, in particular, is of basic importance to understand career development. There is an Alumni organization which might help in this regard.</p> <p>The Committee would like to understand this point in detail.</p> <p>Hiring of excellent researchers and professors, is of basic importance for the School future. Indeed VQR results on the teaching and research staff are good. However, there is no description of how hiring is organized. For instance, there is little information about the number of international staff and if there is an ongoing effort to maintain or increase their numbers. International staff recent hiring (11/19). Similarly, about activating/deactivating courses or laboratories.</p> <p>The Committee would like to understand more in details about hiring procedures at the School.</p> <p>We would also like to hear about training policies towards the administrative and technical staff.</p>
POLICIES AND STRATEGIES FOR QA	<p>The School has a set of QA policies which appears well organized and following the European Quality Assurance standards (ESG): the resulting documents are available on the School web site.</p> <p>The School has developed its QA policies actively involving its personnel using the PDCA cycle (Plan - Do - Check -Act) which ensures a good level of feedback.</p> <p>The School uses as well defined system of internal Monitoring and Evaluation bodies, to check ex-post the effectiveness of the AQ system.</p> <p>The Committee would also like to hear about the role of the International Scientific Advisory Committee (ISAC) and how its recommendations are or have been implemented.</p> <p>The feedback collected from the users (students, technical, administrative staff) could be clearly very useful.</p> <p>The Committee would like to understand better how this feedback is collected, analyzed and used to improve management strategies of the School.</p> <p>ISAS suggestion have been taken at least in some cases.</p>
INTERNATIONALISATION	<p>The School has a clear definition of its international strategies.</p> <p>The Schools has various agreements for cotutela degrees with national and foreign universities.</p> <p>Many students and PI from abroad.</p> <p>International staff recent hiring 11/19</p>

CONTENTS	CEVS EVALUATION
	The Committee would like to understand more about how the School plans to plans to stay competitive at the highest international level.

Preliminary evaluation Section B

SISSA is definitely among the leading PhD schools in Italy: based on a very strong capability to attract international students and provide post-doc opportunities within a large network of high-ranking laboratories and research centres.

SISSA has a strong potential to keep and improve its international positioning in the future: its Strategic Plan 2016-2020 and its QA policy are likely the two most important tools to define the School future path and to verify the effectiveness of the policies implementation.

During the analysis of the documents provided online, the Committee identified several areas where

- a) there are some useful/essential information missing or need to be clarified;
- b) there are elements which are interesting and motivate deeper discussion.

These items have been identified as bold text in the Section B detailed table above and will be the subject of detailed discussion during the on-site visit, in order to check the consistency among the various element of management and policy strategies.

We then request the SISSA management to identify the personnel and the students who could best address the questions which have been raised.

Comments to the preliminary evaluation - Section B

(to be completed by the School)

SISSA agrees on the preliminary evaluation by the Committee, that fully outlines the key aspects qualifying the School, but also its specific features.

SISSA also agrees on the importance of the Strategic Plan and of its Quality Assurance policies as interacting and congruous instruments guiding the School to pursue its mission towards new challenges and to improve its performance.

In line with this view, the Strategic Plan is currently being updated so to align it to the forthcoming three-year planning (2020-22) and adopts the same participatory approach in the involvement of the entire SISSA Community (professors, students, technical and administrative staff, postdocs) and external stakeholders, as in the previous plan.

We have therefore organized an agenda of meetings following your request, so that the Committee has the opportunity to further analyze the aspects deserving clarification and to discuss in detail about possible improvements.

Final evaluation – Section B

(A) STRATEGIC VISION, OBJECTIVES AND SCHOOL ORGANISATION

The School has an excellent positioning both within Italy as well as European level. The School has a long and successful tradition in competing at international level for research grants and for attracting good junior and senior research staff and students. Teaching, research and other services compare fairly at international level using standard parameters. If a reference should be taken one should consider the Weizmann Institute in Rehovot (Israel), although taking into account the different sizes. The research and teaching activities are mostly theoretical (Physics and Mathematics), while the third area, Neurobiology, is experimental, supported by a set of on site laboratories.

The School has developed a Strategic Plan 2016-2020 which includes policy for ensuring the Quality of Teaching Courses, of Research and of the other related activities like Outreach and TT. The plan strategic directions have been defined considering the careful recommendations of the ISAC (International Scientific Advisory Committee).

Physics and Mathematics courses have a stable organization and an established tradition of excellence, also exhibiting a level of interdisciplinarity: actions aimed to increase multi- and interdisciplinary cross boundaries activities would be nevertheless recommended, including hiring of new researchers.

The situation is quite different in the area of Neuroscience. First of all the number of PIs belonging to this area, while roughly in the same proportion with respect to the number of students, is smaller with respect to the other two areas and far from the ideal critical mass needed to successfully compete in such a wide experimental research domain at international level. Second, interaction between the three main neuroscience subdomains is insufficient. New hirings across disciplinary boundaries, which could bring together the subdomains, should be discussed and decided at the level of the school management involving the existing PI's and, possibly, at coordination level, also senior members from mathematics and/or physics.

The Committee received good students feedback on the topic of career development and academic placement services. The recently founded Alumni organization also helps in this regard.

Hiring of excellent researchers and professors is of basic importance for the School future. VQR results on the teaching and research staff are good and confirm the quality of the hiring process.

The committee was positively impressed by the ongoing efforts to train the administrative personnel by providing several training opportunities. The level of participation of the administrative personnel to the final choice of the training courses could be improved.

(B) POLICIES AND STRATEGIES FOR QA

The School has a set of QA policies which appears well organized and follow the European Quality Assurance standards (ESG): the resulting documents are available on the School web site and are of good quality.

The School has developed its QA policies actively involving its personnel using the PDCA cycle (Plan - Do - Check -Act) which ensures a good level of feedback.

The School uses as well defined system of internal Monitoring and Evaluation bodies, to check ex-post the effectiveness of the AQ system.

In addition, the International Scientific Advisory Committee (ISAC) has an important role, in evaluating and recommending strategic directions for the School. This role is well recognized by the School management, which has taken seriously the ISAC recommendations.

The level of feedback collected from the users (students, technical, administrative staff) looks good.

(C) INTERNATIONALISATION

The School international strategies are clearly defined and are of basic importance in managing the School to keep its attractiveness and competitiveness at international level.

The School has various agreements for cotutela degrees with national and foreign universities.

A large fraction of the students is coming from abroad, following careful and flexible procedures.

Similarly for new PI and postdoc. The committee acknowledged the quality of the hiring: in the most recent batch of 19 recruited researchers, 11 were from outside Italy.

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

Section C

In view of the next periodic accreditation we have the following recommendations.

On the preliminary evaluation procedure.

Procedure was well-organized; the scheme which has been followed for the preliminary evaluation could be used in the future without significant changes.

- The length of the meeting for 'preliminary feedback' that took place on the last day could have been shorter; probably one hour would have sufficed.

On the issues noted during the preliminary evaluation

- Consider increasing the hiring of young researchers [post-docs, rtd (a), and to a lesser extent rtd (b)]. As mentioned in the previous sections the present number is barely sufficient to pass the required threshold. We do understand that SISSA peculiarities with respect to a conventional university tend to favour a hiring model tilted toward already established associate or full professors. On the other hand, a more conspicuous intermediate layer of temporary research staff between the students and senior faculties can also be beneficial, particularly in the experimental area where day-to-day lab activities typically require larger groups, and often constant presence of experienced scientists.

- SISSA excellent tradition in theoretical physics and mathematics is longstanding and indisputable. The experimental neuroscience area is much younger and has obviously different needs and issues. At the moment there is a feeling that this area is a bit disconnected both internally and from the rest of SISSA and still has to find its own clear identity. A strong effort should be made to find, support and develop those research directions and opportunities that could really benefit from the cross-fertilization of ideas, methods, competences with the other areas present at SISSA. A mere co-presence of experimental activities is probably not enough for SISSA tradition and it would be a pity not to exploit the unique world-leading environment available. Some initiatives in this direction are already present and should be fostered and encouraged to the fullest.

On the preliminary evaluation

- SISSA was well-aware of the points that need to be addressed and are mentioned earlier in the report. SISSA management is working to address them.
- SISSA really fulfilled all the requirements for the accreditation and no issues concerning the functioning of the School were observed.

**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