

## SMSTC – Academic Review – Report 23 May 2013

The Panel appointed to review the SMSTC academic activities is convinced that the general programme of introducing training courses in the PhD curriculum in Mathematics of the member Universities is of great importance and that it should continue to be pursued in the coming years.

Following the review conducted in the days of May 22 and 23 of 2013, the Panel unanimously expresses appreciation for the dedication of past and present Directors, Deputy Directors and Members of the Academic Steering and Management Group, the enthusiastic activity of the Stream Leaders and Lecturers, and the competence of the Technical and Administrative Teams. We are appreciative of the time afforded to us by the administrative staff, in particular Johanna McBryde, students, Stream Leaders and Heads of Department during our review and the time spent preparing data for our consideration.

On the basis of the documentation received and of the interviews conducted on May 22 with a group of past and present SMSTC students, with the Stream Leaders and with the Heads of the member Departments, the Panel gives a positive evaluation of the activities conducted so far, and in particular on the following points:

- the subdivision of the teaching activities into eight Streams, each coordinated by a Stream Leader;
- the considerable freedom allowed to each Stream in the choice of the syllabus, coordination of the lecturers and organisation of the delivery;
- the promotion of a substantial broadening of students' mathematical culture, through the expectation that each student take the courses offered in three different Streams;
- the gradual improvement of the video-conferencing facilities, which have now reached a good level of quality and reliability;
- the creation of a well-structured website containing the relevant material for tutorials and assessments;
- the improved interactions among students and among lecturers of different universities;
- the beneficial effects of embracing a challenging new delivery medium for both lecturers and students.

The Panel remarks on the following aspects concerning the academic activity, on which ASMG should intervene:

- a strong limitation in the possibility for lecturers and students to interact is inherent in the way the videoconference system has been used up to this point, with the effect that students' participation has been largely passive;
- the diversity of students' backgrounds makes it difficult in many courses to tune the level and pace of the teaching in a manner that is adequate for their different needs;
- local assistance for tutorials cannot be provided uniformly in all the nodes of the consortium, and an effort is required to overcome such disparities;
- students still exhibit a limited understanding of the relevance of training courses for the achievement of a higher mathematical education and, in the long run, for the improvement in quality and breadth for their future career;
- communication problems exist between SMSTC and some stakeholders in the different member Departments, in particular PhD supervisors.

The Panel encourages ASMG to consider the following suggestions, notwithstanding that some of them may have been considered before in some form:

- organise the material presented in each Stream into two modules, the first more introductory, and the second more specialised;
- allow students to include either or both of the two parts in their selection, thus allowing them to try subjects less immediately related to their research;
- use modules to allow more flexibility in the choice of the syllabus, with a possibility of alternating different subjects in consecutive years, and including subjects that are not covered presently, such as mathematical physics;
- recommend that teaching be adapted to the level of the module, where advanced modules could be directed to open up perspectives in the given field and not be necessarily limited to a systematic treatment of a specific subject;
- experiment with new forms of VC-lectures to promote more active participation by the students: for instance, provide preparatory material to free up time for more direct interaction in the VC-sessions; successes should be shared across SMSTC;
- consider the possibility of providing recordings of lectures, in forms and with access limitations such that they could not represent a substitute to attendance at interactive lectures;
- plan VC-tutorials promoting active participation by students, and encourage students to self-organise discussions on problems and content of the courses through the VC-system;
- continue efforts to simplify and improve accessibility to the website for all interested parties; assign specific responsibility for monitoring this to a member of ASMG.

In moving forward, the Panel is aware that SMSTC will only be able to continue its activity if it is supported by the member Departments and if its role is recognised by thesis supervisors. It is important, in this perspective, that:

- ASMG consider the possibility of assuming initiatives of different kinds directed to present and past SMSTC students; for instance, the Panel believes that SMSTC would not exceed its institutional aims by promoting through its website and the use of VC-facilities communication about instructional seminars, colloquia, and other scientific activities of interest for graduate students held at any of the member Departments;
- SMSTC courses be more widely advertised outwith mathematics departments; other forms of promoting mathematics would help awareness and the continued success of SMSTC courses;
- the time and effort required for sustaining and enhancing the success of SMSTC be recognised within departments.

Fulvio Ricci (Chair)  
Shaun Bullett  
Francis Clarke  
Chris Glasbey  
Andrew Wathen