College of Science

School of Mathematics and Physics

MTH1007
Professional skills and group Study Handbook

2023/2024

15 Credit Module

Module teaching team
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The information contained in the handbook is correct at the time of publication. However, the University reserves the right to change its regulations and processes from time to time as this becomes necessary. Any changes will follow the protocols laid down in the University regulations, and interested parties informed accordingly.

September 2023

Module Synopsis

The course provides the students with an opportunity to gain a variety of transferable skills, allowing them to communicate scientific ideas via a variety of media, work in groups, manage and plan projects, and keep a record of work. The students will be developing an understanding of general and specialised databases, their uses and searches. In addition, the students will learn to use referencing appropriate to the subject studies. The students will also be learning a set of professionally relevant IT skills. The group study aims to develop the student skills in team-working around investigating a topic from literature. The students will assume administrative roles within the team and work towards common aims and objectives.

Delivery plan and timetable

CW#_R coursework release date.
CW#_D coursework submission date and time.
PT#_R Python test

Date	Description	Hrs	Assessments (S = Summative)	Summary of session content	Lead Staff involved
25/09/2023	Week 1	2+2		**F2F**: Introduction to the module **F2F:** Career and employability talk part 1. **Asynchronous**: tasks to complete.	Manuela Mura Beth Chafik
02/10/2023	Week 2	2+2		**F2F**: Career and employability talk part 2. **F2F**: Plagiarism **Asynchronous**: tasks to complete on excel and word.	Manuela Mura, Beth Chafik
10/10/2023	Week 3	2+2		**F2F**: Meet the assistant librarian and Library. introduction. **F2F**: Latex introduction and overview. **Asynchronous**: tasks to complete on Latex	Manuela Mura
16/10/2023	Week 4	2+2	CW1_R (17/10)	**F2F**: Legal and ethical issues in scientific practice. **F2F**: Latex practice **Asynchronous**: tasks to complete on Latex	Manuela Mura
23/10/2023	Week 5	2+2	CW2_R 24/10/23 CW1_D 24/10/23	**F2F**: Career and employability talk 3 **F2F**: Python introduction and overview **Asynchronous**: tasks to complete on python	Manuela Mura Beth Chafik
30/10/2023	Week 6	2+2	CW3_R 31/10/23 CW2_D 31/10/23	**F2F**: Python practice **F2F**: Legal and ethical issues in scientific practice. **Asynchronous**: Tasks to complete on Python	Manuela Mura

Physics students

06/11/2023	Week 7	1		Overview and introduction Allocation of the group study topics, Formalisation of officer roles	Manuela Mura
13/11/2023	Week 8	1	CW3_D(17/11/23)	Work on the project-Meeting with supervisor	Meet supervisor
20/11/2022	Week 9	1		Work on the project-Meeting with supervisor	Meet supervisor
27/11/2022	Week 10	1		Work on the project-Meeting with supervisor	Meet supervisor
04/12/2022	Week 11	1		Work on the project-Meeting with supervisor	Meet supervisor
11/12/2022	Week 12	1		Work on the project-Meeting with supervisor	Meet supervisor
Week 13-14			Vacation		
08/01/2024	Week 15		Presentation 08/01 Report submission 12/01	Presentation and report deadline	

Mathematics, Mathematics and Physics Students

29/01/2024	Week 19	1		Overview and introduction Allocation of the group study topics, Formalisation of officer roles Library talk	Manuela Mura
05/02/2024	Week 20	1		Work on the project-Meeting with supervisor	Meet supervisor
12/02/2024	Week 21	1		Work on the project-Meeting with supervisor	Meet supervisor
19/02/2024	Week 22	1		Work on the project-Meeting with supervisor	Meet supervisor
26/02/2024	Week 23	1		Work on the project-Meeting with supervisor	Meet supervisor
04/03/2024	Week 24	1		Work on the project-Meeting with supervisor	Meet supervisor
11/03/2024	Week 25	1		Work on the project-Meeting with supervisor	Meet supervisor
18/03/2024	Week 26		Final assessment Presentation 18/03	Presentation and report deadline	Manuela Mura/ Evgeny Khrukho

Learning outcomes

LO1 Deliver a simple team product in science related to your programme of study while working as a team member towards common aims and objectives, meeting the group's self-imposed deadlines.
LO2 Use appropriate software in areas such as preparation of documents, information searchers, numerical calculations and the manipulation and presentation of scientific data.
LO3 Identify main legal and ethical issues in scientific practice.
LO4 Communicate scientific information related to your programme of study effectively by means of a written document and presentation.

Learning and Teaching Strategy/Methods

Professional skills will be introduced briefly using a lecture format combined with some on-line material. Databases, reference manager and other relevant IT packages will be explored through exercises in computer-based workshops. The skills will be put into practice in the Group Study, during which students work in groups to investigate a topic from literature. They take on roles of Chairman and other officers, and set targets for individual group members. Groups are expected to manage their own processes, and to hold regular weekly meetings both with and without their supervisor.

Assessment

The module will be assessed through two composite portfolios: one dedicated to the professional skills component of the module and another to the group study component. The group study component portfolio includes assessment of the work planning, conducting, team working as well as presenting the results in the written and oral forms.

Assessment Method	Weighting (%)	Learning Outcome(s) tested	Group Work
Portfolio	50	LO2, LO3	No
Portfolio	50	LO1, LO4	Yes

Portfolio 1: Assessment

Assessment	
CW1: Latex coursework	20%
CW2: Python test	15%
CW3: Ethical coursework	15%

Part 2: Group Study Manual and instructions

Students will work in teams of 4 to 6 and undertake a combination of library and Internet research with the aim of writing an in-depth report and giving a group presentation of their results.

Each group will choose a chairperson whose task it is to co-ordinate the work of the group each of whom will have other defined roles.

- **Chairperson (manage the group activity)**
- **Secretary (take the minutes and organise internal deadlines)**
- **Report coordinator (check the manual format and submit the report)**
- **Presentation coordinator (check the presentation format and submit the presentation)**
- **Research coordinator (search the reading list and sources).**
- **Other officers as required by group.**

Each group will hold a weekly formal meeting attended by the Group supervisor. The chairperson and secretary will prepare an agenda before each meeting and minutes of each meeting will be produced to be included as an appendix of the group report. These will be taken as evidence of the work done and effective operation of the group and will therefore contribute to the assessment of the module.

Study Time:
- 1 hour group meeting with Supervisor per week.
- Additional time for private and group study as required.
- It is expected that students spend 75 hours in total per module, including all in-class hours, presentations, etc. Consequently, each group member should expect to spend approximately 10 hours per week on the project.

The project to be studied this year are circulated on a separate sheet.

The first task of each group is, through library research and discussion, to define the areas of investigation under the theme title. Once the main structure of the investigation has been agreed, tasks are to be allocated to individual. **Each group member should take responsibility for an individual chapter in the report.**

It is likely that the most up-to-date information is not in printed form on the library shelves, and students will be expected to be resourceful in finding suitable material through computer search, inter-library loans and the Internet. You may need to acquire information from companies and organisations. Suitably drafted letters can be written on department headed notepaper and sent to company public relations or information officers etc.

Students **are** expected to:

- Contribute to the group effort as a whole and be mutually supportive. For example, if you come across sources of information that you know will be of assistance to another group member, pass these on.
- Turn up to group meetings without fail.
- Meet all the deadlines agreed upon by the group.
- As an individual, take on responsibility for a specific area of the investigation.
- Contribute to the group report and presentation.
- Take on an administrative role from the list above.
- Spend about 10 hours per week working on the project.

Your approach should concentrate on the scientific themes posed by the chosen title and not on the political or economical issues. You should ensure that your report is written as a coherent group report containing analysis and conclusions that are a group effort.

The final allocation of marks takes account of evidence of group effort, cooperation, and individual effort. Evidence of the group work must be evident in the report, the group presentation and the day-to-day operation of the group (reported in the minutes). Finally each member of the Guidelines for peer assessment will be discussed nearer the time and are included in the Appendix, together with the forms for all aspects of the Group Study assessment.

Resolving conflicts

Overview:

The Group Project is intended to teach you how to work well in a team. Almost every career involves a significant amount of teamwork. Perhaps the most important parts of learning to work in a team are learning how to resolve conflicts and learning how to deal with team members whose contributions towards the team's goals are inadequate.

It is important to note that, although you will be scored individually for your chapter in the final report, part of your score depends on communal parts of your report. Consequently, your entire group is responsible for the report. This means that if someone in your group is not pulling their weight, the rest of the group must increase their efforts to compensate. You can use the Peer Assessment to reduce the score of team members who did not contribute as much to the project as other team members, but your first priority should be the successful completion of the report.

When assigning roles, it is important that you build in some redundancy, so that the absence or failure of one team member can be compensated for. It is also important to find out early if someone is underperforming.

Some common scenarios to plan for:

- Someone who is responsible for writing the report stops responding to emails shortly before a deadline.
- The person in charge of researching a topic doesn't do any research.
- Members of your team refuse to do any work.
- Someone in your group claims that they cannot contribute because they do not understand the subject matter.
- Someone in the group is controlling and takes on too many roles. Eventually they fail to complete their assigned tasks.

- Someone in your group works well to begin with, but they slowly stop contributing as the semester goes on.

Some strategies that might work:
- Assign roles that reflect the strengths of the people in your group.
- Assign the same role to two people with different strengths and weaknesses.
- Use a shared one-drive folder when working on your report. If someone disappears the week before a deadline, you will still have access to their work.
- Have meetings twice a week, where each person is set a goal that they are held to. You need to know early if someone is underperforming.
- If someone is underperforming, assign other team members to take over some or all of their roles. Your main priority is to hand in a good project; if necessary, you can remove points from that person later in the Peer Assessment.

If all else fails:
In industry, if a team member is consistently underperforming despite being given opportunities to improve, you can speak with their manager as a last resort. In the Group Project module, the manager role will be played by your Group Supervisor and by the Module Tutor.

Before involving your Group Supervisor, make sure you have worked to try to resolve the issue yourselves within your team. Your Group Supervisor will speak with the person or people involved. In exceptional circumstances, they may decide to refer the issue to the ***Module Tutor.***

Assessment

The assessment is a Portfolio consisting of:

- [10%] Peer group assessment – scored individually and submitted on Blackboard
- [10%] Group presentation – scored individually and submitted on Blackboard
- [30%] Final project report – individual chapter scored individually, while the introduction, conclusion, and evidence of teamwork (e.g., minutes of meetings) are scored as a group. This is also submitted using Turnitin

The following pages contain detailed descriptions of how each of these components will be assessed.

Group Study Peer Assessment (10% of the component mark)

This form is for you to undertake the **peer assessment**.
Score each aspect of the individual's performance as a percentage.
Remember that the normal university marks system assumes:

Anything over 70%	First Class
60-69%	Upper second Class
50-59%	Lower Second Class
40-49%	Third Class

In a normal group of students in any one module, about two thirds get a 2-1 or 1st and the rest get a 2-2 or below. A mark of 65% represents a good solid 2-1 performance.
Ensure that scores you give your group adhere to the criteria specified on the form.
Please attempt to be realistic in the peer assessment marks you give. The Module Tutor reserves the right to rescale the marks from student peer assessment if necessary.
Include yourself in the assessment, and mark each student in your group against the following categories:

- Time and effort (score out of 100)
- Technical competence (score out of 100)
- Contribution to their assigned role (score out of 100)
- Ability to work in a team (score out of 100)
- Contribution of ideas and general benefit to the project as a whole (score out of 100)

Your peer assessment will be submitted on Blackboard, in the Assignments section. You should ensure that the average score (across all group members) you give for each field should be between 50 and 80.

Group Study Peer Assessment

Student name Marks out of 100						
Time and effort put in the project						
Technical competence						
Contribution to their assigned role						
Ability to work in a team						
Contribution of ideas and general benefit to the project as whole						

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Presentation Briefing and Assessment
(10% of the component mark)

A final presentation about the work done will take place.

Each group will have 30 minutes, to include: Group introduction
Individual chapters
Group conclusion
And questions from staff and audience

A typical individual contribution may last 5 minutes. Assume that your audience consists of your peers.

You should prepare the presentation electronically, but may use other facilities, such as video and whiteboard. Let your supervisor know if you need anything other than a data projector and PC.

You may use earlier sessions to rehearse your presentations.

The presentation will be judged on the following criteria:

A. General features	25%
Good points	**Bad points**
Gain and hold audience attention and participation, make eye contact, ask questions. Be relaxed, move about, and smile. Exude confidence and speak up.	Speaking in a monotone and being boring. Rambling, repetition, too fast or slow. Writing too small, too much on overhead. Bad mannerisms: turning back on audience, obscuring screen or board, reading from notes.
B. Structure of the talk	**25%**
Title and Introduction, main body Logical ordering of material. Summary/Conclusion	Outline of subject and context of talk. Summary of main features.
C. Communicating	**25%**
Efficient management of time allocated. Correct level of material for the audience. Appropriate quantity of material for the time allocated Communicating the content of the talk Effectiveness in handling questions.	
D. Preparation and use of resources and audio, visual aids	**25%**
Research and preparation of content. Well-prepared slides (transparencies, computer presentation). Good quality picture diagrams and tables.	

Student	*A out of 10*	*B out of 10*	*C out of 10*	*D out of 10*	*Average*

Group Report Guidelines

The report should be written as a coherent Group Report using the third person. It should demonstrate group effort and cooperation as well as individual effort. There are no set word limits, but a typical report might include 1-2 pages of group introduction, 4-5 pages of individual contribution by each member (approximately 2000 words) and 1-2 pages of group analysis and conclusions.

Ensure that your report includes science of 1st University year level. For the presentation, assume your reader is one of your peers who need to study your group Study topics.

Each chapter of the report should show evidence of literature/library research, critical appraisal and analysis of the researched materials. The text should contain references to specific sources of data as required, and the corresponding entry should appear in the bibliography (IEEE style) at the end of the individual chapter.

The Report required to be structured as follow:

A	**Table of Contents**
B	Introduction that identifies: • The group members and their contributions • The scientific issues and arguments to the developed in the report • Approximatively 1-2 pages
C	Chapter of the Main Body of the Report • Each Chapter should be written by an individual student. • The author's name should appear under the chapter title or use the footer. • The text should contain images, equations, diagrams, tables and/or plots. • Figures/diagrams/tables must include caption and aknowledge to sources (using IEEE style). • Cross-references within the text to bibliography, images, equations, diagrams or plot. • Bibliography at end of chapter (**IEEE style**) • The web-references should be not more than 30% of the total number of references. Wikipedia website should not be used as a reference. • Approximatively 2000 words.
D	Group Analysis/Conclusion • This should address issues raised in the introduction and draw together threads from all the individual contributions. • Approximatively 1-2 pages
E	Appendices • Minutes of all Group Meetings. Others as necessary

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The Report Should be in a uniform style, reflecting its group nature. It should be of publication standard, with good use of English grammar and spelling, and word-processed to a high standard.

a) Font Times New Roman size 12 for normal script and size 16/bold for main heading and 12/bold for minor headings.
b) Left margin 1.25 inches, right margin 0.75 inches, top and bottom margins 1 inch.
c) Justification on right and left margins, 1 line between paragraphs, 2 lines between sections and new chapters to start on new page.
d) Pages should be numbered, with headers and footers
e) Should contain diagrams, equations, tables, pictures and graphs, each of which must have a Figure number, Equation number, Table number and caption containing the reference/acknowledgement as appropriate
f) Bibliography must be done using IEEE style.

Assessment of Group Study Reports (30% of the component mark)

**Group   Project
Title:**
Student:
Chapter title:

The Group Study Report will be marked by your supervisor and one other staff member. In assessing your chapter of the Group Report, the following factors will be taken into account:

Qualitative Grade

Factor	Bad Fail	Marginal Fail	III	IIii	IIi	I	High First
A individual aspect							
Chapter Shows evidence of individual research and reviewing of material using appropriated references in the text.							
Chapter contains enough material and reflection for 1st year level and time used.							
Logical structure within chapter							
Chapter presentation, including figures, style, grammar, spelling and use of IT							
Correct use of references in text and acknowledgements in figure captions.							
Bibliography at the end of chapter							
B Group aspects							
Arguments in the chapter integrated in a coherent group report							
Report style coherent for group, including figures and use of IT.							
Minutes or evidence in appendices showing the group functioned well.							

Additional Comments:

Name Supervisor: Individual mark=0.6xA+0.4xB
Name Moderator: Mark awarded (%)

Group Study plan: Mathematics and Mathematics and Physics students.

Week	Date	Group study tasks and Deadlines
7/19		Explanation of the role of the supervisor.
		Allocation of the group study topics, Formalisation of officer roles
8/20		Group Report plan (to send via email to your supervisor).
9/21		Draft of individual Sections (to send via email to your supervisor).
10/22		Draft Group introduction (to send via email to your supervisor).
11/23		Draft Group Conclusion (to send via email to your supervisor).
15/24		Group presentation draft.
16/26		Report deadline (via turnitin).
16/26		Presentation deadline (via turnitin).
16/26		Deadline Peer Assessment deadline (available on Blackboard).

List of Topics: Physics Topics

1. Physics of Superheroes

2. Physics of Food or Physics of cooking.

3. Physics of Sport.

4. How nanotechnologies influenced the modern life.

5. The physics of planet habitability.

6. The physics of spacecraft.

7. Any topic that you wish to do research on can be submitted as suggestion to the module coordinator.

List of Topics: Mathematics Topics

1. Mathematics of Super-heroes and Sci-fi.

2. History of numbers.

3. History and development of geometry.

4. History and development of algebraic equations.

5. Fractals and applications.

6. Platonic solid, their models and applications.

7. Mathematical models applied in games.

8. Any topic that you wish to do research on can be submitted as suggestion to the module coordinator.