Faculty of Technology

IMAT5314 MSc Project

**Project Guide**

**MSc Computing**

**MSc Information Systems Management**

**MSc Software Engineering**

**MSc Business Intelligence Systems & Data Mining**

**MSc Data Analytics**

**MSc Intelligent Systems & Robotics**

**MSc Intelligent Systems**

**MSc Cyber Security**

**MSc Cyber Technology**

**MSc Forensic Computing for Practitioners**

**MSc Professional Practice in Digital Forensics and Security**

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1. Introduction

This document describes the operation of MSc projects, undertaken during the academic year 2018-2019, for the IMAT5314 project module.

The project forms an important element of the MSc course, and must be passed to obtain the degree. Further, the project must be passed at distinction level before an overall MSc with distinction award will be made, and similarly must be passed at merit level before an overall MSc with merit award will be made.

Note – the project is worth 60 credits, which makes it a third of your degree – this means that a good mark in this will have the same weight as 4 of the taught modules.

This document contains the following:

* Requirements for postgraduate projects
* An explanation of what is expected from students and staff during the whole project life cycle
* Information for staff and students with regard to the supervision process
* Notes for guidance on the production of a terms of reference document
* Notes for guidance on the planning, preparation and submission of a MSc dissertation

This guide should be read in conjunction with the current version of the “Modular Scheme for Taught Postgraduate Courses: Handbook and Regulations” and any supplementary notes issued by the Course Leader or Project Co-ordinator.

* 1. Project Aims

The aim of the project is to provide the student with the opportunity to carry out an in-depth study involving critical analysis, and to demonstrate the application of skills acquired from the taught component of the course, to the solution of a particular problem.

The project should be a self-contained piece of work of considerably greater depth than can be accommodated within a taught module. It should include a substantial element of scholarly research and fact-finding so that (a) it demonstrates research and analysis skills appropriate to a masters degree, and (b) the creative work of the project is based on a solid foundation of knowledge and conceptual understanding of the problem.

The postgraduate nature of the project should be evident from the higher overall standard compared to an undergraduate project, in the depth of critical analysis, the insight required and the complexity of the task undertaken.

Students will be expected to demonstrate project management and presentation skills throughout the period of the project when liaising with their Supervisors and Project Management Panels (PMPs).

* 1. Types of Project

There are a number of different types of project. The most common types are development projects and research projects. All of the different types of project are acceptable for most of the MSc degree programmes that include IMAT 5314 projects. However, one type of project may be more feasible given the skills developed by a particular degree programme, or more appropriate for meeting the educational objectives of a particular degree programme. If you are concerned about this, you should consult your tutors or your Programme Leader.

However, *MSc Intelligent System*s and *MSc Intelligent Systems and Robotics* are BCS-accredited programmes for which students need to do practical work using computer technology, typically producing some sort of artefact, usually a running program. See Section 1.3.

An MSc project needs to be scholarly work. For any MSc project, of any of these different types, a significant element of background research is required. This should result in the acquisition of sufficient and extensive knowledge to provide sound justifications for the methods used or the approaches employed in solving a given problem. The MSc project should also address research questions that the research and development work helps to answer. The level of the research element should be defined when discussing the Terms of Reference with your Supervisor.

You must determine the type of project you will undertake. The choice you make will affect the deliverables, content, presentation and assessment of the project work. These categories are not rigid: the balance between literature survey, primary research, software development and other activities can be set to suit the demands of the project and the interests of the student, and adapted to fit the nature of the project as the student’s work progresses.

* + 1. Development Projects

In a *Development Project*, the student is normally expected to produce a working piece of software that serves a particular purpose, meeting a defined set of requirements. In some cases, the product may include self-designed and purpose-built hardware as well as software, for instance an innovative robotic system. The running system itself is normally the major deliverable, and is normally the most important factor in the assessment. However, the requirements analysis, the system design work, and the testing and evaluation of the software – and how they are documented and presented – are also important to the assessment of development projects. The development work should be set in the context of the questions that it should help answer and how it contributes to answering them. It is not essential to meet *all* the requirements to gain a pass level mark; it is normal and healthy to have realistic but ambitious plans so that a good piece of software for a successful project will do a lot of what is aimed for but not everything. In some cases, background research, requirements analysis and system design work of sufficient quality may justify giving a pass-level mark to a project that has an essentially unsuccessful piece of software.

* + 1. Research Projects

In a *Research Project*, the student is expected to carry out a thorough investigation of a particular topic, apply one or more theoretical frameworks for making sense of what is known about the topic, identify one or more unanswered research questions, and apply one or more research methodologies to gathering primary research data and analysing it to attempt to answer the research questions. The student is expected to produce a dissertation detailing the research undertaken and its findings and implications, setting them in the context of related research and a clear conceptual framework. The benchmark for determining the degree of success in a research-based project will normally be whether or not the project and its dissertation can form the basis of a publishable academic paper.

* + 1. Literature Study Projects

In a *Literature Study Project*, the student is expected to carry out a thorough investigation of a particular topic, looking at previous research literature and other published or publicly available documents or sources of information, to produce a novel and creative analysis that attempts to answer one or more unanswered (or perhaps wrongly answered) research questions. The student is expected to produce a dissertation describing and critically evaluating existing documents and other sources of information, setting them in the context of a clear conceptual framework, and presenting a cogent analysis. Doing a literature study to the standard required for an MSc project requires both hard work and hard thinking, as a considerable degree of intellectual sophistication is needed to do this well. The benchmark for determining the degree of success in a literature study project will normally be whether or not the project and its dissertation can form the basis of a publishable academic paper.

* + 1. Consultancy Projects

In a *Consultancy Project*, the student is normally expected to produce a consultancy-style report to meet a clearly defined need for a clearly defined client or audience, providing a detailed and sophisticated critical evaluation of existing techniques, approaches or systems, or how to solve a practical problem, with recommendations. The practical consultancy work should be set in the context of how the work can answer more general and scholarly questions. The student should discuss with his/her Supervisor whether or not an implementation of any of the recommendations is required.

* + 1. Data Analysis Projects

In a *Data Analysis Project*, the student is expected to evaluate, select and apply computational techniques for data analysis and knowledge extraction, to solve a novel data analysis or knowledge extraction problem, or develop a novel technique for solving a particular data analysis problem, or develop a novel technique for presenting data or statistical information to support a particular human activity. The student is expected to demonstrate and illustrate the application of the technique and evaluate how well it solves the problem.

* + 1. Conceptual Analysis Projects

In a *Conceptual Analysis Project*, the student is expected to develop an analysis on paper of a system or of how to solve a problem. Such projects might involve developing an analysis of a working software system by applying one or more analytical techniques, for example for producing a usability evaluation; or analysing or modelling a process; or producing a notation or technique for describing a particular sort of information that a software system might generate or use; or devising a procedure for tackling a particular class of problem in software development. The student is expected to demonstrate and illustrate the application of the technique and evaluate how well it solves the problem.

* 1. BCS Standards

The BCS (formerly known as the British Computer Society) is the Chartered Institute for IT. It accredits our *MSc in Intelligent Systems* and *MSc in Intelligent Systems and Robotics.*

The requirements for BCS accreditation for degree programmes specify standards that projects for computer science degrees must meet, both in terms of content and in terms of quality of work. Meeting them is mandatory for Intelligent Systems projects and expected (and wise) for other development projects. Appendix II comprises Section 2.5 of the BCS document ‘Guidelines on Course Accreditation: Information for universities and colleges’ dated May 2018, in which these requirements are stated. It is imperative that the *plan* for the project (for a BCS-accredited degree) in the Terms of Reference document meets the BCS requirements; the students should ensure that the Terms of Reference satisfies the BCS checklist (borrowed from the undergraduate project module, available on Blackboard); the Supervisor should check this.

* 1. Standards for professional conduct

All students should, in their project work and elsewhere, seek to aspire to high professional standards. We expect MSc students to maintain high standards of professional conduct.

The professional standards the BCS expects of its members and other computing professionals are embodied in the BCS Code of Conduct, contained in Appendix III.

The ACM Code of Ethics and Professional Conduct is at <https://www.acm.org/code-of-ethics>

1. Submission Deadlines

Part of the challenge of doing an MSc project is getting it done on time. You have a deadline, and alterations to the deadline are not agreed lightly.

* 1. Full-Time Students

The normal duration of a project is **14 weeks of full-time work**. Full-time students are normally required to complete their projects within the normal period of full-time attendance i.e. within 12 months of initial enrolment on the course. For most, this means starting taught modules in October, finishing taught modules in May, starting the project in June (at the beginning of “Semester X”), submitting in September and having a viva before October.

**Full-time students** (usually starting in October) **finishing taught modules in May**

* *Start project in June*, finish September, duration 14 weeks (Semester X)

**Full-time students** (usually starting in February) **finishing taught modules in January**

* *Start project in February*, finish May, duration 14 weeks (Semester 2)
* Can allow: *Start project in June*, finish September, duration 14 weeks (between the two semesters of taught modules), provided all four modules have been passed.

In all circumstances, full-time MSc students must submit within 3 years of initial enrolment on the course; otherwise their registrations time out and they are automatically terminated.

In some circumstances, full-time students may convert to part-time status, if they need to combine doing a project with employment or some other time-consuming activity. This requires the approval of the Programme Leader.

* 1. Part-Time Students

**Part-time and distance learning students** are normally expected to take three years to complete their degrees, and do their projects in the academic year after they complete their taught modules. The normal **duration of a part-time project is 11 months**, with another month for the viva and marking. However part-time students who finish taught modules in May and officially start their projects at the beginning of the next academic year in October may do unsupervised preliminary work on their projects over the summer.

**Part-time students finishing taught modules in May**

* *Start project in October*, finish September, duration 11 months.
* Can allow: *Start project in June*, finish May, duration 11 months.

**Part-time students finishing taught modules in September**

* *Start project in October*, finish September, duration 11 months.

**Part-time students finishing taught modules in January**

* *Start project in February*, finish January, duration 11 months.
* Can allow: *Start project in June*, finish May, duration 11 months.
* Can allow: *Start project in October*, finish September, duration 11 months.

Part-time students are welcome to complete their projects and get them assessed early, and when it is administratively possible we will process the mark and award the degree early, but students are strongly discouraged from committing to unnecessarily early deadlines.

In all circumstances, part-time MSc students must submit within 6 years of initial enrolment on the course; otherwise their registrations time out and they are automatically terminated.

* 1. The Standard Project Submission Deadlines

**The standard submission deadline** will be determined and announced for each year by the MSc Project Module Coordinator, but is likely to be on or near the first Friday in September.

For the 2018-2019 academic year, the **September** deadline will be **12:00** on **Friday 6 September 2019.**

The Semester One and Semester Two deadlines will be determined and announced for each year by the MSc Project Module Coordinator, but will normally be on the last day of teaching for the taught modules.

For the 2018-2019 academic year, the **January** deadline will be **12:00** on **Friday 11 January 2019**.

For the 2018-2019 academic year, the **May** deadline will be **12:00** on **Friday 10 May 2019**.

**Any other submission deadline** needs to be agreed at or before the beginning of the project, by the Student and the Student’s Supervisor and Programme Leader. The decision and primary responsibility for variations in deadlines rests with the Programme Leader.

* 1. Allowing for Resits of Taught Modules

Subject to the agreement of the Supervisor and Programme Leader, the project submission deadline may be adjusted to allow time for the completion of resits in parallel with the project according to the following policy.

* ***One*** *module resit*: Zero extension. The Student is expected to do this in parallel with the project.
* ***Two*** *module resits*: One week extension.
* ***Three*** *module resits*: Two weeks extension. However this will be regarded as good grounds for granting a four week deferral.
* ***Four*** *module resits*. Two weeks extension. However the Student will be **very strongly advised** to apply to **defer the project** until after the completion of the resits; for normal full-time students this will mean doing the project in Semester One with a January deadline.
	1. Delaying the Start of the Project

Students may delay the start of their MSc Project with the ***prior written agreement*** of their Programme Leader. Students wanting to delay starting the project must provide a ***good reason*** for delaying the start of the MSc project to the Programme Leader (such as doing an industrial placement after the taught modules). Note that a delay to the start of the project may mean that the ratification of the project mark and award of the degree gets delayed to the subsequent Programme Assessment Board (about four months later).

For overseas students, a delay to the start of the project or a later submission date may be incompatible with the terms of their visas, even if the Programme Leader is willing to allow it. If you are considering delaying the start of your MSc project, you should consult the De Montfort University Immigration Compliance team in Student and Academic Services as early as possible, to check the implications for your student registration and visa status in the UK. It is your responsibility to ensure that your choices about what you do when, especially starting and submitting your MSc project, do not compromise your ability to complete your remaining studies or conduct the project successfully.

* 1. Industrial Placements

Students may wish to do an industrial placement before their MSc projects, and so delay their MSc projects until the following year. If so, they need to notify their Programme Leader, the Computing Engineering and Media Faculty Placement Team, and the MSc Project Module Coordinator of their intention to look for an industrial placement before the end of May, and if possible much earlier. Under DMU’s regulations, students need to pass all of their first four taught modules (first time, without resits) to be allowed to do a placement.

Note that the Computing Engineering and Media Faculty Placement Team needs to check and approve an agreed placement before DMU can allow it, so you need to seek their agreement. The Placement Team can be very helpful with finding placements, so it is a good idea to talk to them early about doing a placement if you want to. (They are in Gateway House 4.13 and their email address is CEMplacements@dmu.ac.uk.)

Students wanting to look for industrial placements need to ask their Programme Leader’s permission in advance to delay starting their project for four weeks while they devote June to looking for a placement. This permission may be made conditional on demonstrating sufficient commitment to finding an industrial placement, and may be revoked, so that additional time granted for doing the project may be lost.

Students who do industrial placements will be expected to do projects immediately after completing the placements. They will be given custom project submission deadlines that will ordinarily be fourteen weeks from the Friday after the last Monday of employment at the placement. (Delays beyond that will require a good reason, and permission from the Programme Leader, and will need to be compatible with any applicable visa regulations.)

Students who get permission to delay the start of the project to look for an industrial placement, but fail to find one, will be expected to start work on their projects immediately. They will ordinarily have a project submission deadline four weeks after the standard project submission deadline (this year, Friday 4 October 2019).

Students who delay starting a project to look for an industrial placement, but do not ask permission to do so in advance, can not be given a delayed start date (and thus submission date) retrospectively by their Supervisor, or their Programme Leader, or the MSc Project Coordinator. They may apply for a deferral, but the Faculty Deferral Panel will need a strong justification for granting a deferral. At a minimum, it will want to see a good reason for why permission was not asked in advance, and evidence for substantial effort put into finding a placement.

* 1. Resit Projects

Students who fail the project module get an opportunity to do another project. In certain circumstances students, at the discretion of the Supervisor and Programme Leader, may be allowed to revise and improve their projects if they are close to pass-standard. Otherwise the students need to do entirely new projects with new supervisors.

**Full-time students** are expected to complete their new resit projects in the semester following their result notifications. For example, for student who originally submitted in September, this means doing a new resit project in Semester Two. Students are encouraged to start their resit projects as soon as possible after the resit notification.

Full time students who are reworking or extending their previous projects are expected to submit them at the next standard submission deadline. For example, for students who originally submitted in September, the resubmission is due in January.

**Part-time students** are expected to complete new resit projects in the academic year after their original project, and submit a year after their original submissions. For example, for students who originally submitted in September, this means submitting in the following September.

Part time students who are reworking or extending their previous projects are expected to do this in the semester after they get their result notifications. For example, for students who originally submitted in September, the resubmission is due in May.

* 1. The Viva Date

The **viva voce examination** is a mandatory component of the module – not having a viva counts as a non-submission of the project. The Student arranges a time for it that suits the Supervisor and Second Marker. This is normally after the submission deadline and in time for marking to be completed and marks to be processed and the degree awarded at the next Postgraduate Assessment Board.

* 1. Extensions, Deferrals and Interruptions of Study

For students whose work is severely disrupted by unpredictable, unplanned-for events like serious illness, there are three mechanisms by which submission deadlines for assessments can be postponed. If you think you may need an *extension*, a *deferral,* or an *interruption of study*, **talk to your Supervisor** as soon as possible; if you can’t, talk to your Programme Leader as soon as possible.

The following is only a brief outline of university policy, which isn’t guaranteed to be up to date or sufficiently detailed; you should obtain fuller and more accurate information as quickly as possible if you are considering asking for an extension, a deferral, or an interruption of study.

DMU regulations and procedures are described on the DMU website, at <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/deferral-of-assessments.aspx> – alternatively, google ‘DMU deferral’.

* + 1. Extensions

In the event of a temporary problem seriously disrupting your work, your Supervisor can authorize an *extension* of the submission deadline of up to *two weeks*, depending on the severity of the problem. You will need to fill in an official form and present documentary evidence of the problem. It is not possible to extend submission deadlines more than two weeks, so if this isn’t sufficient you need to apply for a deferral.

* + 1. Deferrals

In the event of an unforeseen major problem causing much more than the loss of two weeks’ work, that will make it very difficult or impossible to complete your project by the deadline, you may apply to *defer* the submission of your project to a later date. A deferral cannot be authorized by your Supervisor or your Programme Leader or the MSc Project Module Coordinator; a deferral application will need to go to the Faculty of Computing Engineering and Media Deferral Panel and be supported by documentary evidence (confidential evidence will only be read by the chair of the panel). In exceptional circumstances deferrals can be granted retrospectively, but students are very strongly advised to apply as early as possible.

* + 1. Interruptions of Study

An interruption of study is a complete suspension of your enrolment in the course for an agreed period, usually exactly one year. Interruptions of study are only permitted to cater for forthcoming events, such as having to change jobs, having to accept new responsibilities at work, health problems, etc. As this is a whole-course matter you would need to discuss it with your Programme Leader as well as your Supervisor. Interruptions of study cannot be agreed retrospectively.

* 1. Absences Abroad

The Home Office requires De Montfort University by law to monitor overseas students’ attendance and participation in the course. Because of this, the university requires MSc students who wish to leave the UK for *more than four weeks* during the course of their degrees to go through a bureaucratic procedure to (1) obtain permission to do so, and (2) register the permission with the university’s International Office. If the absence is during the project, the Supervisor can grant permission; otherwise, permission is required from the Programme Leader.

If you wish to go abroad to further your MSc project work, for instance to interview people in another country, or you wish to travel for urgent personal reasons, you should discuss the matter at soon as possible with your Supervisor. If your Supervisor is satisfied that the travel is justified, you should then download and complete the *Absence Request Form* (which is an editable PDF file available on Blackboard), get your Supervisor to sign it, and send it to the responsible Faculty of Technology administrator (currently Suffiyyah Mohammed at smohammed@dmu.ac.uk). In the absence of the Supervisor this can be done by the Programme Leader.

During your absence you must communicate with your supervisor **at least once every two weeks** to comply with the terms of your permission to be absent and the requirements of the university’s statutory obligation to monitor your participation in the course. Communicating more often than that would of course be desirable for maintaining your progress and making sure that your Supervisor knows what he or she needs to know about your situation.

1. Project Submission

Your project documents should be officially submitted to the University in electronic form. You are required to submit archive copies of your dissertation and other documents, via the links in the ***Submission*** content area of the shell for **IMAT5314 MSc Project on *Blackboard***, at [**https://vle.dmu.ac.uk**](https://vle.dmu.ac.uk)

* 1. Terms of Reference and Ethical Review Form

You should complete your Terms of Reference document and your Ethical Review Form to the satisfaction of your Supervisor as quickly as possible. Your Supervisor may insist on revisions. You should get them finished, agreed and submitted early in your project; failure to do may get you marked down for poor project management.

Once your Supervisor is content with your Terms of Reference document, you should submit a PDF or MS Word copy via the *Turnitin* link for **MSc Project Terms of Reference.** Once your Supervisor is satisfied with your Ethical Review Form, you should submit it using the *Turnitin* link for **MSc Project Ethical Review** form. These are for archiving purposes and for checking that everyone has done them, and don’t get checked for similarity to other documents.

* 1. Dissertation

You **MUST** submit a copy of your project for similarity checking, in PDF format, through the *Turnitin* link for **MSc Dissertation**. This is **MANDATORY**: failure to submit your dissertation for plagiarism checking may be treated as non-submission of the project. It also provides us with an easily accessible electronic copy of your dissertation. If you have problems doing this, contact your Supervisor and the MSc Project Module Coordinator at once.

The *Turnitin* link will only accept one file. The current size limit is 40MB. If producing one file constituting a complete and definitively correct final version of your dissertation presents difficulties, you need to agree a submission procedure with your Supervisor. However, submitting a document containing all the text to *Turnitin* will be absolutely essential.

Your supervisor and second marker may appreciate softbound printed copies if this saves substantial effort. You should ask them. Printed documents should be submitted to **CEMAC**, on the ground floor of Gateway House, for the attention of your Supervisor. Note that we do *not* want expensive hardcover bindings of the sort used for theses for research degrees, and we will treat printed copies of your project as disposable.

* 1. Project Files

You should also submit a complete set of your project files, including source files for programs, in a ZIP file, using the *Turnitin* link for **MSc Project Files**. This is for archiving purposes, and the files will not be checked for similarity to other documents. This is NOT a substitute for submitting your dissertation for checking using the *Turnitin* link for MSc Dissertation.

As Turnitin can’t handle files larger than 40MB, ask advice on how to be selective if your complete set of files is likely to be bigger than that.

1. Project Management

Successfully completing an MSc project involves several activities, and requires both careful planning and disciplined work, as well as regular contact with the project Supervisor. The student needs to take responsibility for project management, retaining an overview of where he or she is at and what still needs to be done, and giving enough attention early enough to producing the dissertation.

As well as the agreed deliverables and the final dissertation on the project, the student is also responsible for producing a Terms of Reference document and a completed Ethical Review Form. These are mandatory part of the project module. They are a vitally important part of setting the course of the project and making sure that it is appropriate, and need to be agreed early in the project life cycle. The Supervisor is responsible for making sure the Terms of Reference and the Ethical Review Form describe a clearly defined, feasible, appropriate, and ethically well-considered project, and may insist on revisions. The student is responsible for making sure that the Ethical Review Form is scrutinized and agreed by both the Supervisor and the Second Reader.

* 1. Supervision

Students will be allocated a ***Supervisor*** and ***Second Reader***.

The student is responsible for arranging and attending regular meetings with the Supervisor, and when appropriate, the Second Reader.

It is important to have regular contact with the Supervisor. Full-time students should aim to see their Supervisors at least once every two weeks, and part-time students should aim to see their Supervisors at least once every six weeks, more frequently when needed. Different Supervisors like to manage interactions with students differently, with some favouring regular timetabled meetings and others preferring more flexible arrangements. Especially during the summer, some Supervisors may be away from DMU for extended periods. However, a reasonable expectation is that the Supervisor will have six to eight half-hour meetings with the student, plus the presentation and viva at the end. It is a good idea for the student to meet the Second Reader two or three times for a progress check, as well as the presentation and viva at the end.

You should discuss at the beginning your Supervisor’s expectations for when and how you will schedule meetings, and how you will work around times when the Supervisor is unavailable.

Where a Supervisor is away for some time during the project period, cover should be arranged with the Second Reader if possible. It is the student’s responsibility to find out when the Supervisor will be around, and ask advice on where to get additional support if it is needed.

To make the most effective use of your Supervisor’s time you should always come prepared (though it’s better to turn up empty-handed to a scheduled meeting than not come at all). You should have a list of key issues you wish to discuss and keep notes of any important decisions. Following the meeting let your Supervisor have a brief summary of the key points that were addressed including the decisions that were agreed.

Distance learning students may, by agreement with their Supervisor, conduct Supervisor meetings face-to-face, by telephone, or through the use of other communication technologies, such as Skype or Zoom. Where the student and the Supervisor agree to the use of alternative technologies for the interview it is the responsibility of the student to provide and organize the appropriate resources required – note that this is not a requirement but an alternative option to face-to-face or telephone conversations.

* + 1. Progress Reports

One of the greatest dangers to the timely completion and submission of a project is the postponement of critical paths within the plan in favour of less critical work, or worse still, the continued neglect of the project work.

You should agree the procedure with your Supervisor for monitoring progress. It will normally involve both Progress Reports and periodic meetings with your Supervisor. You should discuss your Supervisor’s expectations at the beginning of the project.

Full-time students are normally required to submit three Progress Reports. For part-time and distance learning students the project has a longer duration, which increases the risk of the project becoming stalled or neglected. Consequently, these students are normally required to submit a minimum of six Progress Reports. The timings of these reports should be agreed with the Supervisor and clearly identified in the Schedule of Activities produced as part of the Terms of Reference.

Your regular progress reports should clearly identify the work completed to date, deliverables already produced, and the plan forward. Failing to produce timely Progress Reports may result in the project management aspect of your project being marked down.

A Project Progress Report proforma is available on the IMAT 5314 Blackboard shell.

* 1. Selecting a Project

Students are responsible for investigating possible projects and discussing these with the Supervisor, and where possible the proposer and other stakeholders, and getting a clear agreement on the project with the Supervisor. Full time students are strongly advised to do this *before* starting full-time work on their projects after their second semester exams.

* + 1. Sources of Project Proposals

Ideas for projects may be

**Proposed by a member of staff**. The MSc Project Module Coordinator will make a collection of project proposals available on the Blackboard shell for IMAT 5314 on the DMU Intranet. You will have access to the Blackboard shell once you are registered on the module. The proposals will indicate how to contact the proposer if the proposer is at DMU; however the collection of proposals on Blackboard includes project proposal documents written by people who have now left DMU.

When possible the student should also discuss a project they want to do with the proposer as well as the Supervisor. Ideally, the proposer will also be the Supervisor. If you choose a project sufficiently early the MSc Project Module Coordinator or your Programme Leader may be able to allocate you the proposer as Supervisor, but this is frequently not possible.

**Proposed by an employer or other client**. Sometimes external clients suggest ideas for projects to students. We strongly encourage MSc projects that have real-life applications; however the Supervisor will need to ensure that the proposal is feasible and has sufficient depth and complexity to be an appropriate MSc project. There can be a conflict of interest between meeting the practical needs (or apparent or claimed practical needs) of the client and doing what will get a good mark, and the balance between these needs to be set sufficiently far towards prioritizing a successful MSc project. You should (anyway) keep your Supervisor sufficiently well informed about your requirements analysis and design work to get advice on this, and should ask advice if in any doubt.

Part-time and distance learning students normally find it convenient to undertake a project related to their employment. It can take some time to refine a work-based project and a few iterations may be needed to set up a project of appropriate level and duration for an MSc Course. You will therefore need to plan accordingly. You will need to meet with your Supervisor and the client as early as possible to define clearly the aims and boundaries of the project.

**Proposed by the student**. We encourage students to devise and put forward their own ideas for projects. Sometimes these may be inspired by suggestions for similar projects proposed by members of staff. If you intend to propose your own project, you should provide your Supervisor or Project Module Coordinator with an outline proposal as soon as possible. The Supervisor will need to ensure that the proposal is feasible and has sufficient depth and complexity to be an appropriate MSc project, as we find that sometimes students’ ideas will involve doing too much content production and not enough computer science. If you produce a good idea sufficiently early, it may be possible for the MSc Project Module Coordinator or your Programme Leader to find you a Supervisor with a particular interest or expertise in the topic.

* + 1. Part-Time and Distance Learning Students

The study arrangements for part-time and distance learning students are very flexible. You may formally begin work on your project as soon as you have passed four taught modules and the Research Methods component. We strongly recommend, however, that you pass all eight taught modules before beginning your project.

* 1. Agreeing a plan: Terms of Reference and Ethical Review

It is an essential requirement of the IMAT 5314 project module that the student produce a Terms of Reference document and an Ethical Review Form and get these agreed by the Supervisor. You should do this as quickly as you can once you have agreed on a topic with the Supervisor. The Supervisor may insist on revisions before signing them off. These are discussed in more detail in Section 5.

1. The Terms of Reference and Ethical Review Form

Once the topic of the project has been agreed by the Student and the Supervisor, the project must be defined in more detail by the Terms of Reference produced by the Student in conjunction with the Supervisor and the client. The aim is to get a clear and agreed understanding of what the project *is*, so that the Supervisor can ensure that the student has both objectives and plans for how to achieve them that are feasible and appropriate for an MSc project. The Terms of Reference and the agreed schedule of activities are critical elements of the project in that they determine a ‘metre stick’ against which the project will be assessed.

It is common for the topics for background research, the research questions, or the planned functionality of the system to shift as the project develops towards its agreed overall goals and you understand better what you can and can’t do. This is normally perfectly acceptable – you need to have clear objectives but they aren’t cast in concrete. What is not acceptable is to abandon a project and start doing another one. If you want to make major changes to the objectives of your project after agreeing your Terms of Reference, it is imperative that you consult your Supervisor as soon as possible.

You *must* complete an Ethical Review Form and get it agreed by your Supervisor at the same time as the Terms of Reference. If the project changes (with the agreement of the Supervisor) so that it includes elements of human research not envisaged in the Terms of Reference, you will need to produce a new Ethical Review Form.

* 1. Structure of the Terms of Reference document

The Terms of Reference contain the following elements:

* Header
* Student Name & Course
* Project Title
* Client/Proposer
* Supervisor(s)
* Background to the Project
* Deliverables
* Academic Objectives
* Research Questions
* Background Research Objectives
* Product Objectives
* Resources Required and Constraints
* Risk Assessment (see section 5.2 below)

Appendices

* Schedule of Activities (including dates of Progress Reports and Submission date)
* Ethical Review Form (see section 5.3 below)
* BCS accreditation checklist (for BCS-accredited degrees, see section 5.4 below)

The *Background to the Project* section should state what the problem *is* that you intend to tackle, how you intend to tackle it, and why what you are doing is needed and/or interesting. Half a page should be sufficient unless understanding the background or the nature of the project is not straightforward.

The *Deliverables* section states what documents and other artefacts you will produce for the project. This will normally be a bullet point list.

The *Academic Objectives* section should state what you want to learn from the experience of doing the project (i.e. in what ways you want to become a more skilled or educated person). It will normally be a brief bullet point list.

The *Background Research Objectives* section should state what you want to learn and write about as part of doing your project, beyond what you will study anyway for your taught modules. This is what you are going to investigate for the research element of your project, and write about in your dissertation to provide a context for your own work and show that you have satisfied the requirement to do some research as part of your project. Learning about a particular topic may be one of your academic objectives. This will normally be a brief bullet point list, but detail won’t hurt.

The *Research Questions* section should outline the scholarly questions you are aiming to address through your project. Normally this will be a bullet point list. It is a good idea to provide as full a list as you can of the various research questions you want to consider within your topic. (These should include specific and concrete questions as well as more general or theoretical questions. There’s no harm in starting with too many and deciding which to discard later.)

The *Product Objectives* section should state what your program if you are building one, or other deliverables, should *do*, i.e. what you are intending to *produce*, in enough detail to demonstrate that you have a good understanding of what the project will involve and plans that are both realistic and feasible and sufficiently ambitious. This will normally be a bullet point list; detail is good but only if going into detail doesn’t require you to make premature decisions.

It’s worth listing the *Resources Required* and the *Constraints* that affect the project, but this is only significant if they are non-standard or problematic in some way.

It is essential to produce a detailed *Schedule of Activities*, i.e. a time plan stating what the different steps in your project are, what you expect to do when, and how long each activity will take. The time plan usually takes the form of a *Gantt Chart*.

If you are in any doubt about what to put in your Terms of Reference you should consult your Supervisor.

* 1. Risk Assessment

You are required to include a risk assessment in your Terms of Reference, naming the risks that might jeopardize the success of your project, assessing their likelihood and impact, and saying what you can do to minimize the likelihood that they will happen and mitigate their effects if they do happen.

The project is a major, largely self-managed, individual piece of academic work, and an important component of the Master’s programme – it is worth 60 credits out of a total of 180. Success in the project is vital, so you need to (1) take your risk assessment seriously and make sure that your assessment and proposals for managing risk are realistic and sensible, and (2) actually do the risk management.

Essentially risk is associated with uncertainty – an event, usually with negative outcomes, may or may not occur. A fundamental principle of risk management to be proactive – to identify and catalogue potential risks using a range of techniques; using prompt lists, or brainstorming with other project students, for example. Then two important properties of risks need to be considered:

Probability – the chances that a particular risk will occur (*%* or *odds* or *P* or risk from *1 to 10*, or *high, medium, low*)

Impact – the consequences the project if the risk materialises (severity from *1 to 10*, or *high, medium, low*)

These can be combined to give an idea of the exposure of the project to the risk. While it will probably not be appropriate to express this in monetary terms for your project, you might calculate a numerical value, or classify exposure as “high, medium or low”. This should allow you to prioritize risks in order to allow you to manage the most important.

The following table is a simple example of how you might record risk management information, or you might use a more sophisticated approach, such as a risk register.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk identification** | **Probability** | **Impact** | **Assessment (i.e. combine probability and impact)** | **Risk monitoring, mitigation and management** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

We recommend carrying out some independent research into good risk management approaches, such as Hughes and Cotterell (2009) in the reading list.

* 1. Ethical Review

As part of the Terms of Reference you *must* carry out an ethical review of your chosen project, and complete the Ethical Review Form and get it agreed and signed by your Supervisor. Every project must have a completed and agreed Ethical Review Form even if it has no element of human research or any other ethically relevant activity.

**Before doing so you must have viewed the lecture on “The Ethics of Emerging ICTs” by Bernd Stahl at** [**http://www.youtube.com/watch?v=UWUI7UIoNbk**](http://www.youtube.com/watch?v=UWUI7UIoNbk)

You must complete your ethical review in good time, get your form agreed, and submit it via the *Turnitin* link on the IMAT 5314 Blackboard shell, *before* you do any substantial or ethically significant part of the work for your project.

* + 1. University policies and good practice for ethical research

The University has a policy to protect individuals who are the subjects of research. For the purpose of ethical review, your MSc project is “research”. It follows the guidelines of the Helsinki Declaration of Human Rights to assess all studies that involve human volunteers.

Ethical issues arise when the conduct of a student project involves the interests and rights of others. The project may impinge on the confidentiality, privacy, convenience, comfort or safety of others. Such threats constitute ethical problems.

In an ethically sound student project, the student must observe and protect the rights of would-be participants and systematically act to permit the participants to exercise those rights. Ethical practice in such cases requires that participants, at a minimum, be fully informed, volunteer freely without inducement, be free to opt-out without prejudice, and be fully protected in regard to safety to the limits of best practice.

Student projects often involve other people in various capacities, such as the client, the user of an existing system, and the recipient of the outcome of the project, as well as interviewees or test subjects in usability trials. These can be broadly termed the *human subjects* of the project. Human subjects can be affected by the project involving:

* Gathering information about human beings through: Interviewing, Surveying Questionnaires, Observation of human behaviour
* Using archived data in which individuals are identifiable
* Researching into illegal activities, activities at the margins of the law or activities that have a risk of injury

The University policy states that research (including student projects) involving human subjects should ensure:

* All participants volunteer**,** normally without inducement, and give their written consent to participation
* Written consent is given in the light of full awareness of the objectives of the teaching or research, the procedures to be followed, and the anticipated outcomes particularly in respect of publication of findings
* All participants be given a written description of their involvement in the project, the demands to be made, their rights and how their rights and interests will be protected, particularly in respect of confidentiality, privacy and safety
* All participants are made aware of their freedom to withdraw consent and discontinue participation at any time
* Appropriate documentation is designed to meet these objectives and to keep appropriate records, for example, information regarding the project should be given in writing and the participant should sign to acknowledge receipt of the material.

Students undertaking projects must abide by this policy.

The University’s policies on ethical conduct of human research are here: <http://www.dmu.ac.uk/research/ethics-and-governance/pg-and-research/human-research-ethics/technology/human-research-ethics.aspx>

* + 1. Ethical review procedure

For ethical compliance to be embraced and be effective, a procedure is adopted which is based on an escalation process dependent upon the severity of the ethical issue.

1. The student thinks carefully about how the research might involve or impact other people or have some other real-world consequence, and how to follow ethical good practice and avoid harm.
2. The student completes the Ethical Review Form, discusses it with the Supervisor, and revises it until it is satisfactory.
3. The student and Supervisor review and sign the Ethical Review Form. The student submits it via the *Turnitin* link on Blackboard.
4. If there are major ethical issues (which is uncommon for IMAT 5314 projects), the Ethical Review Form is submitted to the Chair of the Faculty of Technology Human Research Ethics Committee for further review. These projects cannot be taken beyond the Terms of Reference stage until the matter is resolved.

The outcome of the ethical review is recorded on the Ethical Review Form. There are four possible outcomes:

1. **No ethical issues** (normal if the project does not involve and has no impact on any other human beings)
2. **Minor ethical issues which have been addressed and concerns resolved** (normal if the project might involve interviews or questionnaires, or user testing, or observations of adults, with their consent and not involving private or ethically problematic activities)
3. **Major ethical issues which have been addressed and concerns resolved**
4. **Ethical issues that have not been resolved**

The Supervisor authorizes those projects with outcomes 1 or 2. Projects with outcomes 3 or 4 are submitted to the Faculty Human Research Ethics Committee for further review. These projects cannot be taken beyond the Terms of Reference stage until they have been reviewed by the full committee or by the chair of the committee or whoever he/she delegates authority to.

The student must keep the completed form duly signed, as well as submit an electronic copy on Blackboard. The student must give a copy of the form to the Supervisor who must keep it for reference. The form must be included in the dissertation when it is submitted for assessment.

* + 1. Completing the Ethical Review Form

The form *Faculty of Technology Application to Gain Ethical Approval Taught Masters Degree Student* can be downloaded from the IMAT 5314 Blackboard shell. Students are often in some doubt about how to complete the form. When in doubt, you should consult your Supervisor.

The form asks you to state what sort of ethically-relevant activities the project will involve, in a checklist, and to name other issues or problems not covered by the checklist. In section 3 of the form you should *briefly* describe the ethically-relevant activities and other areas of concern, and briefly describe how you propose to resolve the ethical issues. (This is *not* asking you to describe your whole project, but a sentence to say what the project is about won’t hurt.) Take data confidentiality issues seriously. If you think you might do user testing you should mention this; it’s sufficient to say that normal good practice for conducting user trials will be observed – but you then have to follow the good practice! If there are no plans to involve other human beings, you should write a sentence here to say so.

The form asks you to name the guidelines and codes of conduct you have looked at. DMU’s policies and the BCS Code of Conduct and the ACM Code of Ethics and Professional Conduct should do in most circumstances, but you actually need to look at them! For particular techniques you may need to look at more specialized guidance.

* 1. BCS accreditation checklist

The BCS accreditation checklist should be included as an appendix to the Terms of Reference document for all BCS-accredited degree programmes – currently these are *MSc Intelligent Systems* and *MSc Intelligent Systems and Robotics*. The checklist in use for IMAT 5314 is the IMAT 3451 undergraduate project BCS checklist. It is available on Blackboard.

It is essential that the plan for the project stated in the Terms of Reference meets the BCS requirements. The Terms of Reference should conform to the requirements stated on the checklist – just including the checklist isn’t enough. This should be checked and agreed by the Supervisor. For more information on the BCS requirements that projects should meet, see the statement of the BCS requirements for projects in BCS-accredited degree programmes, which is also on Blackboard.

1. Working On The Project

Once you have planned a programme of work, in conjunction with your Supervisor, you should begin preliminary work on your project. Full-time students are expected to devote all their time (notionally 40 hours per week) to the project on completion of the Semester 2 examinations. Appendix IV lists some useful guides to carrying out a project.

* 1. Formulating Research Questions

Formulating and addressing research questions is an important part of your project. This is true for development and consultancy projects as well as for research projects. You need to think of a range of research questions related to your topic – things that your project can *tell you*. Some guidance on how to do this is in the document ***Formulating Research Questions for Development Projects***, which you will find on Blackboard. This is aimed at students who want to build a software system and want to know how to make building a software system into scholarly work worthy of an MSc. However people doing research projects may find it helpful.

You should aim to have a lot of research questions, as many as you can think of, and have a mixture of concrete and specific questions and more general and theoretical questions. Many students do poorly because they only have questions that are too general, and fail to appreciate that having something well-grounded to say about a very specific issue is more interesting and valuable than saying something insubstantial about a broad question. Having too many questions is a good thing: you can go where your evidence takes you and discard all the questions that didn’t prove fruitful. You should start formulating questions and discussing them with your Supervisor as early as possible.

You should list your research questions in your Terms of Reference, but they aren’t set in concrete at that stage.

* 1. Literature Survey or Fact Finding

This is the first major milestone of the project. In general, the process of fact finding (for development or consultancy projects) or literature survey (for research projects) aims at identifying what other work has been carried out in the same area and relating the objectives of the project to an understanding of the context. Fact-finding is more oriented towards defining the requirement of the project and can be a continuous process. This is particularly true for projects whose final deliverable is an *evaluation* of some kind (e.g. evaluating a given technology, existing software packages in a specific area, etc.). Literature survey is more oriented towards understanding and organizing previous knowledge, and identifying gaps that need to be filled. Normal projects will include an element of both fact-finding and literature survey. The balance between literature survey, fact-finding and development work will depend on the nature of the project.

Literature survey (or fact-finding) is a crucial stage in the project life cycle and, therefore, its importance should not be under-estimated. Your Supervisor is in a position to provide help and offer guidance to ensure that you review relevant academic research papers and other writings and explore related sources of information.

* 1. Presenting your Fact Finding

You should discuss the outcomes of your fact-finding and literature analysis with your Supervisor, and get feedback on how to improve what you have done as well as how to build on it in the later stages of your work.

Your fact-finding and literature analysis will form an important part of what you deliver at the end of the project. For development projects, a thorough, persuasive and well-presented requirements analysis will add to the value of the project, while a poor one will fail to impress. When you read an academic paper or anything else that will contribute to your dissertation, it is a good idea to write a paragraph about it quickly while it is fresh in your mind, that you can slot into your dissertation or can adapt, without needing to read the paper again.

* 1. Implementation Issues

The project provides the opportunity to learn new skills and techniques. The time necessary to acquire such skills should be built into the preparation stage, and budgeted for in the time plan.

The implementation of a solution to the identified problems will be influenced by the choice of software and hardware. Although you should have discussed this choice during the generation of the Terms of Reference, new requirements that may have been identified during the analysis could lead to the need to use different software or hardware. If that is the case, you should discuss the situation with your Supervisor as soon as possible.

Caution: Always over-estimate the time needed for implementation. If in doubt, consult your Supervisor. Remember that Hofstadter's Law applies strongly to programming: “It always takes longer than you expect, even when you take into account Hofstadter's Law.”

Where the project consists of significant software development you should conduct thorough testing and analysis of the test results, and document this thoroughly in the dissertation. You should consider how to do verification and validation, do this if possible, and discuss this in your dissertation. A properly conducted and documented user trial can add considerable value to a development project.

* 1. Critical review

Remember that your project needs to include a thorough, thoughtful critical review of what you’ve produced and a critical review of the conduct of the project. A project with a poor critical review may get a mediocre mark when the project has produced a good piece of software presented with a clear, otherwise thorough, well-written dissertation.

Your critical review should discuss your research questions, what you have learned from your background research, and how well your program or other product works and meets the needs it was intended to address.

* 1. SVN Repository for code

All software development projects ***may*** use the faculty’s SVN version control server as the source code repository. If you request it, you will be given your own repository to which you have read/write access and tutors have read access. More information on this is provided in a separate handout, *Version Control with SVN*, which is available on in the IMAT 5314 MSc Project module shell on Blackboard.

1. Writing The Dissertation

The written dissertation constitutes the principal deliverable of the MSc project. You need to give careful attention to its preparation. Appendix IV lists some useful guides to writing reports and dissertations.

**A note on terminology**: In this document we refer to the main written document about the project as the *dissertation*. The word *report* implies that it is a document *about* something else, usually a piece of software or a research activity, which is the primary product of the project. However, the main product of a research degree such as an MPhil or PhD is a *thesis* or *dissertation* – this is a document that *is* the scholarly contribution, and everything else is just supporting evidence or documentation. We use the word *dissertation* for your MSc project report to stress that this is scholarly work, and the dissertation is your key contribution; for research-type projects your report is usually a research dissertation similar in character to an MPhil or PhD thesis. (The words *thesis* and *dissertation* are essentially synonyms, but in British usage a thesis is bigger than a dissertation, and in American usage the opposite is true. The word *thesis* is also used for a claim to be investigated and supported or refuted.)

* 1. Avoiding plagiarism and giving credit for other people’s work

The most important requirement of the project is that it is *your work*. But all scholarly work uses and builds on the contributions of others. It is absolutely essential that you distinguish absolutely clearly between your own work and ideas and your own text, and the words and ideas of others. You need to give due credit – *honestly*, *clearly* and *accurately* – for any text, ideas or information that are not your own. Failure to do so constitutes plagiarism.

* + 1. Plagiarism and Turnitin

Serious cases of plagiarism can result in expulsion from the university and automatic failure of the degree course.

As well as deliberate cheating, failing to be sufficiently careful about showing what text in your dissertation is yours and what is second hand is also plagiarism. This can result – and has – in students who have worked hard and done their own projects being punished for an academic offence and having their projects failed or severely marked down. In order to avoid any unwanted occurrences of plagiarism, it is important that your work is correctly referenced (see section 7.8).

You must submit a copy of your dissertation through *Turnitin* (see section 3). *Turnitin* checks for originality and generates a report showing the percentage of your submitted work which matches material found in other sources. Your dissertation will be added to the *Turnitin* database.

Remember that a high *Turnitin* score will get the attention of your Supervisor and the MSc Project Module Coordinator, but it isn’t a problem provided the relationship between what you have written and what you have borrowed from your sources is shown both honestly and clearly.

* + 1. A note about quoting explanations

What you *should* do is write explanations in your own words, summarizing and synthesizing the information you’ve taken from your sources. What you *should not* do is quote chunks of other people’s text, presenting them as yours – this is plagiarism. Paraphrasing large pieces of text, changing words here and there to avoid copying sentences unaltered, impresses no one. This is easily spotted by *Turnitin*, and will be regarded as plagiarism.

However, it is quite common to want to include extensive definitions and explanations in your dissertation that you have taken from one source and don’t want to summarize or rewrite – the author has written exactly what you want to say in your dissertation, and you can’t improve it. This isn’t ideal – we want *your* writing – but is legitimate and acceptable provided you make clear both *what* you are quoting, and *where* you are quoting it from. Second-hand sentences introduced with phrases like “Alshammari and Howley (2012) claim that…” or “Carter and Ahmadi (2012) define…” don’t need special treatment, though quotation marks aid understanding by showing that the sentence is an exact quotation not a summary or a paraphrase. Sentences quoted verbatim with a reference at the end should be in quotation marks. For larger chunks, you should use quotation marks or indented paragraphs to make quotations visually distinct.

The same principles apply to citing or quoting work that you have written yourself, for instance in assignments for your taught modules. For projects that draw on and extend work done for taught modules, it is essential to show what comes from the earlier work and what is new.

* 1. Writing the Dissertation

It is a mistake to try to write the dissertation all at once at the end of the project. By then you will be running short of time and will have forgotten why you made particular decisions or did things in a particular way. Instead, you should keep a record of your work as progress is made, and write it up steadily throughout the project life cycle. Writing up much of the exploratory work early is a good way of keeping a succinct record of the initial work associated with the project and can be a useful reference source in the later stages of the project.

It’s also a good idea to write notes, or paragraphs for your report, or descriptions of the paragraphs that you’re going to write, on journal articles and other documents *when you read them*, so you don’t need to reread them later to write your dissertation.

You should agree with your Supervisor how your writing will be structured and monitored and agree on a timetable for producing the dissertation. You should ask your Supervisor’s advice *early* about what to include in the dissertation and how to organize it. The best advice this handbook can give you is to write the dissertation your Supervisor wants you to write.

* 1. The Deliverables

You should agree with your Supervisor what the deliverables of the project are going to be, preferably when agreeing the Terms of Reference, and certainly before you do much report writing.

For most development projects, the central part of the work is the production of a piece of software, and the essential deliverables are the piece of software, and a report that describes both the software and its development process, which should have appendices containing all the required documentation of the requirements analysis, design and testing.

For other types of projects, where the aim of the project is to produce some sort of document, there are different models.

One approach is to produce a single document – a dissertation – plus appendices, that combines a presentation of your research and findings (whether a literature analysis, or a research study involving the collection of primary data, or a data analysis project, or a consultancy report on a practical problem) with an account and critical review of how you have carried out the project.

The other approach is to produce two documents. One is the key product, comparable to the piece of software in a development project – a consultancy report for the client or a paper on your research. The other is a report – comparable to the report on a development project – on how you have carried out the project, describing everything that needs to be discussed that doesn’t belong in the consultancy report or research paper, including the critical review of the project.

* 1. Evidence of Research and Critical Analysis

Whether the project is of a research-based or a professional type, the dissertation must exhibit evidence of a thoughtful investigation about the problem in hand. A project with a significant research component should provide a well-explained review of published research related to the topic, and a critical analysis of your approach. This is likely to form one or more major sections of your dissertation.

**A poor or non-existent critical analysis is likely to lead to failure of the project.** You must provide evidence both of research into the problem (typically by reading and writing about journal articles, books and other information sources) and of critical analysis and integration of what you have read. Note that any statement made has to be justified. Phrases such as: “*this method is better than*...” or “*this technique has been used in this project*” should be explained. Alternatively, the reader should be referred to another text where the explanation can be found.

* 1. Critical Review

You need to have a critical review of both your program or other product, and of your project as a whole. This should be a major section of your dissertation, or two if you choose to split these.

You should discuss the extent to which the original objectives were met and explain any shortcomings. You should neither over-estimate the achievements nor under-play the shortcomings. It is important that you identify points of weakness in your work and suggest possible ways of overcoming them. You should describe what answers you can give to your research questions, plus how strong your evidence is and how strong your conclusions are. (You may discard questions you have nothing much to say about, but you should comment on this.) Your Supervisor and Second Reader want to see evidence of intelligent thought: they will be far more impressed by a shrewd, sophisticated and frank analysis of what you’ve done and haven’t done than by lack of awareness of problems they can see clearly themselves.

Your critical review should include a subsection on the possible social impacts of the system, or of the technology being developed, or of systems like the one proposed or developed, and the ethical implications of the system or the technology. Again, this will gain from intelligent thought and awareness of the limitations of what you can do and say rather than grandiose claims, and from being tightly focused on your own work.

* 1. Structure and Readability

When preparing a report or dissertation, you should remember that it is intended not only for your Supervisor and Second Reader but other readers as well. The other readers may be IT literate but their knowledge of the project itself may be minimal. Therefore, you should pay particular attention to a clear statement of your objectives in the introduction of the dissertation. Any technical terms and abbreviations used should be clearly defined, and you should not assume that the reader has spent the same amount of time on the project as you did.

Of crucial importance is the critical analysis throughout. You must, when reading and writing about other people’s material not merely report their work, but provide your own analysis of the content. When evaluating the software you develop, you need to *test* it: you need to ensure that everything works, or if it doesn’t, report this honestly and accurately.

* + 1. Style

Above all, your dissertation should be *clear*. Say exactly what you mean as simply as possible. Do not use long or fancy words when plain words will do. Do not write in an artificially stuffy style.

Guides to academic writing (including some previous versions of this MSc project guide) often state that “You must write in the third person”. You shouldn’t treat this as an absolute rule, but your dissertation (and other academic writing) should be impersonal except when it is important that these are *your* experiences or opinions. If you want, you can compromise on the “The author…”

* + 1. Sections

There is no single right way to structure reports, unless the report is an instance of a defined class of reports that serve a very specific purpose and have precisely defined contents. (For MSc projects, this is true of the whole submission, see section 7.10, but not of the dissertation itself – projects are far too varied for a one-size-fits-all approach.) You should think carefully about what structure suits your project and meets your needs and those of your readers. You should agree the structure of your dissertation with your Supervisor.

However, the following general principles apply:

* You need to have numbered sections and subsections. The introduction is section 1.
* Anything before the introduction, like table of contents, list of figures, abstract, etc, is not *part* of the report or dissertation, and doesn’t get a section number; similarly the reference list, and acknowledgements if you have them, after the report don’t have section numbers. Appendices need to be numbered separately.
* An *Introduction* should give a brief overview of the project and explain the aims and objectives of your work.
* Later sections will provide more details about previous work, how your objectives for your own work relates to this previous work, and the methods and techniques you have used to attain your objectives.
* If your product is a program, you need to give a section to saying what the program as built *actually does*.
* If your product is a program, you should give sections to your requirements analysis and to the design, separate from your account of what the system does.
* You need to give a section to your critical review. (Consider whether or not your discussion of your findings about your research questions, and your review of the conduct of your project ought to be separate sections.)
* You must ensure that a smooth flow is maintained between sections.
* Choose titles for sections and subsections that tell as much of the story as they reasonably can, without being too wordy.
	+ 1. Appendices

Your dissertation should tell a readable linear story, and your appendices should have everything in them that you ought to include in your project submission. Include any diagrams, pictures or tables that you need to support your story in your dissertation, in the places where they are referred to. You should only have a figure once in the dissertation, but you shouldn’t be afraid to repeat them in the appendices in order to have complete sets of things in one place.

* + 1. Paragraphs

Paragraphs should be used sensibly. A new train of argument requires a new paragraph. With long paragraphs the reader will have difficulty finding the salient points in the argument. Each paragraph contains a group of closely related sentences. Typically, the first sentence introduces the subject of the paragraph and the last sentence concludes it.

* + 1. English Language: Some Suggestions
* Although the length of sentences should be variable, most sentences should be kept short. An average of 12 words per sentence should work.
* Avoid contracted forms such as *“isn’t” “can’t”, “haven’t*.”
* Run the spell-checker to eliminate obvious spelling mistakes.
* Technical terms and abbreviations should be explained when they first appear.
* Provide a glossary and/or a list of symbols as an appendix if necessary.
* We recommend having the report checked by a native English speaker (or a more experienced writer) as it progresses.
* Have a look at the list of useful references on report writing (available from the library). They contain useful tips and guidance for preparing and writing a good dissertation.
* If you can, allow several days between writing a draft and proof-reading your own work.
	1. Abstract

The abstract is a brief summary of the paper or dissertation itself and is placed just before the introductory chapter. In general, dissertation abstracts are about 250 words in length and contain short statements summarising the project objectives, the method and techniques used to work towards these objectives, and the results achieved and conclusions made. It should give a reader sufficient information to decide whether or not to read the rest of the paper or dissertation.

The abstract is important, because it is this section of the dissertation that is generally stored in electronic format for future reference, and turns up in literature searches. Thus the abstract must accurately reflect the content of the dissertation and should be written in a clear and concise manner. It’s a summary, not an introduction or a teaser.

* 1. References

It is important that you distinguish your work from that of other people. Any previous work that has been used during the course of the project should be clearly referenced within the text. Any document cited in the text has to appear in the list of references. Any reference in the list of references must be cited in the text.

However it is good practice to list books, journal articles, and so on, that you have used to generally support your project in a Bibliography, separate from the reference list; these do not need to be cited in the text.

* + 1. Applying a standard reference format

For any scholarly work, *applying a standard reference format absolutely consistently* is extremely important for making your work look competent, as well as enabling people to use your reference list. Rewriting references into exactly the right format can get very tedious, but it is absolutely essential as failing to do so creates an impression of careless, shoddy, incompetent work.

* + 1. Choosing a standard reference format

If writing for publication, use the reference format of the journal (or whatever). If not, pick a standard reference format, and stick to it.

There are two main types of reference format: (a) Numbered references, where the references are listed and numbered in order of citation in the text, and are referred to in the text by their numbers. This has the advantage of brevity. (b) Name and date references, also called parenthetical references, where the references are listed alphabetically by the names of the authors and the year of publication, and are referred to in the text by the names of the authors and the year of publication. This has the advantage that the readers can often recognize the citations if they are familiar with the field, and find it easier to see when the same work is cited in different places.

DMU requires the use of the *Harvard Referencing System*. This is the most famous name and date referencing ‘system’. The trouble is that there is no such thing as ‘the’ Harvard System: there are a lot of guides that have slight variations on the rules. De Montfort University has its own flavour of ‘DMU-Harvard’ referencing, and DMU Library offers a guide to it at <http://www.library.dmu.ac.uk/Images/Selfstudy/Harvard.pdf> (accessed 5.10.2018). In practice, if you use a sensible name-and-date format absolutely consistently, no one at DMU will complain too loudly.

By far the most popular properly defined name and date referencing system is the ***American Psychological Association* format**, which is a little bit different from the most common variants of the Harvard System. This is the format we recommend using. Purdue University has a good guide to APA referencing at <https://owl.purdue.edu/owl/research_and_citation/> apa\_style/apa\_formatting\_and\_style\_guide/ (accessed 5.10.2018). The University of Southern Queensland also has a good guide to APA referencing at <http://www.usq.edu.au/library/referencing/apa-referencing-guide> (accessed 5.10.2018).

* + 1. Reference management software

It helps to use an automated reference generation tool to put references into the right format for you, as well as to keep track of papers you might want to look at and cite. There is a reference generator built into *MS Word 2013* and later, which works well, though you need to check the box labelled ‘show all bibliography fields’ to get at the volume number of journal articles. You can keep and import your own reference collection but not search from a large database.

DMU has an institutional subscription to ***RefWorks***, and DMU Library recommends it and provides support and courses on how to use it. It provides quick ways to import reference information into your personal collection and to put citations and references into your documents. Using it involves creating a *RefWorks* account using your DMU email address, and installing an add-in for MS Word or Google Docs. The DMU Library guide to using *RefWorks* at DMU is here: <http://libguides.library.dmu.ac.uk/Newrefworks/Welcome> (accessed 18.10.2018). The *Learn to Use RefWorks in Twenty Minutes* video guide is here: <https://www.youtube.com/playlist?list=PLyN7Mmvg_0of4d81CN6kZ5NrSuH5sv6iF>

There are other reference management systems. *Zotero* ([www.zotero.org](http://www.zotero.org)), a free open-source system supported by George Mason University, is a good choice.

* + 1. Citations in text

Indicate references in the text by showing the author’s name and the year of publication, in brackets at the appropriate point “… (Shneiderman, 2002)”. For two authors, give both names “… (Newell and Simon, 1972)”; for three or more, give the first author’s name followed by ‘et al’ “… (Jakobson et al, 1999).” APA Style wants three to five authors listed, rather than abbreviated to ‘et al’, but you can regard this as overkill – just be consistent. If you want to refer to something at a particular point in a text, include the page number if you can “… (Russell and Norvig, 2010, p. 1023)”.

If the authors’ names form part of the sentence, put the year in brackets after the names, like this: “Stahl (2011) claimed that…” If the sentence refers to the book or paper itself rather than the author, use the author name with the year in brackets “In Jakobson et al (1999), UML is used…” If the paper or the author isn’t referred to in the sentence, but is just the source of the assertion, then the name and year in brackets go at the end of the sentence or after the point they support. “Use cases form an essential part of the Unified Method (Jakobson et al, 1999).” Separate citations to works by the same author with commas, as in “… (Eckert, 1997, 2001).” Separate citations to works by different authors with semi-colons, thus “The cognitive dimensions framework can be used to analyse usability trade-offs (Green, 1989; Green and Petre, 1996).” Use “(n.d.)” if there is no publication date, but you shouldn’t use author and date referencing for the Bible, ancient classics, Shakespeare, etc, unless the edition matters.

To cite conversations and private messages such as letters and emails sent to you, write “personal communication” with the year. “Martin Stacey (personal communication, 2014) recommended using the APA reference format.” Personal communications should not appear in the reference list.

* + 1. References in the reference list

The list of references consists of all publications cited in the text, in alphabetical order by author and date. The references should have *hanging indentation* – all lines after the first should be indented a bit.

There are rules for a very wide range of types of publication: consult a guide.

Names of authors should be written *surname, comma, initials* (if possible, all the initials), *comma* (except for the last author), with an *ampersand* to separate the last author, followed by the *year of publication in brackets*, followed by a *dot*. You may put the authors in bold face if you wish, but this isn’t standard. Put “(Ed.).” or “(Eds.).” after the names for edited books.

**Newell, A. & Simon, H.A. (1972).**  …

Titles of books and names of journals should be in *italics*, with important words Capitalized – maintain the punctuation and capitalization they use in their titles. Harvard Style favours using some standard abbreviations for names of journals, for instance “Int J Product Development” “Phys. Rev.” but most publications using APA Style aren’t keen on this. Pick a policy and be consistent.

**Newell, A. & Simon, H.A. (1972).** *Human Information Processing* …

For **Books**, the *title* should be in italics followed by a *dot*, then *place-of-publication colon publisher dot*. (The place of publication should name the country or US state, except for major publishing cities like London, New York or Paris.)

**Newell, A. & Simon, H.A. (1972).** *Human Information Processing*. Englewood Cliffs, NJ: Prentice Hall.

For articles in journals, magazines, etc, or in conference proceedings, or chapters in edited books, the titles of the individual articles should only capitalize the first word and proper names, and not be in italics.

**Turing, A. (1936).** On computable numbers, with an application to the Entscheidungsproblem. …

For **papers in academic journals or other periodicals**, the *title of the paper* should be followed by a *dot*, then the *name of the publication in italics*, comma, the *volume number in italics*, comma, the *pages occupied by the paper, dot*. Only include the issue number within the volume (in brackets, not in italics) if the pages of the periodical are numbered by issue not by volume.

**Turing, A. (1936).** On computable numbers, with an application to the Entscheidungsproblem. *Proceedings of the London Mathematical Society, 2nd series*, 42, 230-265.

**Scruton, R. (1996).** The eclipse of listening. *The New Criterion, 15*(3), 5-13.

Include the *Digital Object Identifier* (DOI) if there is one, for any type of publication, at the end.

**Radford, M. (2001).** Aesthetic and religious awareness among pupils: Similarities and differences. *British Journal of Music Education, 18*, 151-159. doi:10.1017/s0265051701000249

References to **chapters in edited books** should include the editors of the book, but references to papers in **conference proceedings** generally don’t. Page numbers in books include “pp.” and are in brackets in APA style, but page numbers for journal articles don’t have “pp.”

**Treasure, D.C., Lemyre, P.N., Kuczka, K.K., & Standage, M. (2007).** Motivation in elite sport: A self-determination perspective. In M.S. Hagger & N.L. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 153-166). Champaign, IL: Human Kinetics.

**Eckert, C.M. & Stacey, M.K. (2001).** Dimensions of Communication in Design. In *Proceedings of the 13th International Conference on Engineering Design: Design Management – Process and Information Issues* (pp. 473-480). Glasgow: Professional Engineering Publishing.

For **online sources**, give the URL; include a retrieval date if the content is likely to change. Treat online publications in the same way as print publications. You don’t need to worry about web retrieval of documents that are published on paper. If the work has an author and publication date, treat it like a regular reference.

**Allen, D. (2004).** Dealing with your meeting notes. Retrieved from http://www.effectivemeetings.com/meetingbasics/notes.asp

If an organization acts as an author, treat it as an author.

**Australian Institute of Health and Welfare (2011).** Australia's health 2004. Retrieved from http://www.aihw.gov.au/publications/index.cfm/title/10014

* 1. Acknowledgements

It is a good practice to acknowledge help from individuals and organisations. This includes any members of staff or fellow students who provided help or support during the course of the project. For dissertations for research degrees, it is customary to put acknowledgements at the beginning before the report, with a heading that is unnumbered but formatted like a major section heading. For research publications, it is customary to put acknowledgements at the end, after the conclusions but before the references, with a header formatted like the reference list header.

* 1. Presentation

MSc dissertations will ordinarily be read in hardcopy form, whether the hardcopy is submitted by the Student or printed by the Supervisor, so should be prepared with that in mind.

Dissertations should be formatted one and a half or double-spaced, with reasonably large margins. Many supervisors prefer single-sided printing. The officially approved page layout is shown in Appendix VII. The Faculty will provide front and back covers in card to protect the paper dissertation. The following order of sections is recommended:

* Front Cover
* Title Page
* Abstract
* Acknowledgements
* Table of Contents
* List of Figures (where applicable)
* List of Tables (where applicable)
* List of Acronyms (where applicable)
* THE DISSERTATION ITSELF
* References (& Bibliography)
* Appendices
* Back Cover

The appendices may be bound separately if they are bulky. We recommend this for reports where understanding the technical details involves frequent reference to the appendices. However the report should include the figures needed to understand it in the places where they are needed, if these aren’t too numerous.

The detailed requirements for the report page layout is given in Appendix VII

* 1. Copyright Protection

All material which has an original copyright, including work of students which comprises part of a formal University project, should bear the following copyright marking:

*Copyright © 20xx De Montfort University. All rights reserved.*

* 1. Document Versioning under SVN

All projects ***may*** use the faculty’s version control server as the repository for the emerging project report and its accompanying documentation. Software development projects may already be using the repository for source code control. If you wish, you will be given your own repository to which you have read/write access and tutors have read access. Guidance about using your repository is detailed in a separate handout, *Version Control with SVN*.

1. The Viva Voce

In addition to the assessment of a written report, all projects will include a viva voce examination which may or may not include the demonstration of some project artefacts.

* 1. Purposes of the viva voce examination

The purposes of a viva voce are:

1. To establish that the submitted work is that of the Student
2. To give the Student the opportunity to explain and defend the direction, structure, methods, procedures, analysis and conclusions of the work
3. To explore with the Student any particular issues in the submitted work which require clarification or development
	1. The viva voce examination is mandatory

**The viva voce examination is a “must pass” element of the overall project assessment!**

If the viva voce examination is seriously unsatisfactory, the project will get an overall fail mark regardless of the quality of the product and report.

Not having a viva voce examination constitutes non-submission of the project.

* 1. Conducting the viva voce examination

The Student should agree the format that the viva voce will take with the Supervisor, and arrange a time and a place that suits the Supervisor and Second Reader.

It will typically include a presentation by the Student outlining the project and its results. If the project involved producing a program, the viva voce will include a demonstration of the program; the assessors will want to test the program and may wish to examine the code.

It may be possible to hold the viva voce examination remotely using Skype or other communication technology, if this is feasible and the Supervisor and Second Reader are willing to do this.

* 1. Preparing for the viva voce examination

You should expect the viva voce to last between 30 and 60 minutes, but in some circumstances this may be exceeded. Typically, a research project would have a 30-minute presentation followed by 20 minutes of questions, while a development project might have a more mixed format with a briefer presentation and a demonstration of the program. You should attend prepared to discuss any aspect of your work.

If you are giving a prepared presentation, which is expected for nearly all projects, you should prepare a PowerPoint presentation. If you would prefer to use a different approach, you should consult your supervisor in advance.

You should focus on *your* research questions, and what *you* have done and found, and what *your* system does, and say very little if anything about the structure of the project module, or general information about procedure and methodology unless you have done something non-standard.

You shouldn’t have too many words on a PowerPoint slide – these words should provide real content, not describe the structure of your talk. Talk to the assessors – don’t just read your slides unless you’re quoting something.

If you can, find a volunteer to listen to your presentation and give you feedback before the viva voce. Your friend may spot where you’re waffling or being vague, or need to pause. A good run-through will give you confidence, but you should remember that slick talking is a *very* minor aspect of your project assessment.

1. Project Assessment

There is a standard procedure for arriving at a final mark that can be released to the Student.

* 1. The Assessment Process

The Supervisor and Second Reader will each complete the standard marking form and arrive at an independent overall mark for the project, expressed as a percentage. This depends on the assessors’ considered academic judgement; projects are not and cannot be marked according to any kind of formula. The assessors then meet and agree a mark for the project – this need not be an average of the two marks – plus threshold values for the key assessment criteria.

In order to ensure that consistent marking standards are applied across the diverse range of computing-related MSc projects produced for IMAT 5314, some of the projects are *moderated*. This means that another academic assessor looks at the project report to see if the mark and its justification seem appropriate for the level of achievement of the deliverables and the report. Any queries the moderator has are then discussed with the Supervisor and Second Reader; this can occasionally result in a modification of the mark. Ordinarily, the projects that are moderated are all fails, plus borderline passes, very high marks, ones where the assessors ask for moderation, and a sample of others. Some projects will also be scrutinized by the External Examiners, who may sometimes suggest alterations to marks.

The mark only becomes official when it is ratified at a meeting of the Postgraduate Assessment Board, at which degrees are awarded. At this point, students can be notified of their results. Supervisors and other members of staff will not discuss marks with Students before they are officially released.

* 1. Arriving at a Mark: Judgement plus Threshold Requirements

The assessor (Supervisor or Second Reader) needs to do two things: (1) arrive at an overall mark for the project according to his or her considered academic judgement of what the project as a whole deserves; and (2) determine whether the project meets threshold standards for the award of a particular grade. The final mark is essentially a MIN function of these two outcomes.

The project will only get a *distinction* level mark (70 or more) if it is of distinction-quality overall, and will only get a *merit* level mark (60 or more) if it is of merit quality overall, and will only *pass* (50 or more) if it is of pass standard overall. However this isn’t enough.

The assessor needs to consider five key assessment criteria, and determine whether each of these aspects of work and its presentation in the dissertation is *Unsatisfactory*, or *Below Pass Standard*, or *Pass Quality*, or *Merit Quality*, or *Distinction Quality*, or *Outstanding*.

The five key assessment criteria are

* Project Framing
* Fact-finding and Literature Review
* Project Development (that is, the actual new work)
* Critical Review
* Dissertation and Documentation

In order for a project to achieve a *distinction* level mark (70 or more), ***all*** of these aspects of the assessment must be at least of Merit Quality. In order for a project to achieve a *merit* level mark (60 or more), ***all*** of these aspects of the assessment must be at least of Pass Standard. In order for a project to achieve a *pass* mark (50 or more), ***all*** of these aspects of the assessment must be at least Below Pass Standard, that is, better than Unsatisfactory.

In order for a project to pass, the viva must be better than Unsatisfactory (see Section 8).

* 1. Assessment Criteria

The assessment criteria are flexible, as projects are diverse and each needs to be judged on its own overall merits. However the assessors are expected to consider and comment on the following aspects, which are listed on the standard marking form (in Appendix VIII), together with the standard Requirements for Masters Degrees (as detailed in Appendix I). An indication of what we are looking for is given by the Criterion Reference Grid (on Blackboard)

The assessors are *not* required or expected to give an individual mark or any explicit weighting to these different aspects, and will only do so if they find it helpful for themselves.

**Comments on Project Framing**. This is how well the student has understood and described the nature of the problem tackled by the project and what the program or the research or other products should achieve, and formulated appropriate research questions.

**Comments on Fact-Finding and Literature Review**. This is the quality of the literature survey and fact-finding about aspects of the problem that sets the context for the Student’s own contribution. Some element of research is an essential requirement for all MSc projects, so it is essential that it is considered in the marking process (see section 7.4).

**Comments on Project Development**. This is the scope, sophistication and quality of the software system or other product or contribution, as well as the analysis and development work and research that went into it. This includes evidence of skills in critical analysis, design and research, and the choice and application of appropriate methodologies. This by far the most important aspect of the assessment.

**Comments on Critical Evaluation** of the project deliverables and project process. This is the quality and sophistication of the assessment of the strengths and weaknesses of the system, the research or other work, the answers to the research questions, and what went well or badly in the project or might have been done differently (see section 7.5).

**Comments on Dissertation and Documentation**. This is the quality of the dissertation itself, including how clearly and completely it explains the work and argues its points, the quality of the writing and presentation (see section 7.6), and how well referencing is done (see section 7.8), plus the quality, thoroughness and appropriateness of the documentation of the research, requirements analysis, system design, testing, and so on, presented in appendices to the report.

**Comments on Viva**. This is how well the Student presents, explains and defends the work, demonstrates understanding, and handles questions, at the viva voce examination.

**Comments on Project Management**. This is how well the Student has taken ownership of the project, managed his or her own work throughout the course of the project, including managing time and other resources, proactively organizing meetings with the Supervisor, keeping the Supervisor informed, managing relationships with other people when appropriate, and so on.

* 1. Audit Trail

It is essential that assessors provide adequate justification of the mark awarded for the project and an audit trail for the Postgraduate Assessment Board, External Examiners and possible appeals.

Assessors should therefore provide comments under each of the headings identified on the Project Mark Sheet (The "aspects" described above).

1. Distribution of Project Reports

Some students may wish to publish their MSc project reports or have them available to readers via the World Wide Web

* 1. Distribution by the student

De Montfort University will not discourage students’ efforts to make their project reports available, or to produce research publications based on their MSc project work, provided that the work conforms to appropriate standards of research ethics, does not violate agreements or reasonable expectations of confidentiality, and does not contain significant violations of copyright.

Students distributing their work themselves or publishing it need to ensure that they have obtained permission to reproduce any copyrighted material. Note that publishers’ policies differ enormously on when they charge fees for this; some publishers want to charge for reproductions of figures or diagrams from research papers whose authors would gladly give them for free.

* 1. Distribution by De Montfort University

The university would like to make some MSc project reports available to future MSc students, inexperienced supervisors, and other interested parties. It is important that these should be examples of good work. Showing examples of poor practice is usually an ineffective teaching method, and there is a danger that students will be harmed by treating examples of mediocre work as though they were examples of good work and following their example.

The Faculty of Computing Engineering and Media at De Montfort University may wish to select reports from good projects for distribution via the University’s document repository system, on an invitation-only basis. This requires the recommendation of the Supervisor and Second Marker, the approval of the MSc Project Module Coordinator, and the agreement of the Student.

Project reports selected for distribution internally may also be distributed externally using De Montfort University’s public document repository system, provided they pass a further institutional check that they meet appropriate standards of confidentiality and do not contain copyrighted material for which appropriate permissions have not been obtained. Students may, of course, approve their projects for internal distribution but not external distribution.

* 1. Original copies

You are very strongly advised to retain electronic copies of your work, and keep them safe. The Faculty of Computing Engineering and Media treats hardcopy dissertations as examination papers, and does not return them. Now that the Faculty relies on electronic submission and archiving it does not expect to have or keep hardcopy dissertations. Finding an electronic copy submitted to *Turnitin* might be possible, but would involve considerable effort.

1. Requirements of Masters Degrees

To avoid any possible ambiguity the following important extract is taken directly from the **Framework document for higher education qualifications in England, Wales and Northern Ireland** ([http://www.qaa.ac.uk/en/Publications/Documents/qualifications-frameworks.pdf dated October 2014](http://www.qaa.ac.uk/en/Publications/Documents/qualifications-frameworks.pdf%20dated%20October%202014), accessed September 2017. See also the QAA’s Master’s Degree Characteristics description at <http://www.qaa.ac.uk/en/Publications/Documents/Masters-Degree-Characteristics-15.pdf> dated September 2015, accessed September 2017)

*Master's degrees are awarded to students who have demonstrated:*

* *a systematic understanding of knowledge, and a critical awareness of current*

*problems and/or new insights, much of which is at, or informed by, the forefront*

*of their academic discipline, field of study or area of professional practice*

* *a comprehensive understanding of techniques applicable to their own research or*

*advanced scholarship*

* *originality in the application of knowledge, together with a practical*

*understanding of how established techniques of research and enquiry are used to*

*create and interpret knowledge in the discipline*

* *conceptual understanding that enables the student:*
* *to evaluate critically current research and advanced scholarship in the discipline*
* *to evaluate methodologies and develop critiques of them and, where appropriate,*

*to propose new hypotheses.*

*Typically, holders of the qualification will be able to:*

* *deal with complex issues both systematically and creatively, make sound*

*judgements in the absence of complete data, and communicate their conclusions*

*clearly to specialist and non-specialist audiences*

* *demonstrate self-direction and originality in tackling and solving problems,*

*and act autonomously in planning and implementing tasks at a professional or*

*equivalent level*

* *continue to advance their knowledge and understanding, and to develop new*

*skills to a high level.*

*And holders will have:*

* *the qualities and transferable skills necessary for employment requiring:*
* *the exercise of initiative and personal responsibility*
* *decision-making in complex and unpredictable situations*
* *the independent learning ability required for continuing professional*

*development.*

1. BCS Requirements for projects

Quoted from Section 2.5 of the BCS document ‘*Guidelines on Course Accreditation: Information for universities and colleges*’ dated May 2018.

**General project requirements**

An individual project is an expectation within undergraduate, integrated masters, and postgraduate masters programmes. Students must be provided with written guidance on all aspects of the project, including selection, conduct, supervision, milestones, format of the report and the criteria for assessment.

All projects should reflect the aims and learning outcomes which characterise the programme to which they contribute as set out in the programme specification.

**Project reports**

Projects must involve the production of a report which should include:

* elucidation of the problem and the objectives of the project
* an in-depth investigation of the context and literature, and where appropriate, other similar products (this section is likely to be emphasised less for an IEng project)
* where appropriate, a clear description of the stages of the life cycle undertaken
* where appropriate, a description of how verification and validation were applied at these stages
* where appropriate, a description of the use of tools to support the development process
* a critical appraisal of the project, indicating the rationale for any design/implementation decisions, lessons learnt during the course of the project, and evaluation (with hindsight) of the project outcome and the process of its production (including a review of the plan and any deviations from it)
* a description of any research hypothesis
* in the event that the individual work is part of a group enterprise, a clear indication of the part played by the author in achieving the goals of the project and its effectiveness
* references

**Undergraduate individual project requirements**

It is expected that within an undergraduate programme, students will undertake a major computing project, normally in their final year and normally as an individual activity, giving them the opportunity to demonstrate:

* their ability to apply practical and analytical skills present in the programme as a whole
* innovation and/or creativity
* synthesis of information, ideas and practices to provide a quality solution together with an evaluation of that solution
* that their project meets a real need in a wider context
* the ability to self-manage a significant piece of work
* critical self-evaluation of the process

In the event of this major activity being undertaken as part of a group enterprise, there is a requirement that the assessment is such that the individual contribution of each student is measured against all the above learning outcomes.

For accreditation for CITP or CEng, the individual project should be worth at least 30 credit points at level 6 or above. The project must be passed without compensation.

For accreditation for IEng the individual project should be worth at least 20 credit points at level 5 or above. The project must be passed without compensation.

**Postgraduate project requirements**

Projects at postgraduate level may be similar in scope to undergraduate projects but should reflect the ethos of advanced study and scholarship appropriate to a masters degree (whether generalist or specialist).

Postgraduate projects must give students the opportunity to demonstrate:

* a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of the specialist academic discipline
* a comprehensive understanding of techniques applicable to their own research or advanced scholarship
* originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline
* deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences
* demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level
* critical self-evaluation of the process

Generalist masters programme projects should be worth at least 30 credit points and be at least at undergraduate honours level. It is recognised that in practice a project on a masters programme is usually worth at least 60 credits at Level 7. The project must be passed without compensation.

**Notes for guidance on projects**

Projects must include the students undertaking practical work of some sort using computing/IT technology. This is most frequently achieved by the creation of an artefact as the focus for covering all or part of an implementation life-cycle. Dissertations based solely on literature review activity and/or user/market surveys are not acceptable.

1. BCS Code Of Conduct

**Taken from The Code of Conduct for BCS Members (approved 3 June 2015).**

The original document at <http://www.bcs.org/upload/pdf/conduct.pdf> gives definitions and stresses the obligation of BCS members to report breaches by other BCS members.

1. The Public Interest

You shall:

1. have due regard for public health, privacy, security and wellbeing of others and the environment.
2. have due regard for the legitimate rights of Third Parties\*.
3. conduct your professional activities without discrimination on the grounds of sex, sexual orientation, marital status, nationality, colour, race, ethnic origin, religion, age or disability, or of any other condition or requirement
4. promote equal access to the benefits of IT and seek to promote the inclusion of all sectors in society wherever opportunities arise.
5. **Professional Competence and Integrity**

You shall:

1. only undertake to do work or provide a service that is within your professional competence.
2. **NOT** claim any level of competence that you do not possess.
3. develop your professional knowledge, skills and competence on a continuing basis, maintaining awareness of technological developments, procedures, and standards that are relevant to your field.
4. ensure that you have the knowledge and understanding of Legislation\* and that you comply with such Legislation, in carrying out your professional responsibilities.
5. respect and value alternative viewpoints and, seek, accept and offer honest criticisms of work.
6. avoid injuring others, their property, reputation, or employment by false or malicious or negligent action or inaction.
7. reject and will not make any offer of bribery or unethical inducement.
8. **Duty to Relevant Authority**

You shall:

1. carry out your professional responsibilities with due care and diligence in accordance with the Relevant Authority’s requirements whilst exercising your professional judgement at all times.
2. seek to avoid any situation that may give rise to a conflict of interest between you and your Relevant Authority.
3. accept professional responsibility for your work and for the work of colleagues who are defined in a given context as working under your supervision.
4. **NOT** disclose or authorise to be disclosed, or use for personal gain or to benefit a third party, confidential information except with the permission of your Relevant Authority, or as required by Legislation.
5. **NOT** misrepresent or withhold information on the performance of products, systems or services (unless lawfully bound by a duty of confidentiality not to disclose such information), or take advantage of the lack of relevant knowledge or inexperience of others.

1. **Duty to the Profession**

You shall:

1. accept your personal duty to uphold the reputation of the profession and not take any action which could bring the profession into disrepute.
2. seek to improve professional standards through participation in their development, use and enforcement.
3. uphold the reputation and good standing of BCS, the Chartered Institute for IT.
4. act with integrity and respect in your professional relationships with all members of BCS and with members of other professions with whom you work in a professional capacity.
5. notify BCS if convicted of a criminal offence or upon becoming bankrupt or disqualified as a Company Director and in each case give details of the relevant jurisdiction.
6. encourage and support fellow members in their professional development.
7. Useful References

There are several books that discuss English writing style in general, as well as a few specifically on technical writing, and also development or research projects. The following is a short list of books available from the library, though maybe not in the latest editions.

**Mounsey, C.** (2002). *Essays and Dissertations*. Oxford, UK: Oxford University Press.

**Weyers, J.D.B. & McMillan, K.** (2011). *How to Write Dissertations & Project reports*, 2nd ed. Harlow, UK: Pearson Prentice Hall.

**Weyers, J.D.B. & McMillan, K.** (2011). *How to write Essays & Assignments*. Harlow, UK: Pearson Prentice Hall.

**Hughes, R. & Cotterell, M.** (2009). *Software Project Management*. London: McGraw-Hill.

**Rudestam, K.E. & Newton, R.R.** (2014). *Surviving Your Dissertation: A Comprehensive Guide to Content and Process*, 4th ed. Los Angeles: Sage.

**Creme, P. & Lea M.R.** (2008). *Writing at University: a guide for students*, 3rd ed. Milton Keynes, UK: Open University Press.

**Palmer, R.** (2002). *Write in Style: A Guide to Good English*, 2nd ed. London: Routledge.

**Walliman, N.S.R.** (2013). *Your Undergraduate Dissertation: The Essential Guide for Success*, 2nd ed. London: Sage.

**Weaver, P.** (2004). *Success in Your Project*. Harlow, UK: Pearson Education.

**Dawson, C.W.** (2009). *Projects in Computing and Information Systems: a Student’s Guide*. Harlow, UK: Pearson Education.

**Ricketts, I. W.** (1998). *Managing your Software Project*. London: Springer.

**Oates, B.J.** (2006). *Researching Information Systems and Computing*. London: Sage.

**O’Leary, Z.** (2009). *The Essential Guide to Doing Your Research Project*, 2nd ed. London: Sage.

**Cornford, T. & Smithson, S.** (2006). *Project Research in Information Systems*, 2nd ed. Basingstoke, UK: Palgrave MacMillan.

1. Dissertation Page Layout

 Boundaries of an A4 page

(Ref. The Self-study Pack: *Dissertation Preparation & Presentation*)

 15 mm

 40 mm

 15 mm

SPACE FOR TEXT AND ILLUSTRATIONS

 40 mm