



## **CTEC3451 Final Year Project Module Handbook**

**Level 6, 30 ETCs – Full Time**  
**De Montfort University, Leicester**

**Module Leader: Dr Hossein Malekmohamadi**

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This handbook is correct at the time of writing and may be subject to change. Throughout your studies, to ensure you have the most up to date information, you should always consult the online version of this handbook held on Blackboard.

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## 1. Welcome to the module

This module is quite likely to be the pinnacle of your undergraduate studies. One quarter of the time in your final year is allocated to it, in which you can work on a topic chosen in discussion between you and a supervisor. You have the opportunity to shape it and plan it to be the product of your studies that you will be most proud of. In job interviews, it can be a topic of discussion that makes you stand out in terms of enterprise and originality. With all this potential does come responsibility: *you* are in charge of your own progress on this. You have a project supervisor, supporting lectures, and general support from the module leader, but they cannot make you do the work: it's you who will need to plan it and develop it and complete it. We are looking forward to yet another year in which our students take on imaginative topics, produce exciting reports and surprising software that stir our curiosity. Let's help you make it happen!

### 1.1. Contact details of all module teaching staff

- **Project co-ordinator:** Dr Hossein Malekmohamadi. Gateway House 4.55, email: [hossein.malekmohamadi@dmu.ac.uk](mailto:hossein.malekmohamadi@dmu.ac.uk), phone extension 6182
- **Project supervisors:** most academic staff in the School of Computer Science and Informatics. Note that once you have a supervisor, you should be contacting them (rather than module leaders) in the first instance for any issues with your project.

## 2. Module specification

This is how the module is described in the university's teaching quality system, and most importantly it indicates what the module should achieve ("learning outcomes"). The main descriptions are given below.

**Prerequisites:** The project normally requires students to have undertaken successfully the requirements at level 5 and level 4 of their degree programme prior to commencing the project. The prior learning for each project, however, is dependent on the nature of that project. It is expected that students will choose their project topics, based on their individual course's requirements and with reference to their own prior learning.

The project provides students with the opportunity to carry out a significant piece of work involving critical analysis and reflection to provide an effective solution to a given technical and/or research-based problem. It enables students to apply and integrate previous material covered on the student's course as well as to extend the work covered on the course through research and self-learning. Students will be expected to demonstrate appropriate and proactive project management and written/verbal presentation skills throughout the period of the project. As well as analysing, designing, delivering and appraising a product of suitable quality, they will be expected to undertake, research, analyse, design, evaluate and report on some aspects of a subject explicitly allied to the project.

Some courses may have mandatory requirements that restrict the nature of project work in order to satisfy, for example, course validation conditions and/or the requirements of professional bodies such as the British Computer Society (BCS).

## 2.1. Learning outcomes

- Apply theoretical and practical concepts from the programme of study to the construction of a solution to a practical problem. (Initial and Final)
- Carry out research and analysis to support the project requirements. (Initial)
- Plan and self-manage the work. (Initial and Final)
- Assess the potential global impact of the work (Initial)
- Present the work using a report in which the process and product are described, analysed, and critically evaluated. (Final)
- Present and defend the work in a formal demonstration/Viva (Final)

## 2.2. Timeline

This includes deadline days both for the students and supervisors, as well as the timing of lectures supporting particular aspects of project work and deliverables.

Note that there are sessions listed here that are drop ins at CLaSS (noted as drop in).

September 2019	Project ideas list available on Blackboard
Week 1	Introduction to Development Project
Week 2	Lecture on Project Management
Week 4	Lecture on Literature Review (locating sources)
<b>Week 5: 1/11/2019</b>	<b>Submission of Project Start Forms</b>
Week 10	Q&A, Progress updates, meetings, ...
<b>Week 15: 10/01/2020</b>	<b>First Deliverable</b>
Week 21	Lecture on Feedback & Way Forward
Week 25	Lecture on Presentation Skills
<b>Week 31: 1/5/2020</b>	<b>Final deliverable</b>
<b>Weeks 32-33</b>	<b>Demonstration (Vivas)</b>

## 2.3. Assessments

The module mark is made up of *two* components:

- First Deliverable (25%)
- Final Deliverable (75%)

where each of those elements contribute towards your final mark. Each project submission will be assessed holistically on specific criteria which cover the report, the product, the management, and the demonstration. There are several means by which evidence for assessing project work may be gathered including but not limited to:

- Attendance at supervisory meetings and the outcomes of these meetings
- The written deliverable submissions, in the manner as detailed in the current student project handbook
- Demonstration (Viva)

An appropriate marking scheme will be available on the module Blackboard shell.

The project demonstration (Viva) is compulsory and non-attendance will normally result in a mark of zero for the project.

All of these will be marked by the supervisor, and then second marked by a second marker (who also attends the Viva). Because of the nature of this work, marking cannot be anonymous.

## **2.4. Reassessment**

Reassessment normally involves one of two processes:

- 1) If the ratified project mark is below 30%, by undertaking a new project during the following assessment cycle;
- 2) If the ratified project mark is between 30% and 39%, and subject to any recommendations from the project supervisor and/or module leader and/or the assessment board, an amendment to or enhancement of the existing work may be specified to be undertaken within the following reassessment period.

**Please note that in the first case whereby the student is required to undergo the entire project activity/assessment cycle with reference to a new project, this is a resit with attendance, which incurs a module fee that (the exact amount can be confirmed by the course administrator).**

## **3. Nature of Projects**

This module is for students on a BCS accredited course. Hence, students need to make sure that the correct elements of a development process as indicated in the BCS checklist have been met in their projects. BCS accredited courses are: Computer Science, Software Engineering, Computer Games Programming, Intelligent Systems (BSc & MComp), Computer Security, Digital Forensics.

**For your final year project, you need to remember that most people involved in your project's assessment (other than your supervisor) will only have your deliverables available to base their marks on, so having a full set of supporting documentation is crucial.**

A development project aims to produce software. It will still involve research: to further understand the application area, and to make a justified choice between alternative technologies and approaches (frameworks, libraries, programming languages, APIs, development models, design patterns, ...) to solve your problem.

For digital forensic students only, your project may need more research than development. It also contains more development than a pure research project. You are expected to build a “proof of concept” piece of software to illustrate or further explore the research area, and so the delivered project work cannot remain fully theoretical.

## **4. Early documents for all types of projects**

By the end of teaching week 5 you will need to submit the following documents, and these should be prepared as soon as possible (completed by you and signed off by your supervisor). You also need to submit them online through the relevant link by the end of teaching week 5. The deadline is 1/11/2019 at 15:00.

### **4.1. Project contract**

Your first deliverable at the beginning of the autumn term will be the Project Contract (also known as ‘Terms of Reference’).

Students should consult the **BCS** checklist before completing their project contract, as it includes eight conditions that the project contract should fulfil, such as

- The contract contains an elucidation of the problem, the objectives of the project and a risk analysis.
- The contract states that the project will include an in-depth investigation of the context and literature, and where appropriate, other similar products.
- The contract states that the final report will contain a clear description of the stages of the life cycle undertaken.
- The contract states that the final report will contain a description of how verification and validation were applied.
- The contract states that the report will contain a description of the use of tools to support the development process.
- The contract states that the final report will contain 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).
- The contract states that there will be a description of any research hypothesis.
- The contract states that all research will be fully referenced.

This forms a ‘contract’ between you, your supervisor and your proposer (if different from the supervisor). It states what you intend to do: what is the background to and scope of your project, and what are its aims and objectives. It provides a ‘yardstick’ against which your achievements at the end of the project can be assessed.

It is not easy to complete a suitable Project Contract; you will need to discuss it with your supervisor and may have to prepare several versions before it is finalised. More

information about the content of the Project Contract can be found in the Appendix and on the module Blackboard shell.

The Project Contract must be signed and dated by you and your supervisor. Keep the signed copy carefully. If a change in circumstances means that modifications have to be made to your Project Contract during the year, these should be agreed with your supervisor and proposer (where different from the supervisor) and carefully documented.

#### 4.2. Project plan

This is usually in the form of your product and sprint backlogs. To complete the plan, you will need to:

- Identify the tasks you intend to undertake and their order, remembering that some tasks can be undertaken in parallel;
- Allocate time for each task to be carried out.

You are likely to find it difficult to allocate time to each task, as you may not know what a realistic amount of time is. But you could work backwards from the deadline for project report hand-in: all tasks will need to be completed by then. You may find it helpful to do a critical path analysis. Allow some contingency for falling behind (you might get sick or have some unavoidable delays). Your supervisor will advise whether your initial plan looks realistic.

As you progress through your project you will need to update your plan for each meeting with your Supervisor. Use it to indicate what progress you have made by showing which tasks are complete and which are ongoing. Take it to every supervision meeting.

MS Project is available in all labs of Gateway House.

Remember that you start 'writing up' on day one, you accumulate documents throughout the project period and the final stage should ideally be a matter of tidying up and writing your introduction, conclusions, evaluation etc.



#### 4.3. Ethical review

It is a University requirement that every project undergoes an Ethical Review. This is to ensure the protection of the interests of any humans affected by research studies and to carefully consider any legal risks associated with the project. A client, end user, or research participant can be affected by:

- Collection of data directly from people (e.g. via interviews, surveys, questionnaires, observation);
- Collection of data about individuals whose identity can be detected from the data.

In addition, research may be at risk of involving illegal activities, activities at the margins of the law (e.g. software piracy, illegal downloads of music) 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/research, the procedures to be followed and the anticipated outcomes particularly in the 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 publication of findings;
- All participants are made aware of their freedom to withdraw consent and discontinue participation at any time;
- Appropriate documentation must be 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.

You should discuss with your supervisor whether your project will give rise to any ethical issues, and if so how they will be addressed.

A simplified form has been approved for the Ethical Review process on the Final Year Project; you will find this on the module Blackboard shell under 'Module Information/Module Forms. This form is to be completed and signed off by week 4. If necessary, it can be reviewed later; it may be that you decide later to involve some human subjects (for example, to carry out some user testing); or if you are undertaking a 'research' project you might not have completed your research design, and thus cannot identify what ethical issues may be involved, by week 4.

The possible outcomes of the Ethical Review are:

1. No ethical issues
2. Minor ethical issues which have been addressed and concerns resolved
3. Major ethical issues which have been addressed and concerns resolved
4. Ethical issues that have not been resolved/addressed

It is likely that for the majority of projects the outcome will be 1 or 2: in these cases, the Ethical Review form is completed accordingly, and signed off by the student and supervisor.



If the outcome is 3 or 4, the completed form must be forwarded to the Faculty Research Ethics committee.

You must keep a copy of the completed and signed Ethical Review form. If changes are made in the spring term, then the new form must be handed in as an appendix to your final report.

Further information about the University's Human Research Ethics policy can be found at: <http://www.dmu.ac.uk/research/ethics-and-governance/pg-and-research/human-research-ethics/technology/human-research-ethics.aspx>

Take care if you plan to use publicly available websites to support questionnaires, these may request data from respondents that is additional to the questions you have submitted and possibly in violation of your ethical review.

#### 4.4. Global checklist

As a student of DMU you will be aware of the high value placed on gaining an international experience through all the courses that we offer. As part of the process of enhancing your learning experience through global engagement, the international element of our undergraduate courses is now being assessed at every level. In the School of Computer Science and Informatics, the module which holds this assessment in the final year is the project module, which provides a natural forum for considering the wider aspects of your learning and demonstrable knowledge. Your project will include a Global Impact checklist.

The checklist can be found in the Forms and on the Blackboard shell.

### 5. Deliverables

Make sure to submit your deliverables by the deadline.

Also note that if your submission is successful, Turnitin will give you a submission ID. Make sure you click on the 'confirm' button. After this you should receive a confirmation email about your submission. **If you do not receive the email, that means you have not submitted, and you must go through the submission process again. The word and page limits are firm and there is no 10% buffer.**

#### 5.1. First Deliverable (25%)

This includes:

- a Literature Review
- the Requirements for the software you are building.
- current status of the project according to the submitted product and sprint backlogs

Turnitin submission links will be provided for all these documents; students must compile all into one single word or pdf file for submission. The timing of the deadline for the First Deliverable is such that you will receive a mark, and a constructive feedback on it. Students should mark their action plans as completed, on-going and not started. Supervisors also need to declare the status of their supervisee's projects as red, amber and green. Please refer to the rubric below as well as the rubric in the module information for more details.

First deliverable		Clear fail <30%	Marginal fail 30-39%	Bare pass 40-49%	Clear pass 50-59%	Very good 60-69%	Excellent 70-79%	Exceptional 80-89%	Outstanding >90%
Literature review (2000 words max excluding reference list) (20%)	Acknowledgements, length, spelling, grammar, written style, table of contents, page numbers, referencing etc.								
Functional requirements (20%)	Typically identify system users and write use cases or equivalent								
Indicative test plan (20%)	One page discussing the strategy and two pages of actual tests, e.g. test cases								
System design documentation (20%)	Two-three pages (indicative) e.g. ERD, UML, System architecture, UI design, etc								
Implementation report (300 words max on) (20%)	What the prototype demonstration includes e.g. front-end, back-end, etc, and then show this to your supervisor during 1st meeting of term 2)								

## 5.2. Final Deliverable (75%)

By the time you submit the Final Deliverable, you should also have agreed a date for the project viva, which should include a demonstration of the software you produced.

On the Final Deliverable deadline day, you should submit electronically:

- A final report, whose main body has a word count of no more than 8,000 words (This is your maximum budget which covers first page to the very last page of your report submitted to TurnItIn). It should include
  - Use Case Diagrams/Use Case Descriptions/Class diagrams/ER model/State transition diagrams
  - Story boards/Interface Designs
  - Design Documentation
  - A Test Plan
  - Critical evaluation of your product and your design choices
  - Appendices (e.g. further design documentation, test logs, RAG status of each phase/month, etc)
- Software

Detailed submission instructions (file types, how to submit files that are not checked by TurnItIn, etc) will appear on the Blackboard shell well before the deadline day. Please refer to the rubric below as well as the rubric in the module information for more details.

10% of your final deliverable marks have been dedicated to management meetings. Please see next subsection.

Final Deliverable			Clear fail <30%	Marginal fail 30-39%	Bare pass 40-49%	Clear pass 50-59%	Very good 60-69%	Excellent 70-79%	Exceptional 80-89%	Innovation >90%
<b>Main report (35%)</b>  Maximum budget is 8000 words. This includes from first page to the last page of your report submitted to Turnitin.	Presentation (5%)	Acknowledgements, length, spelling, grammar, written style, table of contents, page numbers, referencing etc.								
	Description of each of the major components (10%)	Clear explanation of the problem and objectives. Clear explanation of each of the major aspects of the product including a rationale for each of the design and implementation decisions.								
	Description of the development lifecycle (10%)	Clear evidence of the application of an appropriate software development methodology. Discussion of each of the major stages including how validation and verification were applied at each stage.								
	Critical analysis and reflection (10%)	What went wrong and what was right? What could be done differently next time? Appraisal of the product; analysis of approach taken (with hindsight); analysis of software/tools used.								
<b>*Viva (15%)</b>  Viva is mandatory. Students without Viva will receive 0% marks for their final submission out of 75% *Mandatory	Timing and delivery (5%)	Professional demonstration, filled the available time appropriately with time for questions								
	System coverage (5%)	All-important use cases covered								
	Question handling (5%)	The student is able to defend the system								
<b>The System (40%)</b>  You must show the examiners your developed software/demo plus pieces of codes that you have written.	Product (30%)	The product meets the objectives of the agreed project contract (completeness) and the requirements for FYP								
	Robustness and usability (10%)	Usability, robustness, and correctness.								
<b>Management meetings (10%)</b>	Project management meetings	1 Mark for each signed and approved management meeting (10 meetings)								

### 5.2.1 Management meetings

Your supervisor has been allocated 5 hours for face to face supervision, with additional time for reading drafts, marking deliverables, and providing feedback on all of those. In order to get the most out of supervision sessions, we suggest that before every supervision session, you

- Produce a summary of your progress since the last meeting: the work you have completed, the problems you have encountered and how you propose to solve them, etc. This should be documented on a Project Progress Report (available in the Appendix and on the Blackboard shell)
- Prepare a list of questions that you want to ask your supervisor, or issues about which you need some advice/guidance.
- Prepare a list of tasks you intend to work on between this and the next supervision meeting.

and during the supervision session, you

- Make sure you are clear about any feedback and advice you are given: ask for clarification, and consider taking notes.
- Agree with your supervisor the work you plan to tackle next.
- Agree the date of the next supervision meeting OR how contact will be made to agree the next meeting.

and after the supervision session, you

- Revise your project plan, if necessary.

- Plan your time until the next supervision meeting, considering your other commitments.
- Put in 10 hours per week work on your project, more if you have fallen behind.

You are required to keep 10 meeting notes approved and signed by the supervisors. Please scan and combine all these approved and signed meeting notes and add it to your final report.

## 6. Use of Blackboard VLE and TurnItIn

All essential information for the module is included in this module handbook, which is also available on Blackboard. Students should check their email regularly, and also the Blackboard shell for the module, for any relevant announcements. The Blackboard shell also includes several useful documents, such as

- The module specification
- All the module forms that you will need to complete throughout the year
- Marking grids for the first and second coursework component, per project type
- slides of the lectures supporting this module
- Advice provided by CLaSS for various of the activities and products in the module
- Suggested reading lists
- Advice to support you on making the most out of your supervisor, advice on the viva examination, and more.

All deliverables for the module should be submitted via TurnItIn links provided. As per the DMU assessment policy, there is a University requirement for written coursework to be checked for originality using TurnItIn where this is appropriate to the learning outcomes and assessment design. This includes both dissertations and major projects.

## 7. Academic Offences and the Academic Practice Officer

You are reminded that the work you submit must be your own, except where its original author is clearly referenced. Please refer to **Chapter 4** of the **General Regulations and Procedures Affecting Students**: <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/student-regulations.aspx> for a broader and more detailed description of good standards of academic practice, including a discussion of what does and does not constitute plagiarism. Please contact your supervisor or the module leaders if you remain uncertain about a specific issue related to this after reading the official guidance.

The **Faculty academic practice officer** is Dr Moira Carroll-Mayer (Gateway House 5.52, email: [mcm@dmu.ac.uk](mailto:mcm@dmu.ac.uk), phone extension 1551).

## 8. Module Specification

### De Montfort University Module Specification

Development Project

**Short Module Title:** Development Project

**Module Code:** CTEC3451 **Credit value:** 30.00 **Credit level:** Academic Level 6

**Department:** TY – Computer Science

**Semester/year-long:** Autumn&Spring Sessn,Autumn&Spring Sessn

**Details of accreditation by Professional, Statutory or Regulatory body:**

Fulfils the final year project requirement for a BCS accredited programme

**Module Leader:** Dr. Hossein Malekmohamadi

**Module Appraisers:**

**Module pre-requisites (module code/s only):**

NA

**Maximum student numbers on module (if applicable):** NA

**DMUGlobal Content Y/N:** Yes

**Module description (including outline content):**

The project provides students with the opportunity to carry out a significant piece of work that reflects the aims and outcomes of their specific programme. It provides students with the opportunity to demonstrate practical and analytical skills present in their programme of study; to work innovatively and creatively; to synthesise information, ideas, and practices to provide a quality solution, together with an evaluation of that solution. The project should meet some real need in a wider context.

\*

Students will demonstrate an ability to self-manage a significant piece of work and will undertake a self-evaluation of the process. \* Students will be expected to demonstrate appropriate and proactive project management and written/verbal presentation skills throughout the period of the project. As well as analysing, designing, delivering and appraising a product of suitable quality, they will be expected to undertake research, analysis, design, implementation, verification, evaluation and reporting pertinent to the project.

Indicative Content: The range of projects will be wide. Projects are obtained from a variety of sources including internal academic proposals, external organisation suggestions, and a number from students themselves.

The deliverables will include:

1. A main report which will 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
  - 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 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
- references
2. A set of appendices that are referred to within the main report, and which contain the substantive work on the project, including product deliverables, such as requirements and design specifications and other project documents (project contract, informed consent, ethics review form etc.).
  3. A product demonstration shortly after the submission of the main report

### Learning outcomes:

1. Apply theoretical and practical concepts from the programme of study to the construction of a solution to a practical problem. (Initial and Final)
2. Carry out research and analysis to support the project requirements. (Initial)
3. Plan and self-manage the work. (Initial and Final)
4. Assess the potential global impact of the work (Initial)
5. Present the work using a report in which the process and product are described, analysed, and critically evaluated. (Final)
6. Present and defend the work in a formal demonstration (Final)

### Assessment

Anonymous marking exemption codes: 1: Individually distinct work, 2: Reflection on development of own work 3: Presentation 4: individually negotiated work 5: work placement/experience/assessment

Type of assessment	Duration or Volume?	Assessment weighting %	Final assessment Y/N	Minimum threshold mark %	Essential component Y/N	Anonymously marked Y/N
Initial submission		25	N	0	N	OPTO1
Final submission		75	Y	0	N	OPTO1

**Assessment Notes:**

Each project submission will be assessed holistically on specific criteria which cover the report, the product, the management, and the demonstration. There are several means by which evidence for assessing project work may be gathered including but not limited to

- Attendance at supervisory meetings and the outcomes of these meetings
- The written deliverable submissions, in the manner as detailed in the current student project handbook
- Demonstration

An appropriate marking scheme will be available on the module Blackboard shell.

The project demonstration is compulsory, and non-attendance will normally result in a mark of zero for the project.

**Reassessment:**

Reassessment normally involves one of two processes:

- 3) If the ratified project mark is below 30%, by undertaking a new project during the following assessment cycle;
- 4) If the ratified project mark is between 30% and 39%, and subject to any recommendations from the project supervisor and/or module leader and/or the assessment board, an amendment to or enhancement of the existing work may be specified to be undertaken within the following reassessment period.

**Expected methods of delivery:**

The project is primarily self-directed with guidance and support from an assigned supervisor. Project skills sessions will normally be provided to give students the necessary pre-requisite knowledge and skills for the project that are not covered elsewhere in the taught programme. A project Blackboard shell is available as a resource for students, which contains all the necessary project documents/forms, the project calendar, project guidance notes, the list of available projects and supervisor allocations, deadline information, lecture notes etc.

A demonstration is given by the student to their supervisor and second reader towards the end of the module. This enables students to show their understanding of the findings of their work, and to defend what they have done and how they have done it.

Lecture: 5

Supervisor meetings: 5

Self-study: 290