

## Annexe A: New/Revised Course Content in OBTL+ Format

### Course Overview

Expected Implementation in Academic Year	AY2026-2027
Semester/Trimester/Others (specify approx. Start/End date)	Semester 1 Semester 2
Course Author * Faculty proposing/revising the course	Wang Li-Lian (Prof)
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Course Title	Group Final Year Project
Course Code	MH4915
Academic Units	8
Contact Hours	40
Research Experience Components	Final Year Project (FYP)

### Course Requisites (if applicable)

Pre-requisites	Minimum CGPA 3.5 and Year 4 Standing or by Division Approval
Co-requisites	
Pre-requisite to	
Mutually exclusive to	MH4900 Final Year Project, MH4914 Work Study Degree Final Year Project and MH4916 Final Year Project
Replacement course to	
Remarks (if any)	

## Course Aims

This one-semester group Final Year Project (FYP) is offered as a Major Prescribed Elective for all Single Major BSc in Mathematical Sciences programmes. It is an 8-AU course. This FYP aims to provide an authentic research experience that allows you to work as a team and apply the knowledge and skills acquired during your studies. It offers the opportunity to gain practical exposure, develop research competencies, and cultivate analytical and problem-solving abilities essential for future career decisions and transitions. Through this project, you will integrate concepts learned across various modules, engage in independent inquiry, and demonstrate your capability to tackle real-world problems in related fields. The experience enhances employability, fosters lifelong learning, and builds readiness for the evolving future of work.

## Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

ILO 1	Apply mathematical knowledge and methods to formulate and analyze real-world or theoretical problems within the chosen area of mathematical sciences.
ILO 2	Develop, design and implement appropriate mathematical theory, models, algorithms, or computational approaches to address the research problem effectively.
ILO 3	Collaborate effectively as a team, demonstrating shared responsibility, constructive communication, and mutual support throughout the project.
ILO 4	Plan, organize, and manage project activities, including setting clear objectives, allocating tasks, and meeting agreed timelines and milestones.
ILO 5	Develop and apply strategies to solve problems effectively (involves critical thinking and creativity, generating questions, resourcing, application, and reiteration). (E.g. develop methodology and plan to achieve project objectives, formulate appropriate research questions.)
ILO 6	Apply effective written and oral communication skills in professional settings when communicating and connecting with relevant supervisors, faculty and examiners. Communicate (in writing and speaking) scientific and non-scientific ideas effectively in presentations and final report.
ILO 7	Present mathematical arguments and results clearly and logically, both in written reports and oral presentations, using appropriate notation, visualization, and explanation.
ILO 8	Demonstrate professionalism, integrity, and ethical conduct in teamwork, referencing, and the use of data and computational resources.
ILO 9	Develop creativity, independence/collaborative, and lifelong learning skills by engaging in problem-solving and self-directed exploration.

## Course Content

In this Group Final Year Project programme, your group (2-3 members) will experience supervised, collaborative research work in a selected field of study. Each team will be supervised by the faculty from the Division of Mathematical Sciences or co-supervisor in or outside the division to achieve the intended learning outcomes listed above. The specific content is dependent on the selection field of study.

## Reading and References (if applicable)

Reading materials are determined by the chosen field of study and the specific nature of each project. The Supervisor will recommend key references, and you are expected to undertake a comprehensive literature review to support your research.

## Planned Schedule

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
1	Students will work in groups of 2 to 3 members. Each group will select a project to undertake, and the weekly meeting schedule will be discussed and mutually agreed upon with the project supervisor.	All		In-person	
2	FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.	All		In-person	

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
3	<p>FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.</p>	ALL		In-person	
4	<p>FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.</p>	ALL		In-person	

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
5	FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.	ALL		In-person	
6	FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.	ALL		In-person	
7	Submission of midterm report	ALL		In-person	

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
8	FYP groups will present to the supervisors on the midterm report and progress (to be arranged by the students and supervisors)	ALL		In-person	
9	FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.	ALL		In-person	

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
10	<p>FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.</p>	ALL		In-person	
11	<p>FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.</p>	ALL		In-person	

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
12	FYP groups will engage in supervised research within a selected field of study under the guidance of a faculty supervisor, aiming to achieve the intended learning outcomes and research deliverables outlined above. The specific content will depend on the chosen field of study.	ALL		In-person	
13	Submission of FYP final thesis.	ALL		In-person	
14	Oral presentation	ALL		In-person	

## Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Active Learning	<p>This FYP is an experiential research programme conducted by groups and in a professional setting. Each group will participate in a research project that involves reading, discussion, problem-solving, and exploration. Through this process, you will cultivate responsibility, self-discipline, self-motivation, communication and effective collaboration.</p> <p>The FYP experience will help you develop stronger skills in time, resource, and emotional management, as well as critical thinking, logical reasoning, and creative problem solving. You will also gain greater confidence in your work and enhance your oral and written communication abilities.</p> <p>Your MAS Faculty Supervisor will be your primary mentor and point of contact throughout the project. You are expected to take initiative in approaching your supervisor for discussions and in seeking guidance when challenges arise.</p>

# Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Description of Assessment Component	Team/Individual	Rubrics	Level of Understanding
1	Continuous Assessment (CA): Report/Case study(Midterm progress report to be submitted in Week 7 and assessed by the supervisor)	all		10	By Week 7, each group will need to submit a midterm progress report of at least 10 pages in latex or word format (11-point font, 1.15-line spacing). The report should include an abstract of about half a page stating your research problem and goals to achieve, a comprehensive literature review of around 3 to 4 pages (including figures or graphics) discussing how your project relates to the broader field, followed by any preliminary findings presented over 3 to 4 pages and finally a short conclusion or outlook. Each	Team	Analytic	Multistructural

No.	Component	ILO	Related PLO or Accreditation	Weightage	Description of Assessment Component	Team/Individual	Rubrics	Level of Understanding
					member's contributions should be clearly stated			
2	Summative Assessment (EXAM): Presentation(Group presentation in Week 14 to be assessed by supervisor and examiner)	ALL		40	Please refer to the rubrics for the details.	Team	Analytic	Multistructural
3	Summative Assessment (EXAM): Others(Final thesis to be submitted in Week 13 and assessed by both supervisor/co-supervisor (if any) and examiner)	ALL		50	Please refer to the rubrics for the details.	Team	Analytic	Multistructural

Description of Assessment Components (if applicable)

Please see the rubrics.

Formative Feedback

Continuous feedback on progress and performance can be expected from your supervisor.

## NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

<b>Attributes/Competency</b>	<b>Level</b>
Collaboration	Advanced
Communication	Advanced
Creative Thinking	Advanced
Project Management	Advanced

# Course Policy

## Policy (Academic Integrity)

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values. As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

## Policy (General)

You are expected to complete all assigned readings and activities, attend all research meetings punctually and complete all scheduled tasks by due dates. You are expected to take responsibility to follow up research sessions you have missed. You are expected to participate in all research discussions and activities.

## Policy (Absenteeism)

Absence from research meetings with supervisor and group members without a valid reason will affect overall course grade. Valid reasons include Medical Certificate\* or Official Letter of Excuse.

\* The medical certificate mentioned above should be issued in Singapore by a medical practitioner registered with the Singapore Medical Association.

## Policy (Others, if applicable)

### Diversity and inclusion policy

Integrating a diverse set of experiences is important for a more comprehensive understanding of science.

It is our goal to create an inclusive and collaborative learning environment that supports a diversity of perspectives and learning experiences, and that honours your identities; including ethnicity, gender, socioeconomic status, sexual orientation, religion or ability.

To help accomplish this:

If you are neuroatypical or neurodiverse, have dyslexia or ADHD (for example), or have a social anxiety disorder or social phobia;

If you feel like your performance in the class is being impacted by your experiences outside of class; If something was said in class (by anyone, including the instructor) that made you feel uncomfortable;

Please speak to your teaching team, our school pastoral officer or a peer or senior (either in-person or via email) about how we can help facilitate your learning experience.

As a participant in course discussions, you should also strive to honour the diversity of your classmates. You can do this by: using preferred pronouns and names; being respectful of others opinions and actively making sure all voices are being heard; and refraining from the use of derogatory or demeaning speech or actions.

All members of the class are expected to adhere to the NTU anti-harassment policy. if you witness something that goes against this or have any other concerns, please speak to your instructors or a faculty member.

## MH4915 Group Final Year Project – Assessment Rubrics

### Assessment Overview

Assessor	Assessment Component	Component Weightage (Overall Course)	Marks
Supervisor	Midterm Report*	10%	/10
Supervisor	Final Presentation*	20%	/20
Examiner	Final Presentation	20%	/20
Supervisor	Final Thesis*	25%	/25
Examiner	Final Thesis	25%	/25
<b>Total</b>		<b>100%</b>	<b>/100</b>

### Important Notice:

(i) In both the midterm report and the final thesis, the contribution of each individual member must be clearly stated. During the oral presentation, every member is required to present their respective parts of the work and findings.

(ii) \*The **supervisor** will evaluate the three components (midterm report, final presentation, and final thesis) for each member individually, taking into account their respective contributions, teamwork attitude, sense of responsibility, and other relevant factors.

(iii) The **examiner** will evaluate the team as a whole and each member will receive the same scores for the two components (final presentation and final thesis).

### Detailed Assessment Rubric

Midterm Report Criterion 0-10 marks (Supervisor)	Final Presentation Criterion 0-20 marks (Supervisor) 0-20 marks (Examiner)	Final Thesis Criterion 0-25 marks (Supervisor) 0-25 marks (Examiner)
1. Initiative and Motivation (Did the group appear motivated to complete the tasks assigned? Did the group proactively clarify doubts)	1. Overall Organization (Did the group describe the project background clearly? Was information organized logically and systematically?)	1. Organization (Were materials organized in a clear, coherent, and logical sequence? Were references properly cited and formatted)

<p>with the supervisor?)</p> <p>2. Practical Ability and Creativity (Did the group complete assigned tasks satisfactorily? Did the group show creativity and initiative in solving problems?)</p> <p>3. Personal Discipline (Did the group demonstrate effective management of data and calculations? Was the group organized, neat, and focused on the project?)</p>	<p>Did the group manage time well and conclude appropriately?)</p> <p>2. Visual and Oral Presentation (Were the slides informative and well-prepared? Was the speaker clear, confident, and engaging? Was voice clear and gestures appropriate?)</p> <p>3. Q&amp;A (Did the group understand and answer questions confidently and to the point?)</p>	<p>according to scientific conventions?)</p> <p>2. Content (Were project objectives, motivations, methods, and findings clearly explained? Were analyses accurate, relevant, and well-supported? Were discussions consistent with the problem statement and results?)</p> <p>3. Difficulty or Originality (Did the project show innovation, complexity, or originality? Did it involve novel models or creative applications of existing techniques?)</p>
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