

SCOTTISH MATHEMATICAL SCIENCES TRAINING CENTRE

Notes for Teaching Staff (revised May 2022)

1 Introduction

These notes are intended as an aide-mémoire for current Lecturers, Module Leaders (MLs) and Theme Heads (THs) and as an introduction for those new to the job. The job of the module teams, and particularly of the TH, is to ensure that appropriate teaching and assessment takes place, and that results are reported to the students as soon as reasonable and to ASMG when requested at the end of the academic year.

Many students take three SMSTC modules at one time, so a typical student on your module will not be working in that research area. Please bear in mind that the module is as much for such students as it is for students specialising in the area of the module, and that the overall aim of SMSTC is to provide broadening training for first-year PhD students.

SMSTC is a very large joint venture, which relies on your individual contributions. Thank you for all your help with it!

Fraser Daly (Director)

on behalf of the Academic Steering and Management Group (ASMG)

2 Teaching and Assessment

2.1 Themes and modules

SMSTC core modules are organised in four themes: *Analysis (ANA)*; *Applications of Mathematics (AOM)*, *Probability and Statistics (PAS)*; *Structure and Symmetry (SAS)*. Each theme contains four self-contained core modules, which may have different prerequisites. Each module is assessed independently using either one or two assignments. The **Theme Head** has overall responsibility for the theme, but may wish to devolve some duties to one of the lecturers in a module; this lecturer should then be designated as the **Module Leader** on the website.

Supplementary modules are not assigned to a theme. One of the lecturing staff should take on the role of ML.

2.2 Theme and module overview and module pages on the website

The TH is responsible for maintaining the **module pages** on the SMSTC website, including information about the modules and the **staff list**.

The overview information for each module should be completed before the beginning of each session. It should contain details of prerequisites, assessments (including deadlines), a reasonably detailed syllabus, and the teaching team. It is also helpful to suggest **background reading** for students who may wish to take the module but lack some of the prerequisites.

2.3 Opening symposium

This takes place in late September or early October. The TH (or a substitute) will give a short (c. 30 min) **presentation** on the modules in their theme. One purpose of the event is to give students a flavour of a wide range of interesting topics in mathematics, and another is to help those who have not finalised their module choices come to a decision. Another purpose is to allow participants to get to know each other and to give teaching staff the opportunity to discuss the delivery of SMSTC.

2.4 Weekly schedule

We run two ten-week semesters, October–December and January–March, with the following weekly schedule. (This was agreed after extensive consultations at the start of SMSTC in 2007 to avoid clashes with long-standing seminar series etc.)

Time	Monday	Tuesday	Wednesday	Thursday
1300–1500	SAS	PAS	AOM	SAS
1530–1730	PAS	ANA	ANA	AOM

2.5 Lecture notes and slides

Lecturers should upload notes and slides to the SMSTC website for each lecture. Please label lectures, slides etc. from 1–10 within each module, and please ensure that the material is organised on the page so students can easily locate it. It is also helpful to include the academic session in each filename, e.g. “AlgTop_Lecture1_1819.pdf”.

For conventional lectures it is usual to upload full notes at least a week before the lecture; for other forms of teaching such as “flipped” classes, this may not be appropriate. LaTeX templates are available on the website for writing the lecture notes and slides. Books may be used as supplementary material. It is good practice to highlight common ideas and links to material from other modules where possible.

2.6 Lecturing and videoconferencing

Lecturing duties should be spread around the module team. Theme Heads are asked to ensure that the lecturers in their modules familiarise themselves with the videoconferencing system well in advance of their lectures. (The system used will be Zoom; see section 4.3 and our separate policy on online videoconferencing.) Technical support staff at individual universities are normally happy to provide training in use of videoconferencing and associated tools.

You are encouraged to deliver SMSTC lectures from the videoconferencing room at your institution. Details of these videoconferencing rooms are available under ‘Contacts’ on the SMSTC website. It is also possible to deliver Zoom classes from elsewhere (e.g., from home) if you are unable to attend at your institution. No specific advance arrangements are required for this.

There is no uniform SMSTC teaching style, and we recognise that different subjects require different approaches. However, based on many years of experience and student feedback we strongly encourage **interactive** approaches wherever possible.

Engaging with students remotely often requires more effort than in standard classroom settings. It can be particularly challenging when some students are present in the room and others have joined remotely; you may need to invite remote students explicitly to contribute or ask questions.

Ideas and techniques that have been useful in the past include the following.

- Ask everyone (or a spokesperson from each site) to **introduce** themselves at the start. (This also checks that the microphones are working.)
- Ask questions, perhaps for students to **discuss** at their local sites, and ask them to report at different points during the lecture.
- Have one or more short **breaks** during the class. This is particularly important when teaching by Zoom: following a class on screen is significantly more tiring than following it live!
- Provide **partial slides** in advance, which you annotate and fill in as you go.
- Spend the first hour giving a traditional lecture and the second doing exercises.
- Provide an audio recording (**podcast**) explaining the key points in advance.
- Have a **guest lecturer** in one of the sessions, e.g. speaking on the “big picture”, “current research topics”, or “the future of the subject”, rather than on the material one would normally encounter in a taught course.
- Get the students to read the material or tackle problems in advance, and run the class as an **interactive tutorial** or “**flipped**” class. (Note that “flipping” does not have to involve pre-recorded videos, although these are fashionable.) Experience suggests that interactive classes are most successful when there is some structure, e.g. asking someone to volunteer in advance to lead the discussion of a particular topic or problem.
- Ask students to work in **groups** on a problem over the week and give a short (e.g. 15 minute) presentation on it at the end of the following week’s lecture.

The following display equipment has been used in the past.

- **Document camera:** allows you to write on paper and have that broadcast (live) to the other sites. This can work well with partial slides.
- **Electronic whiteboard** or **writing tablet:** as above, but all electronic. Annotating partial slides in PDF format has proved effective in some modules.
- **Laptop:** slides and other computer output, usually without the ability to annotate.
- **We do not recommend using a camera pointed at a chalkboard or whiteboard.** Typically it needs very good lighting and careful experimentation in advance of the class to get acceptable results.

We encourage lecturers to experiment, learn from colleagues, and find something that they are comfortable with. If you try something new then please share the outcome, via the TH and/or Director in the first instance.

2.7 Tutorial exercises

Tutorial-style **problems** should be provided for the students via the SMSTC website. It is usual to provide outline **solutions** for these problems; if this is not appropriate in a particular module then this should be explained to students in advance.

Module teams are not responsible for running **tutorial classes**: this is the job of the local university. However, people running tutorials in support of students on your module in other universities may also request tutorial problems and solutions in advance, so please be prepared to help with this.

2.8 Assessment of modules

This section applies to PhD students of the partner departments only.

- The modules within each theme are assessed independently of each other.
- Each module's assessment regime should consist of one or two **assignments**, typically taking a total of 10–12 hours of work.
- It is the responsibility of each lecturer to **set and mark questions** on their part of the module. The ML or TH may coordinate this process.
- The preferred mode of submission is by **upload to the website**, but some lecturers may prefer to ask for hard copies to be sent by post.
- Lecturers are encouraged to provide **feedback** such as comments or a copy of model solutions. Individual feedback can be supplied by returning hard copies of marked scripts or by uploading files or comments to the website. PhD supervisors can view their students' marks and feedback on the website.
- Students can be encouraged to **work collaboratively** to learn the topic, but they should produce their own assignment solutions. Submitting an assignment is taken as a declaration that it is their own work.
- Identical scripts are not acceptable, and **suspected plagiarism or misconduct** of any kind should be reported to the TH and the Director. In the rare event that this happens, the evidence will be presented to the student's own department and their disciplinary procedures take over.

The **timescale** for assessment is as follows (see also section 2.11, *Key Dates*).

- Students should be told at the start of the module about the number of assignments and their deadlines.
- Each assignment should be made available to students as soon as, or very shortly after, the relevant material has been covered.
- Students should be given at least two weeks to complete each assignment. The final deadline should be no more than three weeks after the end of the semester.
- Marks and comments should be returned shortly after the assignments are submitted. **Our target is to return marks within three weeks.** The TH or ML should look out for delays and do their best to ensure that marks / grades are uploaded on time. (These are then available immediately to the student's home department who can monitor their progress.)
- **Extensions** can be granted, but if these would delay the return of final grades, lecturers should ensure that the TH is aware.
- It is the TH's or ML's responsibility to determine the final grade for each module based on the assignment results.
- **Final grades** must be completed by the end of April, so that they can be ratified at the Academic Steering and Management Group meeting in early May.
- The TH should ensure that all lecturers are aware of the assessment arrangements, including the timescale for return of marks. (Lecturers may be used to different systems in their own university!)

Some other practical assessment matters:

- Please label the assignments "1" and "2", starting afresh with "1" each semester, and not continuing the sequence into a second module.
- **Avoid recycling assessments too early** – remember that current first-year students may still be around in three or four years' time.

- Individual assignments can be awarded either a **percentage** or **letter grade**.
- The **final grade for the module** must be a **letter grade** from the list below. It is up to the TH or ML to decide how to convert marks to grades. The grades are:
 A = excellent (e.g. more than 75%);
 B = good (e.g. 60–74%);
 C = satisfactory (e.g. 40–59%);
 U = unclassified (e.g. below 40%).
Do not leave any mark or grade blank, and enter when appropriate:
 NA = not taken for assessment / no work submitted.

Supplementary modules do not generally have to be assessed in the same way as core modules (or at all). However, if they are assessed differently from core modules then the ML should ensure that all students are aware of this from the start.

2.9 Assessment for other students

The SMSTC consortium departments have an agreement which allows students registered for credit-bearing courses such as MSc and MMath to use SMSTC material and attend the video-conferenced lectures. **Formal assessment of these students is solely the responsibility of their home department.** Module teams are neither required nor expected to mark SMSTC assignments for such students, but may do so informally if they want to. It is good practice to explain to such students in advance what your policy is.

If students who are assessed externally to SMSTC ask for guidance for their preparation for these assessments, the only sensible advice the TH or lecturer can offer the student is to consult the Director of their programme in their own institution. Uncomfortable though that may be, there's no other option.

2.10 Annual theme report

Theme Heads are asked to prepare a brief **annual report**, in consultation with their module teams, on the activities of the theme in the session just past. This report feeds into the annual ASMG meeting in May.

2.11 Key dates

Module webpages up to date	One week before Symposium
Semester 1 final assignments due	Week 1 of Semester 2
Semester 1 marking done and marks entered	Week 3 of Semester 2
Semester 2 final assignments due	Three weeks after semester ends
Semester 2 marking done and marks entered	End of April
Annual theme report	First week in May
Team and plan in place for next year	May/June

3 General

3.1 Communication with students

The SMSTC website provides the facility to message students via email. You can use this both for logistical announcements and to discuss matters within the module and its students. For example, lecturers could ask students in advance of each lecture if there are any particular points needing emphasis.

3.2 Module teams

The module team collectively prepares the materials and delivers the module.

Theme Heads should email the SMSTC Administrator with details of who will be lecturing in which weeks, as soon as this is known. If possible, please make contingency plans in case of illness. It would be very helpful if THs could finalise (as much as is possible) their module teams for the coming session by May/June, because consortium departments need to know how many lecture hours individual staff members will be contributing in order to build them into their workload models for the coming year. Once the plan is finalised, THs should email their module teams with this information and the individual lecturers should let their departments know.

It is recommended to hold **theme or module meetings** on an occasional basis, either in person or by videoconference. Lecturers should be given/alerted to feedback from the annual student feedback questionnaires. The Theme Head should endeavour to inculcate the culture of the theme in its team members.

3.3 Renewal of module teams

It is important to bear in mind the need for renewal of module teams and the desirability of involving new people in SMSTC activities. Your consultations on recruitment should be broad and take into account various diversity issues. When a Theme Head wishes to step down, it is expected that they will consult widely in the Scottish community associated with the theme on their potential successor.

New team members are expected to familiarise themselves with the recent workings of their modules, in part by consulting recent theme reports, by consulting recent student questionnaires, and by taking account of any issues relating to the module which have been raised by the ASMG.

3.4 Academic consultation

Sometimes the ASMG will bring substantial matters of an academic nature to the attention of a Theme Head, usually in response to the annual feedback exercise. In such a case the TH is expected to consult widely in the Scottish community associated with the theme on how to respond and implement any changes. THs are expected to genuinely take into account any substantial issues arising from the annual feedback process and to report in the next annual theme report on what was done and the outcome.

4 Administrative and Legal Issues

4.1 Local workload reporting

It is the responsibility of individual lecturers (not the TH or SMSTC management) to let their own departments know about and agree their SMSTC commitments, and to deal with local workload and timetable issues.

4.2 Student transcripts and certificates

SMSTC cannot award any formal qualifications, or make progress decisions. We return students' final grades to their departments, who may then use them as part of a formal appraisal or credit system. (This point is not always well understood by students and their supervisors.) We therefore cannot provide official transcripts of students' results. However,

at the end of each year we email each student a letter confirming their grade for each module, which they may use to demonstrate to their supervisor or a funding body that they have taken these modules.

4.3 Zoom: privacy, security and recording

SMSTC lectures are delivered using the Zoom videoconferencing platform. This raises some issues around privacy and security; please see our separate **policy on online videoconferencing** for details. Note in particular that **neither students nor lecturers are permitted to record classes**, and also that teaching should be planned on the basis that not all students will have reliable access to live online classes.

4.4 Website, data protection, and copyright

The website (www.smstc.ac.uk) is a combination of a student record system and virtual learning environment, with the additional complication for data protection of having eight different universities involved.

The basic rules we use for **data protection** are that:

- students can see only their own assessment results, feedback, and data;
- lecturers, MLs and THs can see only the results and feedback for students on their modules;
- PhD supervisors and university PG Directors can see only results and feedback for their own students.

The official **privacy policy** is linked to from the bottom of each page on the website.

The teaching materials on the web site are accessible only to registered users. This is the standard position for most university VLEs, and protects the **copyright** of the owners of the materials posted there. If you want to make materials you produce yourself publicly available, then please use a different platform.

4.5 Personal circumstances and special requirements

Unfortunately, SMSTC is not automatically informed if a student has special requirements for teaching or assessment, or if there are personal circumstances affecting their study. Students are asked to contact (or have their department contact) the SMSTC Director to make suitable arrangements. The Director will share information with the teaching teams for that student's modules, strictly on the basis of what they need to know in order to accommodate the student's needs. This information must be treated in strict confidence.