

University of Manchester School of Mathematics
Teaching and Learning Policy
December 2011

1 Aims and objectives

The purpose of this document is to set out the arrangements for teaching and learning in the School so that academic staff and students know what is expected of them and to promote good practice in the School. These arrangements apply primarily to students on Mathematics programmes; students on other programmes who are taking a Mathematics course unit will in certain regards be covered by the arrangements in their home School.

2 Teaching

2.1 Teaching duties of academic staff

The School's taught programmes are built around course units based on traditional lectures supported by some form of support class. However, some course units are project based and the School encourages academic staff to develop innovative teaching methods.

The normal teaching load in the School is approximately two lecture courses each session, together with some support classes. This may vary for a given member of the academic staff depending on the other contributions made to the work of the School, making use of the School work-load system.

Every class in the School is the responsibility of one or more members of the academic staff. However, some classes make use of graduate student support. A separate document sets out the responsibility of graduate students and the responsibilities of academic staff in supporting graduate students in this work.

If it is necessary to cancel a class at short notice then it is essential that the School Teaching and Learning Office is informed and, if at all possible, the students are informed beforehand.

2.2 Training and reflection

All probationary academic staff are expected to take part in the courses for new staff arranged by the Faculty. New academic staff who are new to teaching in this country are also expected to attend the relevant courses for new lecturers.

All members of the academic staff are encouraged to reflect on their teaching and to attend appropriate courses and seminars provided by the Faculty Teaching and Learning Unit, the University Staff Training and Development Unit, the University IT Services Division, and the national Mathematics, Statistics and Operational Research Network. Seminars and other events related to teaching will be

held in the School from time to time and academic staff are expected to participate in these. The School will seek to be represented at major Higher Education conferences related to the teaching and learning of Mathematics.

2.3 Opportunities for students to contact lecturers

It is expected that each member of the academic staff who is responsible for a lecture course or has other responsibilities for students will ensure that students know how they can be contacted. All teaching staff and academic advisors should have a weekly office hour and answer queries by email. These arrangements should be publicized in lectures and displayed outside the lecturer's office door. Lecturers may reasonably refuse to provide additional help to students who have failed to attend the organized support classes for the lecture course unless this is for good reason.

If members of the academic staff with responsibilities for students are absent during term time, including the examination periods, for more than two days then the School Teaching and Learning Office should be informed.

Academic advisors should make sure that their students know who can be contacted during their absence in their place.

2.4 Lectures

The School encourages lecturers to develop the quality and effectiveness of their lecturing and recognizes that each lecturer will develop their own style or styles. The requirements of a large class may be very different from the requirements of a small class.

Most mathematics lectures present material on the blackboard and it is the University policy to ensure that, where required, lectures are timetabled in a room with adequate blackboards. For large classes over about 275 this may not be possible but in this case rooms will be equipped with ample whiteboard space and at least two overhead projectors or visualisers. If necessary lectures can be timetabled in rooms with a data projector.

Lecturers are expected to be well prepared for each class. Even the most familiar lecture based on impeccable notes will be enhanced by the lecturer rereading the mathematical details immediately before giving the lecture.

It can be exhausting and intimidating if every step of a long proof, or sequence of proofs, is presented on the board or screen for note-taking; in these circumstances it may be more productive to focus on underlying principles, and then to refer to auxiliary written material (possibly a course text) for the details.

However large the class, it is still possible to establish a rapport with the class by posing carefully crafted questions, and encouraging answers which may be mathematically incomplete.

Undisciplined behaviour by a small minority of students is always deplored by the majority, who will support any lecturer who takes immediate and appropriate

steps to maintain an atmosphere of mutual respect. This is especially important in Mathematics, where one missed detail may diminish the value of the entire lecture.

2.5 Support classes

Lectures are complemented by various types of support classes the purpose of which is to help support students in their private study of the material in the lecture course and to provide feedback on students' work. If a support class is taught by others then the responsibility remains with the lecturer to ensure that those who are responsible for teaching the class have adequate information about the content of the course and copies of problem sheets with solutions sheets at least a day in advance of each class.

Attendance at support classes is expected of students and a record of attendance is taken at levels 1 and 2. Where attendance records are kept then the lecturer is responsible for taking the register and ensuring that the information about attendance is reported to the Teaching and Learning Office as soon as possible.

2.5.1 Examples classes

Most lectures courses are supported by Feedback Tutorials and larger courses will usually have several parallel classes each week with students expected to attend one, with up to 80 students attending each class. For large classes the staff member responsible for the class will be supported by one or two research students depending on the size of the class. However, if the research students are not required because of the way the class is run then the lecturer should inform the Teaching and Learning Office so that the research students can be assigned to other duties.

It is the responsibility of the course lecturer to provide research student assistants with copies of the relevant problems sheets and solutions sheets in advance of each class and any other information research students need in order to provide appropriate advice to students.

Feedback Tutorials may be run in a variety of ways. One pattern is for students to work individually or in groups on the problems set by the lecturer, asking questions of the lecturer or research student assistants as necessary. In this case it is important for the lecturer and research student assistants to be proactive, making sure that they engage with each student in the class to give them an opportunity to talk about their progress with the course or raise any problems. Another pattern is for the lecturer to go through problems which students are expected to have tried beforehand. In this case it is important that the lecturer is responsive to the needs of the students, ensuring that there is some way in which they can easily raise questions. Some classes may switch from one mode to another, for example by the lecturer interposing a brief exposition on some point of common concern. There are other approaches such as providing additional problems for the students to work on in groups.

Staff are encouraged to experiment and to reflect on the way class time is used so that it is of maximum benefit to the students and the students can see the value

of attending the class.

2.5.2 Supervisions

Each 20 or 15 credit level 1 course unit has weekly supervisions for groups of up to ten students. The supervision groups will normally coincide with the academic advisor groups and the academic advisor will act as one of the first year supervisors, normally in the first semester.

It is the responsibility of the course lecturer to provide supervisors with copies of the relevant problems sheets and solutions sheets in advance of each class and any other information supervisors need in order to provide appropriate advice to students. If the lecturer fails to do this then supervisors should contact the lecturer to obtain the material.

2.5.3 Other classes

For some course units the support classes are of a different nature, such a computing classes. In these cases the same general principle applies that the lecturer should ensure that the people running the class have all necessary material and the students know what is expected of them.

2.6 Course units not based on lectures

The School offers various course units not based on lectures but usually structured around one or more projects. The course units are intended to develop a range of skills such as working in groups, problem solving, report writing and giving presentations.

2.6.1 Projects

All final year BSc students are offered the opportunity to work on a project, researching a particular mathematical topic and presenting their results in the form of a written report. All fourth year integrated masters students are required to take a substantial project. A successful project extends the student's mathematical knowledge and encourages the development of general skills in investigation and report writing.

All members of the academic staff involved in teaching should offer at least one project with a named suitable second examiner to ensure that someone is able to do this. No-one should normally supervise more than three undergraduate projects.

Supervisors should provide prospective students with a brief overview of the subject matter and a list of appropriate references. Supervisors may choose who to supervise and are expected to ensure that the level of work required is not incompatible with the student's previous record of achievement.

There should be an initial face-to-face meeting between the supervisor and the student to discuss the project and to agree expectations on both sides. Further

meetings are held as appropriate depending on the nature and size of the project. The supervisor should provide feedback on at least one sample chapter and an outline of the whole project.

2.7 Teaching weeks and Reading Week

In the autumn semester (semester 1) lectures are not normally given in Freshers Week (week 0) which is used to provide an opportunity for students to register, confirming their choice of course units for the year, and meeting with their personal tutors. There is an induction programme for new students and level 1 course units have an introductory lecture in Welcome Week. Other lecture courses normally begin in week 1 and go on until the end of week 12. First year supervisions begin in week 1 and normally other support classes begin in week 2 but lecturers may choose to hold classes in week 1 and, if so, should inform the students of this. Week 6 is a *Reading Week* when classes are not held. It is intended that students will use this week for private study and lecturers may wish to set coursework assignments over this week or to have coursework tests immediately afterwards.

In the spring semester (semester 2) lectures and first year supervisions begin in week 1 (immediately following the semester 1 examination period). Other support classes normally begin in the second week of the semester but lecturers may choose to hold classes in first week and, if so, should inform the students of this. Week 12 is a *Revision Week* and new material should not be covered in lectures during this week. Lecturers should give one or more revision lectures during this week and support classes should be held as usual.

2.8 Course materials

Each course unit should have a web page on the School website containing a link to the on-line course materials for the course. The on-line course materials may be maintained by the lecturer on the lecturer's own website.

It is expected that the lecturer will issue regular Problem Sheets which should normally be placed on the website (if some of the problems are from a course text then the website might simply provide a reference to these problems). Solutions to problems should be made available to students in due course and before the revision and examination period. At level 1 some of the solutions should be model solutions to show students what is expected of them. When there are several different support classes it is important not to make the solutions available too soon — but it is not normally good practice to delay the solutions for too long.

Past examinations for up to three years are available to students. At level 1, model solutions should be provided for at least one past examination. In the case of a new course unit a mock examination (or a clear indication of the form of the examination based on the problem sheets for the course) should be provided.

The course description should normally include a book list and the lecturer should normally ensure that copies of the books on the list are in the University

Library and, where appropriate, are available in Blackwell's Bookshop. Lecturers are encouraged to consider the use of a course text when this is appropriate.

2.9 Feedback to students

The level 1 course units with supervisions require students to hand in work each week prior to the supervision. This work should be marked and returned to the students at the supervision with appropriate comments either written or in the supervision class so that students can see where they have gone wrong and have some hope of seeing what they should have done. Students will in due course receive solutions from the lecturer.

In most other course units students do not normally have unassessed work marked. However, students are encouraged to write out solutions properly so that during the feedback tutorials they can have someone look over and comment on their work.

All level 1 and 2 lecture courses include an element of coursework (see §4.2) and students receive feedback when the marked work is returned to them.

2.10 Questionnaires and course review

Lecturers should normally issue School *week 3 feedback forms* for completion during the third week of the course. The primary purpose of these is to help the lecturer pick up any problems with the delivery of the course at a relatively early state. It can be helpful for the lecturer to provide feedback to the class on the main issues raised on the forms and how they are being responded to.

The University has online questionnaires for each course unit and lecturers should encourage students to complete these. Lecturers should also issue School *end of course feedback forms* towards the end of a course unit to provide for more narrative comment than is usually possible on the University questionnaires. If there is more than one lecturer for a course unit then these forms should be used at the end of each lecturer's section of the course.

Each course unit is reviewed each year following the examination period for the course. The arrangements are described on the School website. Normally the review is carried out by the lecturer but new courses have a full review the first year they are given and each course has a full review every five years. The *end of course feedback forms* will be included in the material used in these reviews.

3 Learning

3.1 Private study

It is essential if a student is to succeed on the programme that they should spend an adequate amount time in private study, working on the problems issued by the lecturers, studying the lecture notes and other course materials, or reading around the courses. Students may find it helpful to work with other students in the School;

very often the person who can best help a student who is finding some piece of mathematics rather difficult is another student.

The amount of private study necessary varies from one student to another. A rough guide is to expect to do about two hours of private study for each lecture hour. The University expects a 10 credit course to involve about 100 hours of work, including the classes and the final revision period.

3.2 Lectures

Students are expected to attend all lectures. In lectures, students are expected to behave with courtesy and consideration for other students and for the lecturer. Conversation during the lecture disturbs the concentration of other students and the lecturer. Students who disrupt lectures will be asked to leave and will be reported to the Head of School.

3.3 Support classes

Students are required to attend all support classes to which they are assigned. Students are expected to prepare for support classes usually by attempting the problems issued by the lecturer. Where work is required to be handed in beforehand then this should be done by the announced time so that the tutor has time to mark it. In courses which do not require regular written work, students are encouraged to have their written work checked in the class, particularly when they are uncertain about it.

3.4 Peer Assisted Study Sessions (PASS)

Each first year supervision group is assigned two second (or sometimes third) year students as PASS leaders and these leaders will arrange to meet each week with the group. The leaders receive training in the running of these groups. The main purpose is to help students with the first year course material and develop their study skills. PASS Leaders also act as mentors to help first year students adapt to university life.

4 Assessment

The course description for each course unit should include a clear statement of how the course unit will be assessed, whether there is assessed coursework, and if so how many marks will come from the coursework.

4.1 Examinations

Most course units are assessed by an end of semester written examination. Students should be informed well in advance of the length of the examination and the rubric, particularly if there is a change from previous years. Students are expected to have

at least one practice examination (with model solutions at level 1), either a previous year's paper or a mock examination.

All examinations are marked anonymously.

4.1.1 Resit examinations

Examinations (including resit examinations) are required to be held on University premises. If students have to take resit examinations in August then they will need to return to Manchester to do these.

Students who resit level 1 examinations will take the same paper but will be expected to achieve a higher level of performance in order to pass. Students who resit level 2 examinations will take a new examination paper. There are no resits in the third or fourth years.

4.1.2 Feedback from examinations

Students do not normally receive individual feedback on their performance in examinations. For course units taught in the first three semesters lecturers are encouraged to provide a brief report highlighting common errors on the paper.

The marking of all examinations is checked by a second person and students cannot normally ask for scripts to be remarked or for explanations of marks given.

There will be an opportunity for students to view their exam scripts after each examination period. Students will be informed by email the time at which scripts can be viewed and will be able to request

4.2 Coursework

All level 1 and 2 lecture courses include an element of assessed coursework usually providing about 20% of the marks. The purpose of this is to provide incentives for ongoing study during the delivery of the course, to offer an opportunity to gain credit for acquiring basic knowledge, and sometimes to develop and assess skills which may not be associated with a more formal course examination.

The form of the coursework may be a short in-class test (closed book or open book), an assessed computer practical or project, or a homework exercise. Where students are doing non-assessed work in their own time it may be unreasonable not to expect an element of collaboration since we do encourage students to learn from each other. However, for assessed coursework we expect the written work to be the student's own and each student is required to sign a cover sheet confirming that this is the case. Any student suspected of copying another student's work or allowing their work to be copied will be dealt with by the School's plagiarism committee.

Coursework tests should not normally cover material covered in the last week of lectures before the test.

Marked coursework should normally be returned to students within at most two weeks of the submission date if possible and certainly before the end of the lecturing period of the semester. There should be an indication of where students have gone

wrong and some indication of what they should have done, possibly referring to model solutions which may be issued.

4.2.1 Coursework timetables

In all cases, students should be given good notice about the timing and nature of coursework in a course. The School publishes a timetable for the coursework for level 1 and level 2 course units in each semester. This is not done for levels 3 and 4 because of the number of course units.

In-class tests should not normally be held on religious days or festivals which might cause problems for students. Deadlines for handing in assessed work will not normally be extended to allow for religious observance; students are expected to plan their work to take account of religious observance.

4.2.2 Submission of coursework

The arrangements for the submission of coursework should be clear and this should include the arrangements when the work is submitted late (see §4.2.4). When a piece of coursework counts for more than 20% of the marks for a course unit then arrangements should be made for a receipt to be provided for the work. Each student should sign a standard School cover sheet confirming that the work is the student's own.

4.2.3 Marking of coursework

If a piece of coursework contributes more than 20% of the marks for a course unit then, where practicable, arrangements should be made to mark the work anonymously. Coursework is often marked by postgraduate students but when this is done the lecturer should oversee the process carefully. It is good practice to review the marking of the first few scripts to check for accuracy and standard. The lecturer is responsible for the final marks.

Lecturers should ensure that marks for coursework are stored securely. It may be helpful to return the marks for coursework to the Teaching and Learning Office immediately and for the marks to be entered onto the spreadsheet for the examination marks for the course unit.

4.2.4 Late submission of coursework

The University requires each School to have a standard policy for all course units in the School regarding penalties for the late submission of coursework. For the School of Mathematics, unless there are mitigating circumstances, students will lose 20% of the marks awarded to them for the coursework for each weekday late the work was submitted. Thus work submitted one week late will receive no marks.

4.3 Mitigating Circumstances

Students are responsible for informing the School of any absence for any appreciable time, or any personal difficulties or illness affecting their work, particularly if this affects coursework or an examination. Students should inform their Academic Advisor as soon as possible and should also complete a School of Mathematics Self Certification Form and submit it to the Student Support Office together with any supporting evidence such as a doctor's note. Confidential information can be given directly to the Senior Tutor. Examination Boards do take into account mitigating circumstances on the advice of a Mitigating Circumstances Panel. In particular, allowances for missed coursework are confirmed by the Board of Examiners on the advice of this Panel although if the case seems clear the course unit examiner may anticipate approval in preparing the final marks for submission to the Board.

Circumstances meriting consideration include serious illness or injury, pregnancy/maternity/paternity issues, death or critical illness of a close family member, a significant family crisis and jury service. Circumstances not normally meriting consideration include holidays, assessments close together, misreading the timetable, inadequate planning or time management, loss or theft of a computer and paid employment.

Self Certification Forms should be submitted as soon as possible, preferably before or at the time of the affected assessment. The deadline for submitting information related to the first semester is the end of the first week of the second semester. The deadline for submitting information relating to the second semester is the end of the second semester.

5 Work and attendance regulations

Students are expected to attend all lectures, feedback tutorials, supervisions, workshops, seminars and computing laboratories held in connection with the course units on which they are registered. They are also required to sit all examinations and coursework tests for the course units and to submit all coursework assignments by the deadlines specified. If students miss an examination without good reason a mark of zero will be recorded and it will count as an attempt at the examination.

Attendance is recorded at first and second level support classes. Students who are missing classes will be contacted in the first instance by the Teaching and Learning Office.

In cases of continued unsatisfactory attendance or progress the student will be interviewed by their Academic Advisor, the Senior Tutor, the Director of Undergraduate Studies or the Head of School. Any organization providing funds to support the student may be informed. Students who persistently do not attend may be required to have a record of attendance signed at each of their classes. Exceptionally, the student may not be permitted to continue on the programme of study. Students who miss an entire end of semester set of examinations without good reason will be assumed to have withdrawn.

6 Disciplinary matters

Students are expected to familiarize themselves with the guidance about plagiarism, collusion, and the fabrication and falsification of results in the Undergraduate Handbook. This should be drawn to their attention when they are handing in coursework. When a course unit involves project work then the lecturer should make a special point of drawing this guidance to the students' attention and ensure that they understand its significance.