MA3990 REQUIREMENTS GUIDE

General Information

The project in Level 3 is an extended piece of individual work, carried out under the general guidance of a member of staff acting as supervisor. It constitutes two-ninths (22%) of the overall load for the final degree (40 Level 3 credits), and is a *core* requirement for the award of a classified degree (a minimum of a D- grade is required for an Honours degree).

During the development and execution of the work, it is intended that the equivalent of two good days per week should be devoted to it. Following the University guidelines on the working week, 40 credits on average represent about 400 hours. The project is over by Easter, that is, after 24 teaching weeks!

You should maintain close contact with your supervisor throughout; for example, it is expected of you to arrange regular meetings. In the event of your supervisor being absent for an extended period, for example due to illness, the Department will provide a substitute supervisor. Apart from such circumstances, it will not normally be possible for a student to change supervisor (or to change project topic) once the work has started. This is because projects usually involve specialised staff expertise which is not easily duplicated; also, too much time would be lost in making any change.

Some projects are supervised by members of staff in other schools (particularly in the Business School). These notes do not apply to such projects. Procedures might differ between schools.

Some students undertake projects based on work carried out in industry. Permission to do so must be obtained from the company. Confidentiality can be assured if necessary. The company should be provided with a copy of the project report. The nature of the project should be discussed carefully with the university supervisor before embarking on it.

Choosing a Project

To assist students in selecting project topics, a list of suggestions is provided at the start of Level 3. You may also find it helpful to consult samples of previous years' project reports that are available in the General Office. The list of suggested topics is not to be regarded as exhaustive. *Students are free to suggest other topics and to discuss possibilities with members of staff.* Any student doing so must ensure that a member of staff is willing to supervise the suggested work and considers that the work is suitable. The list will not normally include information about possible projects supervised by members of staff in other schools; students who wish to undertake such projects must approach the respective other schools directly and consult the Project Co-ordinators.

Background and Project Plan

At the beginning of Week 9 (Monday, 20 November 2017) you will be required to submit a 10-page A4 document containing background information as well as the draft work plan for the project accompanied by a Gantt chart (this can be used in the critical discussion in the final submission). The requirements for typesetting your submission are the same as specified in the "Writing-up Guidelines" below. You will receive provisional grades and feedback from your supervisor before the end of the first term. The feedback represents an important early gauge of your progress.

Oral Presentations

1. In week 17 (**15-19 January 2018**) you will give a 15-minute progress report presentation (***not assessed***) to your supervisor and a small student audience (typically all students working under the guidance of the same supervisor). In this presentation you will be asked to describe the background to the project, its objectives and methods, the current "state of play", and also to answer questions from the audience. You will receive feedback on this presentation that will aid you in implementing the rest of the project, and in preparing the final (assessed) presentation at the end of the year.

2. In week 30 (**16-20 April 2018**) you must give a 20-minute ***assessed*** presentation (10-minute talk followed by questions from the examiners). Each session will comprise several talks, broadly in the same subject area. The audience will be the markers, the students giving the talks, and others invited at the discretion of the Department.

Final Write-Up Submission

Department of Mathematics requires that written Final Year Project submission should have a **maximum length** of **70 A4 single sided pages**, counting the title page, acknowledgements, etc. In addition, you must submit **all** relevant supporting material such as computer programs (with a clear statement of authorship) and/or data (enabling markers to test the various aspects of numerical work, authorship, etc.). Students who submit more than 70 pages will be penalised by 1 mark for every page over the limit. If in danger of submitting a project that is too long, you should consider what the most important themes of your project are, emphasise these, and condense or remove less important material. Also, 70 pages is a maximum, not a requirement: a shorter, but snappier, project is better. Your project supervisor will be able to advise you.

The submission DEADLINE of the project report is 3:30pm Monday 26 March 2018.

Please note that NO ALLOWANCE will be given for any delays or breakdowns in computing, word-processing or printing facilities; students are expected to engage in proper time-management of their project work, which includes leaving sufficient time to cover any emergencies of this sort.

The following PENALTIES FOR LATE SUBMISSION will be uniformly applied in the absence of relevant mitigating circumstances accepted by the Department:

Up to 48 hours late	Grade capped at D-;
Between 48 hours and 5 working days late	Graded as Non Submission (NS);
More than 5 working days late	Submission not normally accepted for marking.

All submissions will be done on-line. Further instructions will be communicated in due time.

Library and database use training

During the autumn term you will be **required** to attend presentations and undergo training in proper rules of referencing and the use of library resources, including the use of financial databases.

Writing-Up Guidelines

The presentation of the report is largely a matter for the student's discretion, but good presentation is explicitly rewarded in the marking scheme. Students must ensure that sufficient time is available to complete the work and prepare the report. It is usually advisable to *complete most of the development work by mid-February* so as to leave ample time for the final write-up.

Although the report must be submitted on-line, it should be prepared in a form suitable for printing (pdf or MS word). In particular, it must be optimised for A4 sized paper, using 1 ½ line spacing and type face 12 point in either Times New Roman or Arial fonts. Appropriate margins must be left at the top and bottom (at least 15 mm) and at both edges of all pages (at least 25 mm).

The opening pages must include a title page, a list of contents with page numbers, and an abstract of about 300 words (you may also include an optional acknowledgements page). These pages should be numbered using Roman numbering. The title page must include the project title; the student's name and course; the full name of your Department ("Department of Mathematics, College of Engineering, Design and Physical Sciences, Brunel University"); the supervisor's name (and department/college, if different); and the year of submission.

The main body of the text, references, appendices etc. must be numbered normally. Chapter and section headings must be distinguished in a larger font and numbered using a decimal system e.g.

3. Development of ...

3.1 Previous results.

Figures must be numbered, have captions and be referenced if they have not been produced by you (e.g., downloaded or scanned), or are the same graphs of results or functions, etc., as in your sources.

Referencing

All references (textbook, papers, websites etc.) must be clearly indicated in the text, and their list set out at the end of the main body of the report, in a standard and consistent manner used in textbooks and/or research papers. References must be precise, e.g., address and date when accessed for a website, or name of the author, publishing data and page if referencing a book, etc., so that interested parties can find the information without effort. In particular, it is important to reference prior results and information properly, so that readers unfamiliar with the subject know where to look for the statement of (non obvious) facts you claim to be true. This applies both for mathematical and non mathematical information, results and even calculations. **Good referencing is also an essential part of your demonstration that you understand the subject matter of your project!**

REFERENCING MUST LEAVE THE READER IN NO DOUBT ABOUT WHAT CONSITUTES YOUR OWN WORK (OR YOUR `SPIN` ON THE MATERIAL) AND WHAT HAS BEEN TAKEN FROM YOUR SOURCES.

ASSESSMENT GUIDELINES

Each project report is marked independently by the supervisor and by another member of staff. Further moderation is carried out by review panels to ensure uniformity of the marking standards.

The following expands and elaborates each category contained in the marking scheme. The precise Assessment Criteria and Marking Descriptors are given in a separate document.

- ***Background and Project Plan*** ***10%***

This document should contain a clear account of the project's background and motivation, a detailed statement of its objectives, and a work plan setting out how the objectives will be achieved. The whole document is required to be not more than 10 pages of word-processed text, to be submitted on **20 November 2017.** You must demonstrate that you have a sound grasp of the background theories and techniques you need. The work plan should be realistic and sensible, and must include a Gantt chart.

The introductory chapter(s) should be written in a manner appropriate for a mathematics graduate who has not necessarily taken modules in the project's topic area(s). In particular, it is important to reference prior results and information properly, so that readers unfamiliar with the subject know where to look for the statement of facts you claim to be true (for both mathematical and non-mathematical information and results). More detailed guidance on referencing is given above in this document.

The supervisor and another member of staff will mark this report on background materials and will inform the student of his/her grade by the end of the first term. The supervisor may give comments, suggestions and feedback to the student on how the background can be further improved and expanded for use in the final submission.

- ***Write-up Submission*** ***70%***

  - *Background and Technical Content (10+30%)*

Background (10%) and technical content (30%) is split to make more explicit how `background` and `new` material should be considered. You must demonstrate that you have a sound grasp of the background theory; in particular, you should ensure that the background material is presented in a logical and appropriate way for the purposes of the project by making objective judgments about what to include and what to omit. We refer to the requirements of the November submission about the starting level of the background text.

Technical content is the main body of the report, and means any or all of the following as appropriate: description and discussion of the project aims; description and discussion of the analytical and/or numerical methods employed in the execution of the project, software development, data collection and analysis; description, discussion, and interpretation of the results.

- *Conclusions & Recommendations (10%)*

In the sections on *Conclusions* and *Recommendations* you should provide an extended summary and undertake an in-depth analysis of the results of your work. You should demonstrate that you have reflected on what you have achieved and have critically reviewed the strengths and the weaknesses of your project. You should also assess your final submission on the basis of your draft plan: have your goals been expanded, modified, or scaled down in the course of the work on the project? If so, why?

When formulating your recommendations you need to think carefully and deeply about realistic directions for further study. For instance, think about answers to the following questions: given the results of my project and two or three more months of work, what more could I attempt or do? What suggestions can I make for a project next year? It is important that you link what you have done to the future work suggested, and to keep your suggestions realistic.

- *Written Presentation (20%)*

In this category, clarity of the exposition and correctness of your use of English, the quality of referencing, and the quality of the layout and word processing are assessed. You are expected to produce a well-structured report written in clear and concise English. Attention should be paid to the way the write-up is organised into sections, chapters and appendices, as well as the separation of the text into paragraphs. Good word processing and proper use of illustrations contribute to the clarity of the report. If your project involves writing computer code, sections of your code may be included as examples, but they are not a substitute for the proper description of the algorithms underlying the code. If your report contains more than a few mathematical formulae, you may consider using the typesetting package LaTeX.

- ***(Assessed) Oral Presentation*** ***15%***

This is required to be a talk of about 10 minutes (using PowerPoint or similar software). Following the talk, the examiners will ask you questions about all aspects of your project. The questioning may last up to 10 minutes. The examining panel will consist of your supervisor and other members of staff.

The talk should comprise a clear statement of the project's aims, a description of the methods used to achieve these aims, and a description of the results with conclusions and critical evaluation. Marks will be awarded for the content, logic and clarity of the presentation. Your responses to questions will be marked according to the demonstrated degree of mastery and the depth of understanding of the project's subject matter and methods. Marks and feedback will be given to the students by their supervisors by the end of that week.

- ***Assessment of Initiative*** ***5%***

This mark is reserved for assessing the extent, soundness and relevance of your contributions to the project beyond the suggestions and explicit guidance of your supervisor. Examples of such contributions are original ideas which constructively contributed to planning and execution of your project, relevant sources of information identified by you, etc. Such contributions are expected of you, and their extent and quality will be assessed by your supervisor.