

School of Mathematics

Module MA4492 — Project

2010-11

(SS Mathematics, SS Theoretical Physics, SS Two-subject Moderatorship)

Lecturer: Professor Richard Timoney

Requirements/prerequisites: Students must find a member of staff in College willing to supervise their work and must agree the arrangements with the course coordinator as outlined in the rules below. Please consult the coordinator for suggestions about suitable topics and supervisors.

Duration: 10 credits

Number of lectures per week:

Assessment: Written thesis (which should normally exceed 40 pages) and viva presentation

End-of-year Examination:

Description: Rules adopted for Senior Sophister Projects by the School of Mathematics.

1. Basic Rules

Senior Sophister students may choose to take a project/thesis module (MA4492), provided that the agreement of the MA4492 module coordinator is explicitly given and that a member of staff is willing to supervise the work.

The basic standard of the work should correspond to a 10 credits of advanced level modules in depth and difficulty. Ideally the topic should touch on something in the recent research literature (paper in a journal or a preprint) or involve a novel implementation or calculation.

A written thesis must be submitted and the students concerned will also be asked to make an oral presentation of their work. Where relevant, any computer source code should be submitted. The external examiner will assess the marking of the projects along with examination scripts.

The Chairman of the School of Mathematics will appoint a module MA4492 coordinator for each academic year.

Students and their project/thesis supervisors should arrange to meet on a regular basis to discuss the progress of the work.

2. Deadlines

Work on the project must commence before the second week of Michaelmas term in the Senior Sophister year and the agreement of the MA4492 module coordinator should be obtained by this time. Students may opt to discontinue the project before the end of Michaelmas term and change to a regular (advanced) course.

The supervisor of the project/thesis should warn the student during Michaelmas term if the work is not proceeding satisfactorily.

Theses/Projects should be completed and submitted three weeks before the end of Hilary term and subject to a subsequent viva voce presentation held before the end of Hilary term.

Theses must be submitted to the module MA4992 coordinator who will give each student a receipt. The coordinator will keep a copy receipt counter-signed by the student and will

arrange for the thesis to be examined (normally by the supervisor and one other member of staff). Each thesis must include a statement signed by the student that the thesis is their own work except where due citations are given.

3. Marking Criteria

Theses/projects should be marked according to the following criteria

Marks (fill in $p\%$ column (i) or (ii) and compute weighted sum)

(i) <i>Reading type project</i>				(ii) <i>Implementation type</i>		
$w \times p$	weight w	$p\%$		$p\%$	weight w	$w \times p$
	0.10		Oral presentation		0.10	
	0.05		Bibliography		0.05	
	0.20		Clarity of exposition and style of writing		0.20	
	0.30		Understanding of the material	Understanding of the problem and the background	0.25	
	0.25		Difficulty of the topic	Appropriate research method?	0.15	
	0.10		Originality (students own approach to topic)	Originality and difficulty of the problem and progress	0.25	
← Total %				Total % →		

Here are some of the considerations that will be used by the examiners in arriving at the marks.

1. Oral presentation.

Did the student make a comprehensible presentation which summarised adequately their main achievements? Used the time available well? Did answers to any questions show mastery of the material?

2. Bibliography.

Is it there? Is it formatted in a recognisable style used by journals in the field (with author names, source [journal or publisher], date, pages)? Is it adequate in coverage?

3. Clarity of exposition and style of writing.

Is there clarity and precision in the explanations given? Is there a clear development of the ideas? Is the terminology clearly laid out?

4. Understanding of the material | Understanding of the problem and the background

Are the ideas explained and developed in a way that makes it clear that the student has understood them?

5. Difficulty of the topic | Appropriate research method?

(i) Difficulty: is this a challenging topic for the student as compared to the standard of sophister modules? Has the student made contact with recent published literature?

(ii) Method: has the student gone about the project in a sensible way? Modified strategy in the light of early results or difficulties encountered?

6. Originality

In case (i), can you see the students own viewpoint? In case (ii), did the student succeed and was it a substantial accomplishment?

4. Guidelines

Thesis

Students should bear in mind the following when writing up their work.

- The account should be in the style of a scientific thesis (a mathematical one, perhaps an expository one); understandable by a mathematician or theoretical physicist (or statistician or computer scientist) who may not be in the same field;
- So should have title, your name as the author, chapters or sections of content and a bibliography.
- Should convey what you have done, as well as you can in a pedagogical style, and should include discussion of background material you had to master and any difficulties encountered.

Start with an abstract, then an overall summary and then some background.

- We expect an amount of effort and sophistication equivalent to a full year $5 + 5 = 10$ credit course. Does your write-up show that? It should also have enough content to show that (and 40 pages is suggested as a minimum length).
- Don't transcribe stuff. If you find a perfect explanation of something, it is probably best to refer to it (if it is long anyway). If you reproduce an explanation in the literature with your own slant or more explanations of the steps, this is not a problem. You should cite the sources of things you use.

October 19, 2010