

School of Computer Science

Second Year Laboratory Manual

2011-2012

If you need a copy of this manual in a different format (for example large print) please contact Andy Carpenter (Andy.Carpenter@manchester.ac.uk)

“Copying undermines everyone’s efforts”

Welcome

This manual tells you about the second year laboratories. Some of you will have done laboratory exercises here in your first year, so you will be reasonably familiar with much of this information.

The main thing to remember is that your laboratory exercises are worth far more to you than just the marks you get for them; you actually get to put into practice what you see in the rest of your course. You also get a chance to experience the so-called “real-world” for which so many students hunger; you must manage meeting your deadlines, prioritise your workload, work with other students and laboratory staff, solve the problem of why “it worked earlier” but it is now mysteriously broken, and so on. It is all there for you to experience.

I do hope that you enjoy doing your Second Year laboratory exercises.

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Second Year Laboratory Manager

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Cheating, Copying, Plagiarism and Collusion

Call it what you will (cheating, copying, plagiarism, collusion, working too closely together, getting too much help), academic malpractice is so important that it is the first topic in this manual.

You should have read and understood the University policy on academic malpractice, which includes plagiarism and collusion (<http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=639>). This policy is repeated in the School's Undergraduate Handbook (<http://www.cs.manchester.ac.uk/ugt/handbook>) with which you are also expected to be familiar. This section gives the implications of this policy in relation to your second year laboratory exercises.

In all of the activities that you do, we encouraged you to cooperate with others to help each other to understand your coursework. Here the operative word is *help*. If your work, or even part of your work, ends up being a copy¹ then the cooperation has gone beyond helping. If this happens to you, it usually means that you have not understood something. This is not helpful to you, and you need to guard against going down that dark and dangerous road. As with the first year, one useful guide to help distinguish between help and copying is that:

No part of your code, or your pseudo-code, should be made available in any form whatsoever to any other student. Equally, you should not have access of any form to someone else's code.

You should strictly limit any discussion to far more general or higher-level issues related to a problem.

If academic malpractice is suspected, we may test your understanding of the work by giving you a viva. In addition to acting on suspicions, your work may be mechanically scrutinised for evidence of plagiarism and collusion. For pieces of work for which you are found guilty of academic malpractice, it is not possible to resubmit.

The School will normally deal with first offences of academic malpractice; second offences are automatically referred to Faculty. As all offences committed while studying for a degree programme are considered, an offence in the first year will mean that an offence in the second year is automatically referred to Faculty. The penalty varies but possibilities includes zeroing the mark for the work in which academic malpractice was detected and zeroing all of the coursework marks for the associated course unit. As all of the second year marks count towards your final degree grade, any penalty will affect your final degree. Having your marks zeroed can prevent you from passing credits, which can affect the degree programme that you are registered on. Where the malpractice is collusion (working too closely together), all of the students involved are likely to have the same penalty applied.

Laboratory Staff

In general, each laboratory session will have a Laboratory Supervisor who has overall responsibility for the running of the laboratory session; this will be either a course unit lecturer or a Teaching

¹ Of course, by copy, we mean something more than merely a character-by-character reproduction; 'structural copy' is a better term, where the structure of parts of the program is essentially the same.

Assistant. There will also be demonstrators who will undertake marking and provide assistance during the session.

If you have an ARCADE-related problem, for example, you were absent then you should discuss this with the Laboratory Supervisor and not with a demonstrator.

Laboratory Supervisor

The Laboratory Supervisor will take attendance and will resolve problems such as ARCADE irregularities. They are also responsible from granting extensions, if available, and recording excuses.

Demonstrators

The demonstrators' job is to *help* you with your work in the laboratory (not to do it for you), and to mark your work and provide feedback.

Treat the demonstrators as human beings, rather than objects that come between you and the full marks (we expect your answer to be the best you can do in the time available, not a perfect solution). They have the extremely difficult job of awarding fair marks for your work and attempting to provide some feedback. It is sometimes hard for them to explain exactly why your submission may, on this occasion, lack complete perfection. They also have rather a lot of work to mark in a short time; so, please do not needlessly delay them.

Do not expect them to know every answer to your problems either, although they are capable people and should be able to work it out, or find out, given the chance. They are specifically instructed to help you to find solutions *for yourself*, rather than just to tell you the answers (which does not really help you at all).

Managing Your Time

As far as laboratory work, things that go wrong for students in the second year are: a) putting too little effort into doing the exercises, and b) spending too much time on them. This is why time management is included as a learning outcome for your laboratories.

Too Little Effort

Spending too little time doing your laboratory exercises will mean that you do not complete them and do not gain all of the marks that you could have. One of the major causes of this is not starting work on an assignment until just before it is due. To help you reduce the effects of this, most of the course units have deadlines spread throughout a semester. If you find that you are using available extensions, you are putting too little effort into your exercises.

Too Much Effort

In general, laboratory exercises contribute only about 20-30% of the total mark for a course unit (the actual contribution is stated in the course unit syllabus page). Therefore, it is catastrophic to spend all your time doing the laboratory exercises, and little on understanding lecture material and other academic studies. As the exercises are something concrete you can work on now and examinations usually feel to be a long time away, it is hard not to feel that they are the most important thing. However, if you want good examination results, you must put revision effort in during the whole semester.

We cannot stop you from spending 24 hours a day working on laboratory exercises, but if you find yourself spending more than four or five hours a day on these assignments, you should ask yourself if you are using your time wisely. It is particularly wrong to spend significant amounts of time attempting to produce perfect answers that might get perfect marks. In practice, your answers will not be perfect, and you would have gained more marks by understanding lecture material and achieving a better performance in your examinations.

The Correct Amount of Effort

For each exercise, the staff responsible for it decide how many sessions are needed to complete it. They will some safety margin in their calculation, but they will expect you to do preparation and some work outside of the scheduled sessions; remember for each hour of scheduled time you are expected to spend a second hour on self-study.

Our advice is that you should aim to have (almost) completed an exercise *before* its deadline session. Doing this means that you know that can complete it and submit it during the session. If you are frequently taking extensions then you should probably reconsider your approach to time management and multi-tasking. One way to avoid using extensions is to make an *early start* on your laboratory exercises, i.e. in Week One.

You should view your scheduled sessions as a time for having your work marked, and an opportunity to get help and advice on problems that you have already discovered. It is wrong to think of them as the time at which you start to work on an exercise.

As we said already, part of the skill of successfully completing the laboratory is to work on several exercises at once, to meet multiple deadlines. You should guard against concentrating on one exercise at the expense of another. The ability to work to multiple deadlines is a very useful 'transferable skill' and your development of it is one of the aims of the laboratory. We actually think it is quite similar to what goes on in a real-life work environment and so will be useful to you in your future career. The use of deadlines spread throughout the semester is our contribution to you learning to manage your time.

At the end of the day, though, the most important thing is for you to take a balanced approach to your laboratory work, and to be sensible about the amount of effort you spend on it.

Struggling with labs

You can expect to find the exercises difficult, or at least time-consuming. The laboratory is organised in a way that is intended to be fair and to help everyone complete the work they need to do.

If, however, you have particular circumstances that you think should be considered then you should let someone know about this --- the member of staff in the lab, or, for more serious or general circumstances you should talk to your tutor, or the year tutor. If you have a difficult problem about the course, or other matters, the School or University Student Advisory Services are useful contacts too.

Laboratory Management: ARCADE

If you were a first year student in this School, then you will already be familiar with the ARCADE laboratory management system. However, if you are new to the School, or you need to remind yourself about ARCADE, the following sections contain a brief overview of how it works.

Deadlines

At the end of each exercise, which may occupy several scheduled sessions, there is a deadline by which time you should have completed your work on the exercise. If the exercise is marked face-to-face, you should have also had it marked by the deadline. If you have not meeting these deadlines then you are starting to fall behind.

If there is only one deadline for the coursework associated with a course unit, then you should take particular care to plan your work *throughout* the semester, rather than leave it all to the last minute.

Extensions and Late Flags

At the end of a deadline session, you *may* be able to ask for an extension of a few hours or up to the **beginning** of your next session for that course unit (depending on the course unit rules). If it is possible, you will have to attend the session and may need to request the extension. When requesting an extension you do not need to give an excuse, but in general it should be because you did not quite finish the exercise. If you get an extension, you must submit your work before the extension deadline. For exercises that are marked face-to-face, you must get the exercise marked at the start of the next session.

If you submit your work after a deadline without taking an extension or after an extension that has expired, your work will be considered “**Late**”. Late work will be marked; however, any mark for late work will only contribute towards ensuring that you do not fail the coursework component of a course unit.

Missed Laboratory Sessions

Occasionally due to illness, you may miss a single laboratory session. If this happens, you must go along to the next session for that course unit and tell the person taking attendance why you missed the previous session. They will then record your attendance at the previous session as excused and record the reason. As we need to update the attendance book, the next session is the most convenient time; there is no need to phone or email to report your absence.

You should aim to catch up when you return and to complete any due work as soon as possible. Once you have finished an exercise, you should immediately submit it in order to record your completion date. In particular if you were absent, say, just for a day and missed a deadline session, it is unwise for you to use that as an excuse to gain an extra fortnight in which to complete the work. Doing so would mean you are falling behind; it is also very fair on other students.

Extended Absence

If you are ill for an extended period, or otherwise unable to attend laboratory sessions, and you to miss two consecutive sessions for a course unit, you are likely to have fallen too far behind to simply catch up by asking for extensions. In these circumstances, you have probably also missed deadlines for other course units. Consequently, you must see your year tutor to discuss your options and agree a work plan for the rest of the semester.

Exercise Weighting

In your ARCADE record, each exercise has both an out of mark and a weight. The weighting indicates the proportion the exercise contributes towards the final coursework component mark for the course unit. For example, consider a course unit that has two coursework exercises one that is marked out of 10 with a weighting of one and another that is marked out of 20 with the same weighting. In this case, the two exercises are worth the same fraction (i.e. 50%) of the final total mark even though one is marked out of 10 and the other is marked out of 20.

Mark Scaling

For most course units, the final marks for the laboratory component are scaled such that the overall average for the component falls within the 60%-65% range. This represents the expected performance of a group of students and is what an examiners meeting would impose for an average that lies outside of that range. We help you to see what your final marks are likely to be by dynamically computing a scaling factor. Obviously, neither we nor you know what the final scaling factor is until all the marks are in. Any laboratory feedback you get is based on the scaling factor at the time. Clearly, this becomes more accurate after the first few weeks. One consequence is that you should not aim to get just enough marks to exactly pass a laboratory and then stop, as you could be caught out by changes in the scaling factor. The scaling factor is given in the ARCADE marks table for a course unit.

Marks: How to Get and Check Them

For all course units, the first stage of getting each of your exercises assessed is some form of submission process. You must read the specific instructions for each exercise very carefully to determine exactly what you have to do. For each exercise that you submit, you will receive a mark and feedback. You should not underestimate the usefulness of your feedback.

For some course units feedback and marks come from a face-to-face process, in which the marker discusses your work with you. Other course units assess your work without you present and return your feedback and marks to you later. Whatever process is used, your mark will be entered into the ARCADE system. ARCADE will automatically email you about any apparently missing information, such as work not handed in or marked. **We expect you to regularly check your ARCADE record using the ARCADE client (see section).**

Here is a summary of what you can do to ensure that all of your marks are recorded:

- Follow the submission instructions for each exercise and ensure that you meet the deadline, use the correct submission process and submit your work to the correct place.
- Several labs will have hardcopy marking sheets generated by the `labprint` command (see page 12). Ensure that the demonstrator has written your mark on your marking sheet, or script, and signed and dated it too.
- Work that you have had marked and returned to you should be kept in a safe place; it is your insurance in the unlikely event that we lose information.
- Keep (electronic and paper) copies of your programs, and the marked listings where you have them.
- Sort out problems with your ARCADE record as soon as you spot them.

These precautions are important. If you have no evidence that work was submitted and marked, we are very reluctant to re-award marks for it.

Submission with Face-to-Face Feedback and Marking

Some laboratory exercises use the `submit` command for the submission of work *and marks* by students. When you run this command, it sends a copy of your work to the server. It also records the time and which it is run and this is used to determine what deadlines you have met. Thus, you are advised to run the command as soon as you have completed work on an exercise. A common mistake is to run `submit` only when you are about to have your work marked. If this is after the deadline, your work will be flagged as late.

When it is time for you to obtain your face-to-face feedback and a mark, the demonstrator will ask you to run `submit-diff`. This will compare the version of your work in your working directory with the version of the server. If there are significant differences, the demonstrator will ask you to run `submit-again` command (which could make your work late). He or she will then go through the work with you to give you verbal and/or written feedback on it. At the end of this process you will know your mark and the demonstrator will ask you to run the command `submit-mark`. This will prompt you for a `marking` token and the mark, both of which the demonstrator will give you and watch you type in.

When using this submission process, for each exercise there is an associated directory that must contain your work. The name of this directory reflects the course unit and exercise number, e.g. the work for exercise one of COMP25111 must be done in the directory `~/COMP25111/ex1`. You must be in this directory when you run the submission related commands.

If you just want to check for any differences between your work in the working directory and what you have previously submitted, use the command `submit-diff`. If you change your work after submitting it and wish to resubmit it, use the `submit-again` command. Not only does this submit your updated work, it also records a new completion time. Thus, running this command could make your work late.

For some exercises, you will be required to generate a hardcopy marking scheme and printout of your code. To do this, simply use the command `labprint` while in the exercise directory and collect the hardcopy from the printers. It is wise to go immediately to the printer to collect your hardcopy, otherwise somebody else might steal it.

Getting Work Marked in a Later Session

It may not always be possible for laboratory staff to complete all the marking required for a deadline session, especially if you only finish near to the end of the session. If this happens to you, make sure that you have submitted your work so that it is not flagged as late and get it marked in the next scheduled session for the course unit. It is important that you do not continue working on the exercise, if you do this will be detected during your face-to-face assessment and you will have to submit it again which will result in it being late.

Please be patient and make good use of your time; for example, you should be starting work on the next exercise.

Submission with Hardcopy Marking Sheets

When you are required to physically hand-in your work:

- If the work you are handing in contains more than one page, staple the pages together.
- Do not hand in work relating to two different exercises in the same stapled bundle. Doing this increases the chance that mistakes are made and your work is not marked.
- Write clearly your laboratory group and name, and the course unit and exercise number on the *outside* of your work. If a submission form is required, fill it in carefully and staple it to your work.

Submitting Hardcopy Coursework

For some coursework or laboratory exercises, you will be instructed by the course unit lecturer to submit hardcopy work.

To avoid disappointment, you should carefully follow the instructions of the course unit lecturer, and ensure that you submit the work

- by the required deadline
- to the designated hand-in place
- in the required format
- electronically as well, if required, again in the required format.

In general, hardcopy work will be submitted to the stack of locked boxes located in the School's Student Support Office (LF21, Kilburn Building).

Before submitting work, securely attach a work submission cover sheet, checking that you have clearly completed all parts. Each page of your work should also be labelled with your full name or registration number, since the cover sheet will be detached before your work is marked.

You should keep your own copy of any work submitted.

Please ensure that you submit your work to the box labelled with the appropriate exercise number and course unit. If you cannot find the labelled box (perhaps, for example, because you have missed the deadline) then you will be instructed where to deposit your work.

You should carefully check your ARCADE record to ensure that the correct marks for your work are entered.

The Laboratory Timetable

It is a very complex and time-consuming task to allocate up to 200 students to laboratory groups, according to the different options chosen by each student and satisfying various constraints. You can help with this process a lot by ensuring that you attend the lab groups to which you are allocated.

Weeks A and B

For some course units, there are weekly laboratory sessions. Whereas for other course units sessions occur fortnightly and some take place in 'Week A' and others in 'Week B' (Reading Week is not counted as a Week A or B). The School's online timetable

(<http://www.cs.manchester.ac.uk/undergraduate/timetable>) shows in which week laboratory sessions happen and when.

When Are My Lab Slots For Each Course?

You will be sent an email by ARCADE giving you information about which sessions have been assigned to you for each lab course.

For example, you may find that for the COMP23421 laboratory you are in group G. If you look the syllabus page for COMP23421, you will find that COMP23421 Lab group G is Week B, Wednesdays 9:00-11:00 (in the room G23).

For some course units, there will be a single lab group, usually called 'All'.

Marking Sessions

For course unit that allow extensions, any work that is completed by the final extension will not have a normal next laboratory session at which it can be assessed. To cope with this situation, there is a 'Marking' session scheduled during which work for which you obtained an extension can be marked. As these sessions are purely for assessment, no help will be available and no attendance will be taken.

For first semester course units, the extended may be to the last day of term. As examinations are held at the start of the next term, the marking sessions are scheduled for the first week of second semester teaching. For second semester course units, marking sessions are scheduled for the first week after lectures finish and before any examinations are scheduled. A special timetable will be produced letting you know when you must attend to get your work marked. This information will be emailed to you. The timetable may have marking sessions for two different course units *at the same time*. **If you have work to be marked in both course units, you need to ensure that you attend both sessions.**

Timetable Clashes

With any luck you will find the times you have been allocated slot nicely into your timetable. However, there will be a small number of clashes for a handful of people that we couldn't avoid. Rather than say they couldn't do those modules at all we've allocated slots where they could do some time in the labs. This gives a time when work and attendance can be recorded.

If you have clashes then please contact me Andy.Carpenter@manchester.ac.uk.

Your ARCADE Record

As you can access your ARCADE record and inspect all of your ARCADE data on a daily basis, it is your responsibility to ensure that the data is correct.

Access

In order to use the ARCADE client to inspect your ARCADE data, simply type (on a Linux machine in the School's domain):

```
/opt/teaching/bin/arcade
```

then follow the instructions to invoke the required tool.

If you believe that your information is incorrect, it is up to you to get any problem resolved as soon as you can. The longer you leave it, the more difficult it will be to get fixed. However, you also need to use some sense and leave a reasonable amount of time before doing anything --- for example, it usually takes a few days for the standard lab data to be entered into the on-line system. Again, if you email a member of laboratory staff, then please wait a reasonable time\footnote{I once had a student email me late on a Saturday, and then send another message on the Monday morning complaining that I had not responded. Do you think that was the best or most reasonable approach to take?} for a response, before you politely follow it up.

My Laboratory Email Says I've Done/Not Done... and It's Not True!

Sorry about that. It would help us very much if you'd just point this out in the next lab you have for that course unit. The staff are encouraged to go round taking attendance, and they have a list of anomalies recorded for each person, so they should remind you about it too. Corrections need to be put in the Laboratory folders, so the lab is the best time to do it. If the same error crops up over and over again, despite you trying to get it fixed, please email me (Andy.Carpenter@manchester.ac.uk) with details and I will find out why the laboratory staff have been unable to get the problem corrected

Print Quotas

Due to a rapid increase in problems of mis-use of the School's printing facilities, printing quotas were introduced from 2007-2008. There are differing allowances according to the requirements of the various groups of students within the School; check the handbook to see your allocation for the year.

Students will be able to purchase additional pages, from the Student Resource Centre (Room LF21, Kilburn Building), should they exhaust their free print quota.

The banner page printed with each job (at no cost to the user) will indicate the number of pages left in the users printing account. If there is insufficient balance in an account to print a job, an email is sent to the student and the print request dropped. Duplex printing (which is the default) is charged at half the rate of simplex printing.

The system is separate from the campus printing system, and there is no transfer of allowances between the two systems. There will be no refunds or carry forwards at the end of a charging period (end of academic year).

Noise and Mobile Telephones

One of the biggest problems is the level of noise in laboratories, which many students can find very disruptive. At all times, you must avoid unnecessary noise such as loud conversations, tapping on tables and externally audible personal headphones. In particular, the use of mobile telephones in laboratory rooms is *totally banned*. Your phone *must* be switched off or set to non-audible ringing; and if you do receive a call, you must leave the room *before* you answer it. We get so many complaints about phones, that we have no choice but to take drastic action against anyone who persistently ignores these requirements.

Help

If you have a problem with your laboratories, then you need to solve it as soon as you can; it is a lot easier that way. Your first step should be to read through this manual.

Changing Course Units

You can change your course unit choices within the first two weeks of the semester. After that it is too hard to catch up with the work that you have already missed. To change your course unit choices **you** must use Campus Solutions System that can be reached at:

`\htmladdnormallink{\texttt{http://www.studentnet.manchester.ac.uk/selfservice}}{http://www.studentnet.manchester.ac.uk/selfservice}`

As ARCADE is automatically updated with information from Campus Solutions; after a few days, the changes that you make in it will be propagated to ARCADE. When this happens, you will receive an email from ARCADE confirming the change and, possibly, giving you a new laboratory group.

Until ARCADE is updated, you should attend the lab group that best fits your timetable. Once ARCADE has been updated, you must attend the lab groups allocated to you.

Problems that a Laboratory Supervisor Can Usually Resolve

You should try to sort out the following problems with the individual laboratory supervisor:

- if you have been ill for a short period (say a day or two) and have missed a lab session
- if you forgot to get an extension for a deadline exercise
- if you have forgotten to submit an exercise after it has been marked
- if you believe there is a mistake in data that has been entered in a Laboratory attendance book. For example, if you think you attended, got an extension, or had an exercise marked, and you have received an automated email message from ARCADE saying otherwise, then attempt to sort this out at the next available lab session --- the lab supervisor may well be able to do this then. However, if you leave it longer than this then it will be more difficult to resolve.

It is best to resolve any problems at your next scheduled session for the course unit. However, if you have missed a session at which you were supposed to hand in work at the beginning of the session (an extension), your next lab may be up to 2 weeks away. If you don't think your excuse will warrant the additional 2-week extension then you'd be best advised to *emph{get in touch with the lab supervisor}* for the course unit and seek advice about how you could hand in your work earlier. That would certainly look better and could save some embarrassment.

Problems that Only the Laboratory Manager Can Resolve

The records stored in the ARCADE database reflect what course unit choices **you** have entered into the Campus Solutions System. The Laboratory Manager adds to this information details about which laboratory groups you are in. The course units that you are taking can only be updated via Campus Solutions, whereas laboratory group information can be updated by the Laboratory Manager. Therefore, you will need to contact The Laboratory Manager via email (`\htmladdnormallink{\texttt{cck@cs.man.ac.uk}}{mailto:cck@cs.man.ac.uk}`) to resolve the following:

- if you need to be in a different lab group because you have a clash. Please give me some suggestions as to which lab group allocation you would prefer.
- Your name is not listed in the correct lab group in the Laboratory Book.
- if you have been ill for a longer period (or have some other circumstances that mean you are not able to complete much of the labwork in the usual way)

Problems That Only The School's Student Support Office Can Resolve

If you have issues such as:

- ARCADE sent you messages about course units that you're not doing
- you're not listed on an attendance sheet for a course unit

Then this is because ARCADE database records that you are/are not doing these units. If this happens during the first couple of weeks of term and you have just altered your course unit choices in the Campus Solutions System, then this is because ARCADE has not yet been updated from Campus Solutions. When your record in ARCADE is updated, you'll receive an automated message informing you of the change.

If one of these situations occurs after the start of term, then it's because of your information recorded in Campus Solutions System. If this is not correct, then as you will no longer be able to change your course unit choices in Campus Solutions, you must contact the School's Student Support Office (<mailto:sso@cs.man.ac.uk>). Give them details of what you believe is incorrect in Campus Solutions and they will investigate.