

THE HONG KONG POLYTECHNIC UNIVERSITY



DEPARTMENT OF APPLIED MATHEMATICS

PROGRAMME DOCUMENT FOR RESEARCH DEGREES

Master of Philosophy

Doctor of Philosophy

2017

General Information

| | | |
|-----------------------------------|---|---|
| Institution | : | The Hong Kong Polytechnic University |
| Faculty | : | Faculty of Applied Science and Textiles |
| Department | : | Department of Applied Mathematics |
| Head | : | Professor Xiaojun CHEN |
| Programme | : | Research Postgraduate Programme in Applied Mathematics |
| Mode of Attendance | : | Full time and Part time |
| Duration (Normal study period) | : | M.Phil 24 months for full-time, 48 months for part-time. 3- year PhD 36 months for full-time, 72 months for part-time. 4- year PhD 48 months for full-time, 96 months for part-time. (for admission with Bachelor Degree or Master Degree without any research components) |
| Implementation Date | : | September 2014 |
| Programme Leader | : | Dr. Xingqiu ZHAO |

The document is applicable to students admitted to the Research postgraduate programme in Applied Mathematics from academic year 2014/2015 onward.

This Programme Document is subject to review and changes which AMA can decide to make from time to time. Students will be informed of the changes as and when appropriate.

This Document should be read together with the “Regulations and Administrative Procedures for the Degrees of MPhil and PhD” and the “Research Student Handbook”.

1 **Full Programme Titles**

Master of Philosophy (MPhil)

Doctor of Philosophy (PhD)

2 **Host Department(s)**

Department of Applied Mathematics

應用數學系

3 **Awards**

1. M.Phil.

2. PhD

4 **Medium of Instruction**

All subjects are taught in English, unless otherwise specified.

5 **Normal Duration and Mode of Attendance**

M.Phil

24 months for full-time, 48 months for part-time.

3- year PhD

36 months for full-time, 72 months for part-time.

4- year PhD

(for admission with Bachelor Degree or Master Degree without any research components)

48 months for full-time, 96 months for part-time.

6 **Mode of Attendance**

● Full-time

● Part-time

7 **Programme Management**

Programme Leader

The Programme Leader will provide the academic and organizational leadership for the programme. The Programme Leader should expect the full support and cooperation of the Head of Department and Heads of other contributing Departments but should recognise that a Head will have to balance a range of departmental demands and priorities in allocating staff and resources to the programme. In particular, a Programme Leader's responsibilities are:

- (i) to ensure the effective conduct and organization of the programme within agreed policies and regulations;
- (ii) to negotiate with the Head(s) of Department(s) about the allocation of appropriate staff for supervision and other duties required by the programme;
- (iii) to develop good working relationships with the Heads and relevant senior staff of Departments involved in the programme and with staff for supervision on the programme;
- (iv) to keep in close touch with the academic welfare and progress of students on the programme, and to be closely aware of students' views about the programme;
- (v) to report to the Heads of Departments concerned on the on-going requirements of staff and resources for the programme, as part of the preparation of departmental estimates;
- (vi) to lead the development of the programme and the implementation of the Programme Learning Outcomes Assessment Plan;
- (vii) to coordinate the inputs to and the debate of the Departmental Programme Committee leading to the annual programme review reports (including the programme learning outcomes assessment results) which form part of the Annual QA Report and Business Plan, and other periodic programme reviews; and
- (viii) to take executive action as agreed by the Departmental Programme Committee.

8 Entrance Requirements

Applicants seeking admission to a research postgraduate programme should satisfy the following minimum entrance requirements:

MPhil: a Bachelor's degree in a relevant area with first or second class honours from The Hong Kong Polytechnic University or from another recognised university; or other academic qualifications which are deemed to be equivalent.

PhD: a postgraduate degree in a relevant area containing a significant research component, such as a dissertation, conferred by The Hong Kong Polytechnic University or another recognised university. In exceptional circumstances, students with a Bachelor's degree with First Class Honours, or the equivalent, may be admitted directly to the PhD programme. Such applicants may be required to pass an examination.

Applicants from a university where the language of teaching /instruction /examination is NOT entirely in English should satisfy the minimum English proficiency requirements specified by both the University and individual Faculties.

Applicants who have not obtained a degree from a recognised university in which the language of instruction is English are normally required to obtain:

1. a score of 6.5 or above in IELTS (with score for the writing component at 6.0 or above); or
2. a TOEFL score of 575 or above in paper-based test (with a score of at least 4 out of 6 in the Test of Written English); or 90 or above in internet-based test (with a writing score of 23 or above).

All English language test scores are considered valid for five years after the date of the test.

9 Programme Learning Outcomes

Programme Aims

The aim of the programme is to enable the students to acquire competence in research methods and scholarship in Applied Mathematics, and to display sustained independent effort and independent original thought. This programme prepares students to become academics, researchers or industrial R & D professionals upon graduation.

Programme Outcomes

The research degree programmes are designed in such a way to enable the student to:

- enhance students' research knowledge in Applied Mathematics; and
- enhance students' scientific writing and presentation skills; and
- nourish students' up-to-date research development in applied mathematics; and
- recognize the importance of research ethics; and
- learn the skill in writing research articles (for PhD programme)

10 The Curriculum

Course/ Credit Requirement

Students are mainly conducting research study under the supervision of their main supervisor's guidance. Different categories of students need to attain different credit requirements. The credit requirements should cover attending seminars and Practicum as follows:

2-year MPhil: 9 credits

*(1 credit from HTI6081 + 2 credits from attending seminars
(AMA67711+AMA67712) +AMA613+ 3 credits from other subjects)*

3-year PhD: 15 credits

*(1 credit from HTI6081 + 3 credits from attending seminars
(AMA67711+AMA67712+AMA67713) +
2 credits from Practicum (AMA67721+AMA67722) +
AMA613+ 6 credits from other subjects)*

4-year PhD: 22 credits

*(1 credit from HTI6081 + 4 credits from attending seminars
(AMA67711+AMA67712+AMA67713+AMA67714) +
2 credits from Practicum (AMA67721+AMA67722) + AMA613+12 credits
from other subjects)*

Other subjects can be chosen from the research postgraduate subject list offered by AMA, other PolyU departments or other local Universities with a similar level.

List of the subjects offered by the department are varied from year to year.

Attendance in research seminars/ workshops/ conferences

Full-time students are required to attend at least 10 research seminars per year (of which at least 8 research seminars must be within AMA), in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars every year.

Part-time students are required to attend at least 10 research seminars per two years (of which at least 8 research seminars must be within AMA), in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars once every two years.

Students are recommended to complete one credit per year (for full-time students) or per two years (for part-time students) to fulfil the above-mentioned requirement, with an overall assessment grade of Pass and Fail. However, as deemed appropriate by the Chief Supervisor, they are allowed to complete at most two credits per year (for full-time students) or per two years (for part-time students) to fulfil the research seminar credit requirement.

Chief Supervisors are required to assess the report (with a pass or failure grade). Students who failed to submit a report to the satisfaction of their Chief Supervisor are required to make a re-submission until a pass grade is obtained. The Chief Supervisor has to pass the record of the seminars attended by their students and the report with a pass grade to the Research Office for custody at the end of each academic year.

Practicum

As part of the programme requirement, PhD students, irrespective of funding source and mode of study, must complete two training credits before graduation. To earn one credit, students will be required to engage in teaching/research supporting activities assigned by the HoD or his/her delegate for 6 hours/week in any 13-week semester.

Students are allowed to complete these two credits any time before they graduate. They can choose to complete these two credits in two different semesters or within the same semester, subject to the approval of the Chief Supervisor. Stipend recipients are allowed to fulfill part of their departmental training requirement through the completion of these compulsory training credits.

The HoD or his/her delegate is required to:

- a. ensure that the activities are structured and can be assessed properly;
- b. submit, at the end of the training session, an assessment report on the performance of the relevant student(s), with details of activities undertaken and an overall assessment grade of Pass or Fail.

In addition to the 2 credits requirement, the department would also assign students to mark assignments and invigilate mid-term tests and examinations in every semester. Students are also expected to help in conferences organized by the department.

Guided Study Subjects

The maximum number of credits to be taken is 3.

Language proficiency requirement after admission

Students should be required to take and pass the specified remedial subjects before the submission of thesis

Thesis requirements

A thesis must be submitted to the satisfaction of the supervisor(s) for reviews by external examiners. The submitted thesis must contain at least one accepted/published paper in an SCI journal for PhD. students.

Graduation Requirements

A student would be eligible for award if he/she satisfies all the conditions listed below:

- (i) Accumulation of the requisite number of credits for the particular award, as defined in the definitive programme document; and
- (ii) Satisfying all other requirements as defined in the definitive programme document and as specified by the University; and
- (iii) All MPhil students need to complete their coursework with a qualifying GPA of 2.75 or above, and all PhD students need to complete their coursework with a qualifying GPA of 3.0 or above before submission of their thesis for examination.
- (iv) Take and pass an oral defense of his/her thesis
- (v) All other general University requirements relating to Graduation Requirements.

11 **Subjects Support to Programme Outcomes**

Grading

Assessment grades shall be awarded on a criterion-referenced basis. A student's overall performance in a subject shall be graded as follows:

| <i>Subject grade</i> | <i>Short description</i> | <i>Revised elaboration on subject grading description</i> |
|-----------------------------|---------------------------------|--|
| A+ | Exceptionally Outstanding | The student's work is exceptionally outstanding. It exceeds the intended subject learning outcomes in all regards. |
| A | Outstanding | The student's work is outstanding. It exceeds the intended subject learning outcomes in nearly all regards. |
| B+ | Very Good | The student's work is very good. It exceeds the intended subject learning outcomes in most regards. |
| B | Good | The student's work is good. It exceeds the intended subject learning outcomes in some regards. |
| C+ | Wholly Satisfactory | The student's work is wholly satisfactory. It fully meets the intended subject learning outcomes. |
| C | Satisfactory | The student's work is satisfactory. It largely meets the intended subject learning outcomes. |

| <i>Subject grade</i> | <i>Short description</i> | <i>Revised elaboration on subject grading description</i> |
|----------------------|--------------------------|--|
| D+ | Barely Satisfactory | The student's work is barely satisfactory. It marginally meets the intended subject learning outcomes. |
| D | Barely Adequate | The student's work is barely adequate. It meets the intended subject learning outcomes only in some regards. |
| F | Inadequate | The student's work is inadequate. It fails to meet many of the intended subject learning outcomes. |

'F' is a subject failure grade, whilst all others ('D' to 'A+') are subject passing grades. No credit will be earned if a subject is failed.

A numeral grade point is assigned to each subject grade, as follows:

| <i>Grade</i> | <i>Grade Point</i> |
|--------------|--------------------|
| A+ | 4.5 |
| A | 4 |
| B+ | 3.5 |
| B | 3 |
| C+ | 2.5 |
| C | 2 |
| D+ | 1.5 |
| D | 1 |
| F | 0 |

The qualifying Grade Point Average (GPA) will be computed as follows, and based on the grade point of all the subjects:

$$\text{GPA} = \frac{\sum \text{Subject Grade Point} \times \text{Subject Credit Value}}{\sum_n \text{Subject Credit Value}}$$

where n = number of all subjects (inclusive of failed subjects) taken by the student up to and including the latest semester/term, but for subjects which have been retaken, only the grade obtained in the final attempt will be included in the GPA calculation

12 The Curriculum Map

| Programme Outcomes | AMA610 | AMA611 | AMA612 | AMA613 | AMA614 | AMA615 | AMA616 | AMA6881 | AMA6882 | AMA6883 | AMA6884 | AMA6885 | AMA6886 | AMA6887 | HTI 6081 | Attend seminars | Dept. training | Thesis |
|--|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|----------|-----------------|----------------|--------|
| a. To enhance students' research knowledge in Applied Mathematics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | ✓ |
| b. To enhance students' scientific writing and presentation skills | | | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | ✓ |
| c. To nourish students' up-to-date research development in applied mathematics | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| d. To recognize the importance of research ethics | | | | | | | | | | | | | | | ✓ | | | ✓ |
| e. To learn the skill in writing research articles | | | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | ✓ |

SUBJECT DESCRIPTIONS

(AMA SUBJECTS)

Master of Philosophy

Doctor of Philosophy

LIST of Subjects

Key: C = Compulsory CA = Continuous Assessment E = Elective EXAM = Examination

| Code | Subject Title | C/E | Credit | Assessment CA : EXAM (%) | Pre-requisite (P)/ Expected background knowledge |
|---------|--|-----|--------|--------------------------------|--|
| AMA610 | Advanced probability theory | E | 3 | 40 : 60 | A course in Probability Theory and a course in Advanced Calculus |
| AMA611 | Applied Analysis | E | 3 | 40 : 60 | A course in Linear Algebra and a course in Advanced Calculus. A course in Partial Differential Equations or Analysis would be highly recommended. |
| AMA612 | Numerical methods for Partial Differential Equations | E | 3 | 40 : 60 | A course in Differential Equations and a course in Advanced Calculus |
| AMA613 | Mathematics Seminar | C | 3 | 100 : 0 | A compulsory subject for research students of AMA enrolled for at least six months |
| AMA614 | Mathematical Statistics | E | 3 | 40 : 60 | A course in Probability and Statistics and a course in Advanced Calculus |
| AMA615 | Nonlinear Optimization Methods | E | 3 | 40 : 60 | A course in Linear Algebra and a course in Advanced Calculus |
| AMA616 | Statistics for Finance | E | 3 | 40 : 60 | A course in Statistical Analysis and a course in Advanced Calculus |
| AMA6881 | Guided Study in Applied Optimization | E | 3 | 100 : 0 | None |
| AMA6882 | Guided Study in Operations Research | E | 3 | 100 : 0 | None |
| AMA6883 | Guided Study in Applied Statistics | E | 3 | 100 : 0 | None |
| AMA6884 | Guided Study in Financial Mathematics | E | 3 | 100 : 0 | None |

| | | | | | |
|----------|--|---|---|---------|---------------|
| AMA6885 | Guided Study in Engineering Mathematics | E | 3 | 100 : 0 | None |
| AMA6886 | Guided Study in Computational Mathematics | E | 3 | 100 : 0 | None |
| AMA6887 | Guided Study on Research Topics in Applied Mathematics | E | 3 | 100 : 0 | None |
| AMA67711 | Research Seminars | C | 1 | 100 : 0 | None |
| AMA67712 | Research Seminars | C | 1 | 100 : 0 | (P): AMA67711 |
| AMA67713 | Research Seminars | C | 1 | 100 : 0 | (P): AMA67712 |
| AMA67714 | Research Seminars | C | 1 | 100 : 0 | (P): AMA67713 |
| AMA67721 | Practicum | C | 1 | 100 : 0 | None |
| AMA67722 | Practicum | C | 1 | 100 : 0 | None |
| HTI6081 | Ethics: Research, Professional & Personal Perspectives | C | 1 | 100 : 0 | None |

Subject Description Form

| | |
|--|--|
| Subject Code | AMA610 |
| Subject Title | Advanced Probability Theory |
| Credit Value | 3 |
| Level | 6 |
| Expected background knowledge | A course in Probability Theory and a course in Advanced Calculus |
| Objectives | To enable students to have an overview and thorough understanding of the modern probability theory. |
| Intended Learning Outcomes | Upon completion of the subject, students will be able to: (a) Apply the concepts of probability, conditional probability and conditional expectations. (b) Calculate probabilities, moments and other related quantities based on given distributions. (c) Understand and apply the laws of large numbers and central limit theorems. (d) Understand and apply martingale limit theory. (e) Understand and apply Brownian motion model. |
| Subject Synopsis/ Indicative Syllabus | Measure theory concepts needed for probability. Expectation, distributions. Laws of large numbers and central limit theorems for independent random variables. Characteristic function methods. Conditional expectations, martingales and martingale convergence theorems. Brownian Motion. |
| Teaching/Learning Methodology | The subject will be delivered mainly through lectures and tutorials. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of solid mathematical techniques and how the techniques can be applied to solving research and real application problems. Students are encouraged to adopt a deep study approach by employing high level cognitive strategies, such as critical and evaluative thinking, relating, integrating and applying theories to practice. |

| | | | | | | | |
|--|--|-------------|--|---|---|---|---|
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | d | e |
| | 1. CA | 40 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 2. Exam | 60 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Total | 100 % | | | | | | |
| | <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The subject focuses on knowledge and understanding of Measure Theory and Probability Theory. The Exam-based assessment is the most appropriate assessment method, including tests and examination. Moreover, assignments are included as a component of continuous assessment so as to keep the students in progress.</p> <p>Continuous Assessment comprises of assignments and a mid-term test. A written examination is held at the end of the semester.</p> | | | | | | |
| Student Study Effort Expected | Class contact: | | | | | | |
| | ▪ Lecture | | 26Hrs. | | | | |
| | ▪ Tutorial | | 13Hrs. | | | | |
| | Other student study effort: | | | | | | |
| | ▪ Assignment | | 30Hrs. | | | | |
| | ▪ Self-study | | 61Hrs. | | | | |
| | Total student study effort | | 130Hrs. | | | | |
| Reading List and References | R. Durrett, Probability: Theory and Examples. Cambridge University Press, 2010; available online at http://www.math.cornell.edu/~durrett/PTE/PTE4_Jan2010.pdf | | | | | | |
| | K.L. Chung, A Course in Probability Theory. Academic Press, 2001. | | | | | | |
| | S.C. Chow and H. Teicher, Probability Theory: Independence, Interchangeability, Martingales. Springer, 2003. | | | | | | |

Subject Description Form

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|--|---|
| Subject Code | AMA 611 |
| Subject Title | Applied Analysis |
| Credit Value | 3 |
| Level | 6 |
| Expected background knowledge | A course in Linear Algebra and a course in Advanced Calculus. A course in Partial Differential Equations or Analysis would be highly recommended. |
| Objectives | To teach students how to use functional analysis to prove various existence, stability and dynamical results of solutions to partial differential equations (PDEs) arising from Physics, Biology, Geometry and Engineering. |
| Intended Learning Outcomes | Upon satisfactory completion of the subject, students should be able to: <ul style="list-style-type: none"> a. Learn some basic functional analysis; b. Learn how to use inequalities to prove estimates; c. Prove existence and analyze qualitative features of solutions to PDEs; d. Analyze stability and dynamics of solutions to PDEs. |
| Subject Synopsis/ Indicative Syllabus | <i>Basic functional analysis</i> Banach and Hilbert Spaces; L_p spaces; Sobolev spaces; inequalities; linear operators and spectrum (discrete and continuous); semigroups, unitary groups and dynamics. <i>Fixed point theorems and applications</i> The contraction mapping; local and global well-posedness; |

| | |
|---|--|
| | <p>inequalities; Gateaux and Frechet derivatives; implicit and inverse function theorems; bifurcations; applications to PDEs arising from Physics, Biology, Geometry and Engineering.</p> <p><i>Variational Calculus</i></p> <p>Functionals; constraints and Lagrange multipliers; minimization by direct methods; saddle points and the Mountain Pass Lemma; Hamiltonian equations; control theory; applications.</p> |
| Teaching/ Learning Methodology | <p>The subject will be delivered mainly through lectures and tutorials. Tutorials will be spent answering questions, reviewing some background material and going over tutorial questions that are related to assignments. In addition, tutorials will be spent discussing some possible topics for the mini projects.</p> |

| | | | | | | |
|--|--|-------------|--|---|---|---|
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | |
| | | | a | b | c | d |
| | 1. Assignments | 25% | ✓ | ✓ | ✓ | ✓ |
| | 2. Project and presentation | 15% | ✓ | ✓ | ✓ | ✓ |
| | 3. Final Exam | 60% | ✓ | ✓ | ✓ | ✓ |
| Total | 100 % | | | | | |
| | <p>The project must be pre-approved by the instructor.</p> <p>Continuous assessment comprises of assignments and project.</p> <p>A written examination is held at the end of the semester.</p> | | | | | |
| Student Study Effort | Class contact: | | | | | |

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|------------------------------------|---|--------------------|
| Expected | <ul style="list-style-type: none"> ▪ Lecture | 26 Hrs. |
| | <ul style="list-style-type: none"> ▪ Tutorial | 13 Hrs. |
| | Other student study effort: | |
| | <ul style="list-style-type: none"> ▪ Assignments ▪ Project | 30 Hrs. 30 Hrs. |
| | <ul style="list-style-type: none"> ▪ Self-study | 31 Hrs. |
| | Total student study effort | 130 Hrs. |
| Reading List and References | <p>M. Reed and B. Simon. Methods of Modern Mathematical Physics: Vol. I: Functional Analysis. Academic Press, 1972.</p> <p>E. H. Lieb and M. Loss. Analysis, Graduate studies in Mathematics. American Mathematical Society, Vol. 14, 2nd ed. 2001.</p> <p>G. B. Folland. Real Analysis: modern techniques and their applications. Wiley, New York, 1984.</p> <p>R. C. McOwen. Partial Differential Equations: methods and applications. Prentice Hall, 1996.</p> <p>L. C. Evans. Partial Differential Equations, volume 19 of Graduate studies in mathematics. American Mathematical Society, 1998.</p> <p>P. D. Hislop and I. M. Sigal. Introduction to spectral theory, Vol. 133 of Applied Mathematical Sciences. Springer Verlag, 1996.</p> <p>S. Gustafsson and I.M. Sigal. Mathematical Concepts of Quantum Mechanics. Springer Verlag, 2003.</p> | |

Subject Description Form

| | |
|--|---|
| Subject Code | AMA 612 |
| Subject Title | Numerical methods for Partial Differential Equations |
| Credit Value | 3 |
| Level | 6 |
| Expected background knowledge | A course in Differential Equations and a course in Advanced Calculus |
| Objectives | This subject is to introduce students to numerical techniques for solving partial differential equations, with applications in physics, engineering, finance and economics. |
| Intended Learning Outcomes | <p>Upon satisfactory completion of the subject, students should be able to:</p> <ol style="list-style-type: none"> a. Gain a deep understanding of algorithms of finite difference and finite element methods for solving partial differential equations; b. Solve simple partial differential equations numerically; c. Gain a basic knowledge of theories of finite difference and finite element methods; d. Apply finite difference or finite element methods to solve problems arising in physics, engineering, finance and economics numerically. |
| Subject Synopsis/ Indicative Syllabus | <p><i>Finite difference methods</i></p> <p>Introduction to finite difference methods, Stability, Consistency, Convergence, Lax Equivalent Theorem, Fourier stability analysis, Finite difference methods for model problems.</p> <p><i>Finite element methods</i></p> <p>Ritz and Galerkin methods, Introduction to finite element methods, Interpolation Theory in Sobolev Spaces, Conforming finite elements</p> |

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| Teaching/ Learning Methodology | The subject will be delivered mainly through lectures and tutorials. The lectures will be conducted to introduce numerical methods for partial differential equations in the syllabus, which are then reinforced by learning activities involving demonstration, tutorial exercise and assignments. |
|---|---|

| Assessment Methods in Alignment with Intended Learning Outcomes | <table border="1"> <thead> <tr> <th data-bbox="529 600 781 758">Specific assessment methods</th> <th data-bbox="781 600 951 758">% weighting</th> <th colspan="4" data-bbox="951 600 1362 758">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <td colspan="2"></td> <th data-bbox="951 758 1024 831">a</th> <th data-bbox="1024 758 1118 831">b</th> <th data-bbox="1118 758 1240 831">c</th> <th data-bbox="1240 758 1362 831">d</th> </tr> </thead> <tbody> <tr> <td data-bbox="529 831 781 905">1. CA</td> <td data-bbox="781 831 951 905">40%</td> <td data-bbox="951 831 1024 905">✓</td> <td data-bbox="1024 831 1118 905">✓</td> <td data-bbox="1118 831 1240 905">✓</td> <td data-bbox="1240 831 1362 905">✓</td> </tr> <tr> <td data-bbox="529 905 781 978">2. Exam</td> <td data-bbox="781 905 951 978">60%</td> <td data-bbox="951 905 1024 978">✓</td> <td data-bbox="1024 905 1118 978">✓</td> <td data-bbox="1118 905 1240 978">✓</td> <td data-bbox="1240 905 1362 978">✓</td> </tr> <tr> <td data-bbox="529 978 781 1052">Total</td> <td data-bbox="781 978 951 1052">100 %</td> <td colspan="4" data-bbox="951 978 1362 1052"></td> </tr> </tbody> </table> | | | | Specific assessment methods | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | | | a | b | c | d | 1. CA | 40% | ✓ | ✓ | ✓ | ✓ | 2. Exam | 60% | ✓ | ✓ | ✓ | ✓ | Total | 100 % | | | | |
|--|--|-------------|--|---|-----------------------------|-------------|--|--|--|--|--|--|---|---|---|---|-------|-----|---|---|---|---|---------|-----|---|---|---|---|-------|-------|--|--|--|--|
| | Specific assessment methods | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | a | b | c | d | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. CA | 40% | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Exam | 60% | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 100 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The subject focuses on knowledge, skill and understanding of <u>Numerical methods for Partial Differential equations, thus, Exam-based assessment</u> is the most appropriate assessment method, including 25% test and 60% examination. Moreover, 15% worth of assignments are included as a component of continuous assessment so as to keep the students in progress.</p> <p>Continuous Assessment comprises of assignments and tests. A written examination is held at the end of the semester.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Student Study Effort Expected | Class contact: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <ul style="list-style-type: none"> ▪ Lecture | | | | 26 Hrs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|------------------------------------|---|----------|
| | <ul style="list-style-type: none"> ▪ Tutorial | 13 Hrs. |
| | Other student study effort: | |
| | <ul style="list-style-type: none"> ▪ Assignment | 36 Hrs. |
| | <ul style="list-style-type: none"> ▪ Self-study | 27 Hrs. |
| | Total student study effort | 102 Hrs. |
| Reading List and References | <p>J.W. Thomas, Numerical partial differential equations—Finite Difference Methods, Springer, 1995.</p> <p>Randall J. LeVeque, Finite Difference Methods for Ordinary and Partial Differential Equations--Steady State and Time Dependent Problems, SIAM: Society for Industrial and Applied Mathematics, 2007.</p> <p>Philippe G. Ciarlet, The Finite Element Method for Elliptic Problems, SIAM: Society for Industrial and Applied Mathematics; 2nd edition, 2002.</p> <p>O.C. Zienkiewicz and K. Morgan, Finite Element Method, John Wiley, 1983.</p> | |

Subject Description Form

| | |
|--|---|
| Subject Code | AMA613 |
| Subject Title | Mathematics Seminar |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for research students of AMA enrolled for at least six months. |
| Objectives | The aim of this subject is to provide education on students' oral and written presentations of research results. |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Do research on an agreed topic/area/issue. (b) Gain an in-depth understanding of the literature related to topics of interest. (c) Develop written skills for presentation of research results. (d) Develop oral academic communication and presentation skills. |
| Subject Synopsis/ Indicative Syllabus | Topics presented to be determined by the participants, coordinated by the subject examiner (coordinator). |
| Teaching/Learning Methodology | Subject lecturer teaches students about both oral and written presentation skills and chairs all students' oral presentations. Students are required to research, develop and deliver a formal presentation using appropriate audiovisual media support and handouts. The presentation assessment tool includes three graded components: content, communication, and organization. The report is expected to include but not limited to problem identification, methodology, solutions, implementation, interpretations, conclusions, and discussions. Students' presentation materials are required to be submitted to the subject lecturer for checking before class. |

| | | | | | | | |
|---|---|--|--|---|---|---|--|
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | d | |
| | 1. Two oral presentations | 50% | ✓ | ✓ | | ✓ | |
| | 2. One research report | 50% | ✓ | ✓ | ✓ | | |
| Total | 100 % | | | | | | |
| <p>Selected topics will be presented by the students. Content, communication and organization will be included in assessing the oral presentation of the student; and content and organization will be included in assessing the research report.</p> | | | | | | | |
| Student Study Effort Required | Class contact: | | | | | | |
| | ▪ Three lectures | | 6 Hrs. | | | | |
| | ▪ Presentation of supervised research topic | | 6 Hrs. | | | | |
| | ▪ Presentation of selected topic | | 6 Hrs. | | | | |
| | Other student study effort: | | 112 Hrs. | | | | |
| | ▪ Self-study | | Hrs. | | | | |
| | Total student study effort | | 130 Hrs. | | | | |
| Reading List and References | Bowden, John | Writing a Report: How to Prepare, Write and Present Powerful Reports, 6th ed. | Oxford, 2002 | | | | |
| | Moore, Nick | How to Do Research: a Practical Guide to Designing and Managing Research Projects, 3 rd ed. | London: Facet Pub., 2006 | | | | |
| | Van Emden, Joan | Presentation Skills for Students | Basingstoke: Palgrave Macmillan, 2004 | | | | |

Subject Description Form

| | |
|--|--|
| Subject Code | AMA614 |
| Subject Title | Mathematical Statistics |
| Credit Value | 3 |
| Level | 6 |
| Expected background knowledge | A course in Probability and Statistics and a course in Advanced Calculus |
| Objectives | To enable students to have an overview and thorough understanding of the modern mathematical statistics theory. |
| Intended Learning Outcomes | Upon completion of the subject, students will be able to: (a) Use the approach of maximum likelihood to obtain the estimator of parameters of distributions and derive the asymptotic properties of estimators (b) Find the UMVU estimators. (c) Apply the method of pivotal quantity to obtain interval estimates. (d) Use the likelihood ratio principle to construct statistical tests. (e) Find uniformly most powerful tests based on the Neyman-Pearson Lemma. |
| Subject Synopsis/ Indicative Syllabus | This course is concerned with the fundamental theory of statistical inference. Topics include exponential families of distributions, sufficient statistics, complete statistics, convex loss functions, UMVU estimators, performance of the estimators, maximum likelihood estimation, the information inequality, large-sample comparisons of estimators and asymptotic efficiency. |
| Teaching/Learning Methodology | The subject will be delivered mainly through lectures and tutorials. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of solid mathematical techniques and how the techniques can be applied to solving research and real application problems. Students are encouraged to adopt a deep study approach by employing high level cognitive strategies, such as critical and evaluative thinking, relating, integrating and applying theories to practice. |

| | | | | | | | |
|---|--|-------------|--|---|---|---|---------|
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | d | e |
| | 1. CA | 40 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 2. Exam | 60 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Total | 100 % | | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The subject focuses on knowledge and understanding of Statistical Theory. The Exam-based assessment is the most appropriate assessment method, including tests and examination. Moreover, assignments are included as a component of continuous assessment so as to keep the students in progress.</p> <p>Continuous Assessment comprises of assignments and a mid-term test. A written examination is held at the end of the semester.</p> | | | | | | | |
| Student Study Effort Expected | Class contact: | | | | | | |
| | ▪ Lecture | | | | | | 26Hrs. |
| | ▪ Tutorial | | | | | | 13Hrs. |
| | Other student study effort: | | | | | | |
| | ▪ Assignment | | | | | | 30Hrs. |
| | ▪ Self-study | | | | | | 61Hrs. |
| | Total student study effort | | | | | | 130Hrs. |
| Reading List and References | J. Shao, Mathematical Statistics. Springer. 2003. | | | | | | |
| | G. Casella and R. L. Berger, Statistical Inference. Second edition, Thomson, 2002. | | | | | | |
| | E. Lehmann and G. Casella, Theory of Point Estimation. Second Edition, 1998 | | | | | | |
| | Ferguson, T. S. A Course in Large Sample Theory. 1996 | | | | | | |

Subject Description Form

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|--|---|
| Subject Code | AMA615 |
| Subject Title | Nonlinear Optimization Methods |
| Credit Value | 3 |
| Level | 6 |
| Expected background knowledge | A course in Linear Algebra and a course in Advanced Calculus |
| Objectives | To enable students to learn to use more advanced mathematical and computational techniques applicable in solving real engineering and management problems. |
| Intended Learning Outcomes | Upon completion of the subject, students will be able to: (a) Understand basic theory of nonlinear optimization. (b) Solve unconstrained optimization problems. (c) Solve constrained optimization problems. |
| Subject Synopsis/ Indicative Syllabus | <p>Convex optimization: Convex set, convex function, conjugate function, directional derivative, subgradient, duality theorem.</p> <p>Unconstrained optimization: One dimensional search algorithms: Fibonacci and golden section search. Multidimensional search method: Steepest descent method; Newton's method; conjugate gradient method, quasi-Newton methods, and trust region method.</p> <p>Constrained optimization: Kuhn-Tucker condition for optimality, application to solution of simple nonlinear problems; quadratic programming and convex programming problems. Penalty and barrier functions. Sequential unconstrained minimization technique, multipliers method.</p> <p>Nonlinear complementarity problems and variational inequalities: Nonsmooth equation reformulation, generalized Jacobians, semismooth Newton methods, smoothing Newton methods, global convergence.</p> |
| Teaching/Learning Methodology | The subject will be delivered mainly through lectures and tutorials. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of mathematical techniques and how the techniques can be applied to solving problems. Students are encouraged to adopt a deep study approach by employing high level cognitive strategies, such as critical and evaluative thinking, relating, integrating and applying theories to practice. |

| | | | | | |
|---|-----------------------------------|--|--|---|---|
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | |
| | | | a | b | c |
| | 1. Assignments | 20% | ✓ | ✓ | ✓ |
| | 2. Mid-term test | 20% | ✓ | ✓ | ✓ |
| | 3. Examination | 60% | ✓ | ✓ | ✓ |
| Total | 100 % | | | | |
| Continuous Assessment comprises of assignments and a mid-term test. A written examination is held at the end of the semester. | | | | | |
| Student Study Effort Required | Class contact: | | | | |
| | ▪ Lecture | | 26 Hrs. | | |
| | ▪ Tutorial | | 13 Hrs. | | |
| | Other student study effort: | | | | |
| | ▪ Assignment | | 23 Hrs. | | |
| | ▪ Self-study | | 40 Hrs. | | |
| | ▪ Total student study effort | | 102 Hrs. | | |
| Reading List and References | Fletcher, R. | Practical Methods of Optimization, 2nd Edition | Wiley, 1987 | | |
| | Nocedal, J. and Wright, S.J. | Numerical Optimization, 2nd Edition | Springer, 2006 | | |
| | Dennis, J.E. and Schnabel, R.B. | Numerical Methods for Unconstrained Optimization and Nonlinear Equations | SIAM, 1996 | | |
| | Mangasarian, O.L. | Nonlinear Programming | SIAM, 1994 | | |
| | Rockafellar, R.T. | Convex Analysis | Princeton University Press, 1970 | | |
| | Facchinei, F. and Pang, J-S. | Finite-Dimensional Variational Inequalities and Complementarity Problems | Springer, 2003 | | |

Subject Description Form

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|--|--|
| Subject Code | AMA 616 |
| Subject Title | Statistics for Finance |
| Credit Value | 3 |
| Level | 6 |
| Expected background knowledge | A course in Statistical Analysis and a course in Advanced Calculus |
| Objectives | To give a comprehensive introduction into important ideas of financial mathematics and statistics for the modelling and statistical analysis of financial data. |
| Intended Learning Outcomes | <p>Upon satisfactory completion of the subject, students should be able to:</p> <ol style="list-style-type: none"> a. Gain a deep understanding of option pricing model and financial time series; b. Solve simple option pricing problems numerically; c. Carry out basic statistical analysis on financial data; d. Apply option pricing theory to model new financial products and various statistical models to model the financial time series. |
| Subject Synopsis/ Indicative Syllabus | <p><i>Option pricing theory</i></p> <p>Derivatives, Arbitrage, Wiener process, binomial processes, geometric random walks, stochastic integrals, Ito's Lemma, Black-Scholes model, hedging.</p> <p>European options, Binomial model, Cox-Ross-Rubinstein approach.</p> <p>American options, arbitrage relationship, trinomial model, numerical techniques, applications</p> |

| | |
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| | <p><i>Financial Time series analysis</i></p> <p>Econometric models, the random walk hypothesis, unit root test, ARIMA models.</p> <p>ARCH and GARCH models, Exponential GARCH, stochastic volatility, multivariate GARCH models, applications.</p> |
| Teaching/ Learning Methodology | The subject will be delivered mainly through lectures and tutorials, which are then reinforced by learning activities involving demonstration, tutorial exercises and assignments. |

| | | | | | | |
|---|-----------------------------------|----------------|--|---|---|---|
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | |
| | | | a | b | c | d |
| | 1. CA | 40% | ✓ | ✓ | ✓ | ✓ |
| | 2. Exam | 60% | ✓ | ✓ | ✓ | ✓ |
| | Total | 100 % | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The subject focuses on knowledge, skill and understanding of Statistics of Finance, Exam-based assessment is the most appropriate assessment method, including tests and examination. Moreover, assignments are included as a component of continuous assessment so as to keep the students in progress.</p> <p>Continuous Assessment comprises of assignments and tests. A written examination is held at the end of the semester.</p> | | | | | | |

| | | |
|--------------------------------------|--|----------|
| Student Study Effort Expected | Class contact: | |
| | ▪ Lecture | 26 Hrs. |
| | ▪ Tutorial | 13 Hrs. |
| | Other student study effort: | |
| | ▪ Assignment | 36 Hrs. |
| | ▪ Self-study | 27 Hrs. |
| | Total student study effort | 102 Hrs. |
| Reading List and References | <p>J. Franke, W. Hardle and C.M. Hafner, Statistics of Financial Markets, 3rd Edition, 2012.</p> <p>P.J. Wilmott, Quantitative Finance, John Wiley & Sons Ltd., 2007.</p> <p>J.C. Hull, Options, Futures , and Other Derivatives, 8th Edition, Prentice Hall, 2012.</p> <p>C. Chatfield, The Analysis of Time Series: an introduction, 6th Edition, Chapman & Hall/CRC, 2003.</p> <p>J.D. Cryer and K.S. Chan, Time Series Analysis with Applications in R, 2nd Edition, Springer, 2008.</p> <p>R.S. Tsay, Analysis of financial time series, 3rd edition, Wiley, 2010.</p> | |

Subject Description Form

| | |
|---|--|
| Subject Code | AMA6881 |
| Subject Title | Guided Study in Applied Optimization |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in applied optimization through literature searching in various fields. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in applied optimization from literature related to topics of interest. (b) Carry out research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |
| Teaching/Learning Methodology <i>(Note 3)</i> | <p>Meet assigned supervisor regularly Hand the report with full list of references</p> |

| | | | | | | | |
|--|------------------------------------|-------------|--|---|---|--|--|
| Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i> | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | | |
| | Continuous assessment | 100 | √ | √ | √ | | |
| | | | | | | | |
| | Total | 100 % | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report</p> | | | | | | | |
| Student Study Effort Expected | Student contact: | | | | | | |
| | ▪ Seminar/Tutorial | | 26 Hrs. | | | | |
| | Other student study effort: | | | | | | |
| | ▪ Assignment/mini-project | | 34Hrs. | | | | |
| | ▪ Self-study | | 60 Hrs. | | | | |
| | Total student study effort | | 120 Hrs. | | | | |
| | Reading List and References | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | |
|---|---|
| Subject Code | AMA6882 |
| Subject Title | Guided Study in Operations Research |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in operations research through literature searching in various fields. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in operations research from literature related to topics of interest. (b) Carry out research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |
| Teaching/Learning Methodology <i>(Note 3)</i> | Meet assigned supervisor regularly Hand the report with full list of references |

| | | | | | | | |
|--|------------------------------------|-------------|--|---|---|--|--|
| Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i> | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | | |
| | Continuous assessment | 100 | √ | √ | √ | | |
| | | | | | | | |
| | Total | 100 % | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report</p> | | | | | | | |
| Student Study Effort Expected | Student contact: | | | | | | |
| | ▪ Seminar/Tutorial | | 26 Hrs. | | | | |
| | Other student study effort: | | | | | | |
| | ▪ Assignment/mini-project | | 34Hrs. | | | | |
| | ▪ Self-study | | 60 Hrs. | | | | |
| | Total student study effort | | 120 Hrs. | | | | |
| | Reading List and References | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | |
|---|--|
| Subject Code | AMA6883 |
| Subject Title | Guided Study in Applied Statistics |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in applied statistics through literature searching in various fields. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in applied statistics from literature related to topics of interest. (b) Carry out research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |
| Teaching/Learning Methodology <i>(Note 3)</i> | <p>Meet assigned supervisor regularly Hand the report with full list of references</p> |

| | | | | | | | |
|--|------------------------------------|-------------|--|---|---|--|--|
| Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i> | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | | |
| | Continuous assessment | 100 | √ | √ | √ | | |
| | | | | | | | |
| | Total | 100 % | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report</p> | | | | | | | |
| Student Study Effort Expected | Student contact: | | | | | | |
| | ▪ Seminar/Tutorial | | 26 Hrs. | | | | |
| | Other student study effort: | | | | | | |
| | ▪ Assignment/mini-project | | 34Hrs. | | | | |
| | ▪ Self-study | | 60 Hrs. | | | | |
| | Total student study effort | | 120 Hrs. | | | | |
| | Reading List and References | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | |
|---|---|
| Subject Code | AMA6884 |
| Subject Title | Guided Study in Financial Mathematics |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in financial mathematics through literature searching in various fields. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in financial mathematics from literature related to topics of interest. (b) Carry out research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |
| Teaching/Learning Methodology <i>(Note 3)</i> | <p>Meet assigned supervisor regularly Hand the report with full list of references</p> |

| | | | | | | | |
|--|------------------------------------|-------------|--|---|---|--|--|
| Assessment Methods in Alignment with Intended Learning Outcomes (Note 4) | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | | |
| | Continuous assessment | 100 | √ | √ | √ | | |
| | | | | | | | |
| | Total | 100 % | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report</p> | | | | | | | |
| Student Study Effort Expected | Student contact: | | | | | | |
| | ▪ Seminar/Tutorial | | 26 Hrs. | | | | |
| | Other student study effort: | | | | | | |
| | ▪ Assignment/mini-project | | 34Hrs. | | | | |
| | ▪ Self-study | | 60 Hrs. | | | | |
| | Total student study effort | | 120 Hrs. | | | | |
| | Reading List and References | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | |
|---|---|
| Subject Code | AMA6885 |
| Subject Title | Guided Study in Engineering Mathematics |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in engineering mathematics through literature searching in various fields. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in engineering mathematics from literature related to topics of interest. (b) Carry out research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |
| Teaching/Learning Methodology <i>(Note 3)</i> | <p>Meet assigned supervisor regularly Hand the report with full list of references</p> |

| | | | | | | | |
|--|-----------------------------------|-------------|--|---|---|--|--|
| Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i> | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | | |
| | Continuous assessment | 100 | √ | √ | √ | | |
| | | | | | | | |
| | Total | 100 % | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report</p> | | | | | | | |
| Student Study Effort Expected | Student contact: | | | | | | |
| | ▪ Seminar/Tutorial | | 26 Hrs. | | | | |
| | Other student study effort: | | | | | | |
| | ▪ Assignment/mini-project | | 34Hrs. | | | | |
| | ▪ Self-study | | 60 Hrs. | | | | |
| | Total student study effort | | 120 Hrs. | | | | |
| | | | | | | | |
| Reading List and References | | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | |
|---|---|
| Subject Code | AMA6886 |
| Subject Title | Guided Study in Computational Mathematics |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in computational mathematics through literature searching in various fields. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in computational mathematics from literature related to topics of interest. (b) Carry out research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |
| Teaching/Learning Methodology <i>(Note 3)</i> | <p>Meet assigned supervisor regularly Hand the report with full list of references</p> |

| | | | | | | | |
|--|------------------------------------|-------------|--|---|---|--|----------|
| Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i> | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | c | | |
| | Continuous assessment | 100 | √ | √ | √ | | |
| | | | | | | | |
| | Total | 100 % | | | | | |
| <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report</p> | | | | | | | |
| Student Study Effort Expected | Student contact: | | | | | | |
| | ▪ Seminar/Tutorial | | | | | | 26 Hrs. |
| | Other student study effort: | | | | | | |
| | ▪ Assignment/mini-project | | | | | | 34Hrs. |
| | ▪ Self-study | | | | | | 60 Hrs. |
| | Total student study effort | | | | | | 120 Hrs. |
| | Reading List and References | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | |
|---|---|
| Subject Code | AMA6887 |
| Subject Title | Guided Study on Research Topics in Applied Mathematics |
| Credit Value | 3 |
| Level | 6 |
| Pre-requisite / Co-requisite/ Exclusion | Postgraduate course |
| Objectives | <ul style="list-style-type: none"> ◆ To broaden students' knowledge in applied mathematics through literature searching in various fields including applied optimization, operations research, applied statistics, financial mathematics, engineering mathematics, and computational mathematics. ◆ To enhance student's written and oral presentation skills through their own research work or topics of their interests. |
| Intended Learning Outcomes <i>(Note 1)</i> | <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Acquire knowledge and awareness of the latest advances in research development in applied mathematics from literature related to topics of interest. (b) Do research on an agreed topic (c) Improve written and oral presentation skills of research results on current topics of interest. |
| Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i> | <ul style="list-style-type: none"> ◆ The topic is determined by the Supervisor of the M. Phil/Ph. D student. ◆ Students must hand the completed guided study report to supervisor with adequate of related literature references. ◆ Student should consult supervisor regularly about the progress of the literature reviewing progress. |

| Teaching/Learning Methodology <i>(Note 3)</i> | Meet assigned supervisor regularly Hand the report with full list of references | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|---|---|---|---|--|----------|-----------------------------------|-------------|--|--|--|--|--|--|---|--------------------|---|---|---|--|-----------------------|-----|---|---------|---|--|--|--|--|--|--|--|--|-----------------------------|--|--|--|--|--|--|--|--|---------------------------|--|-------|-------|--|--|--|--|--------|--------------|--|--|--|--|--|--|--|---------|----------------------------|--|--|--|--|--|--|--|----------|
| Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i> | <table border="1" data-bbox="523 376 1463 757"> <thead> <tr> <th data-bbox="523 376 858 477" rowspan="2">Specific assessment methods/tasks</th> <th data-bbox="868 376 1002 477" rowspan="2">% weighting</th> <th colspan="6" data-bbox="1011 376 1463 477">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th data-bbox="1011 477 1082 510">a</th> <th data-bbox="1091 477 1161 510">b</th> <th data-bbox="1171 477 1241 510">c</th> <th data-bbox="1251 477 1321 510">d</th> <th data-bbox="1331 477 1401 510">e</th> <th data-bbox="1410 477 1463 510"></th> </tr> </thead> <tbody> <tr> <td data-bbox="523 510 858 577">Continuous assessment</td> <td data-bbox="868 510 1002 577">100</td> <td data-bbox="1011 510 1082 577">√</td> <td data-bbox="1091 510 1161 577">√</td> <td data-bbox="1171 510 1241 577">√</td> <td data-bbox="1251 510 1321 577"></td> <td data-bbox="1331 510 1401 577"></td> <td data-bbox="1410 510 1463 577"></td> </tr> <tr> <td data-bbox="523 577 858 645"></td> <td data-bbox="868 577 1002 645"></td> <td data-bbox="1011 577 1082 645"></td> <td data-bbox="1091 577 1161 645"></td> <td data-bbox="1171 577 1241 645"></td> <td data-bbox="1251 577 1321 645"></td> <td data-bbox="1331 577 1401 645"></td> <td data-bbox="1410 577 1463 645"></td> </tr> <tr> <td data-bbox="523 645 858 712"></td> <td data-bbox="868 645 1002 712"></td> <td data-bbox="1011 645 1082 712"></td> <td data-bbox="1091 645 1161 712"></td> <td data-bbox="1171 645 1241 712"></td> <td data-bbox="1251 645 1321 712"></td> <td data-bbox="1331 645 1401 712"></td> <td data-bbox="1410 645 1463 712"></td> </tr> <tr> <td data-bbox="523 712 858 757">Total</td> <td data-bbox="868 712 1002 757">100 %</td> <td colspan="6" data-bbox="1011 712 1463 757"></td> </tr> </tbody> </table> <p data-bbox="523 792 1463 981"> Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: Supervisor will go through the literature report and project report, and check the references and give a final grade to the final report </p> | | | | | | | | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | | | a | b | c | d | e | | Continuous assessment | 100 | √ | √ | √ | | | | | | | | | | | | | | | | | | | | Total | 100 % | | | | | | | | | | | | | | | | | | | | | | | |
| Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | a | b | c | d | e | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Continuous assessment | 100 | √ | √ | √ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Total | 100 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Student Study Effort Expected | <table border="1" data-bbox="523 1001 1463 1384"> <tr> <td colspan="8" data-bbox="523 1001 1190 1046">Student contact:</td> <td data-bbox="1200 1001 1463 1046"></td> </tr> <tr> <td colspan="8" data-bbox="523 1059 1190 1104">▪ Seminar/Tutorial</td> <td data-bbox="1200 1059 1463 1104">26 Hrs.</td> </tr> <tr> <td colspan="8" data-bbox="523 1117 1190 1162"></td> <td data-bbox="1200 1117 1463 1162"></td> </tr> <tr> <td colspan="8" data-bbox="523 1176 1190 1220">Other student study effort:</td> <td data-bbox="1200 1176 1463 1220"></td> </tr> <tr> <td colspan="8" data-bbox="523 1234 1190 1279">▪ Assignment/mini-project</td> <td data-bbox="1200 1234 1463 1279">34Hrs.</td> </tr> <tr> <td colspan="8" data-bbox="523 1292 1190 1337">▪ Self-study</td> <td data-bbox="1200 1292 1463 1337">60 Hrs.</td> </tr> <tr> <td colspan="8" data-bbox="523 1350 1190 1384">Total student study effort</td> <td data-bbox="1200 1350 1463 1384">120 Hrs.</td> </tr> </table> | | | | | | | | Student contact: | | | | | | | | | ▪ Seminar/Tutorial | | | | | | | | 26 Hrs. | | | | | | | | | | Other student study effort: | | | | | | | | | ▪ Assignment/mini-project | | | | | | | | 34Hrs. | ▪ Self-study | | | | | | | | 60 Hrs. | Total student study effort | | | | | | | | 120 Hrs. |
| Student contact: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ▪ Seminar/Tutorial | | | | | | | | 26 Hrs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Other student study effort: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ▪ Assignment/mini-project | | | | | | | | 34Hrs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ▪ Self-study | | | | | | | | 60 Hrs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total student study effort | | | | | | | | 120 Hrs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reading List and References | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

Subject Description Form

| | | | | | | | |
|--|---|-------------|--|---|--|--|--|
| Subject Code | AMA67711 | | | | | | |
| Subject Title | Research Seminars | | | | | | |
| Credit Value | 1 | | | | | | |
| Level | 6 | | | | | | |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for research students of AMA | | | | | | |
| Objectives | The aim of this subject is to provide students with the opportunity to learn the latest advances in Applied Mathematics and facilitate communications with experts in the field. | | | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <p>(a) Gain a good understanding of different advanced topics.</p> <p>(b) Learn oral academic communication and presentation skills.</p> | | | | | | |
| Subject Synopsis/ Indicative Syllabus | Seminars to be attended are determined by the students and chief supervisors. | | | | | | |
| Teaching/Learning Methodology | <p>Students are required to attend at least 10 research seminars per year, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars every year.</p> <p>Part-time students are required to attend at least 10 research seminars per two years, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars once every two years.</p> <p>Chief Supervisors are required to assess the report (with a pass or failure grade). Students who failed to submit a report to the satisfaction of their Chief Supervisor are required to make a re-submission until a pass grade is obtained.</p> | | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | | | |
| | 1. Attend 10 research seminars | 80% | ✓ | ✓ | | | |
| | 2. One report on one of the attended seminars | 20% | ✓ | ✓ | | | |
| Total | 100 % | | | | | | |

Subject Description Form

| | | | | | | | |
|--|---|-------------|--|---|--|--|--|
| Subject Code | AMA67712 | | | | | | |
| Subject Title | Research Seminars | | | | | | |
| Credit Value | 1 | | | | | | |
| Level | 6 | | | | | | |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for research students of AMA | | | | | | |
| Objectives | The aim of this subject is to provide students with the opportunity to learn the latest advances in Applied Mathematics and facilitate communications with experts in the field. | | | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <p>(a) Gain a good understanding of different advanced topics.</p> <p>(b) Learn oral academic communication and presentation skills.</p> | | | | | | |
| Subject Synopsis/ Indicative Syllabus | Seminars to be attended are determined by the students and chief supervisors. | | | | | | |
| Teaching/Learning Methodology | <p>Students are required to attend at least 10 research seminars per year, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars every year.</p> <p>Part-time students are required to attend at least 10 research seminars per two years, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars once every two years.</p> <p>Chief Supervisors are required to assess the report (with a pass or failure grade). Students who failed to submit a report to the satisfaction of their Chief Supervisor are required to make a re-submission until a pass grade is obtained.</p> | | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | | | |
| | 1. Attend 10 research seminars | 80% | ✓ | ✓ | | | |
| | 2. One report on one of the attended seminars | 20% | ✓ | ✓ | | | |
| Total | 100 % | | | | | | |

Subject Description Form

| | | | | | | | |
|--|---|-------------|--|---|--|--|--|
| Subject Code | AMA67713 | | | | | | |
| Subject Title | Research Seminars | | | | | | |
| Credit Value | 1 | | | | | | |
| Level | 6 | | | | | | |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for research students of AMA | | | | | | |
| Objectives | The aim of this subject is to provide students with the opportunity to learn the latest advances in Applied Mathematics and facilitate communications with experts in the field. | | | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <p>(a) Gain a good understanding of different advanced topics.</p> <p>(b) Learn oral academic communication and presentation skills.</p> | | | | | | |
| Subject Synopsis/ Indicative Syllabus | Seminars to be attended are determined by the students and chief supervisors. | | | | | | |
| Teaching/Learning Methodology | <p>Students are required to attend at least 10 research seminars per year, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars every year.</p> <p>Part-time students are required to attend at least 10 research seminars per two years, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars once every two years.</p> <p>Chief Supervisors are required to assess the report (with a pass or failure grade). Students who failed to submit a report to the satisfaction of their Chief Supervisor are required to make a re-submission until a pass grade is obtained.</p> | | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | | | |
| | 1. Attend 10 research seminars | 80% | ✓ | ✓ | | | |
| | 2. One report on one of the attended seminars | 20% | ✓ | ✓ | | | |
| Total | 100 % | | | | | | |

Subject Description Form

| | | | | | | | |
|--|---|-------------|--|---|--|--|--|
| Subject Code | AMA67714 | | | | | | |
| Subject Title | Research Seminars | | | | | | |
| Credit Value | 1 | | | | | | |
| Level | 6 | | | | | | |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for research students of AMA | | | | | | |
| Objectives | The aim of this subject is to provide students with the opportunity to learn the latest advances in Applied Mathematics and facilitate communications with experts in the field. | | | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <p>(a) Gain a good understanding of different advanced topics.</p> <p>(b) Learn oral academic communication and presentation skills.</p> | | | | | | |
| Subject Synopsis/ Indicative Syllabus | Seminars to be attended are determined by the students and chief supervisors. | | | | | | |
| Teaching/Learning Methodology | <p>Students are required to attend at least 10 research seminars per year, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars every year.</p> <p>Part-time students are required to attend at least 10 research seminars per two years, in addition to workshops/conferences, and to submit a report, to the Chief Supervisor, of no less than 1,500 words (excluding references) on one of the attended seminars once every two years.</p> <p>Chief Supervisors are required to assess the report (with a pass or failure grade). Students who failed to submit a report to the satisfaction of their Chief Supervisor are required to make a re-submission until a pass grade is obtained.</p> | | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
| | | | a | b | | | |
| | 1. Attend 10 research seminars | 80% | ✓ | ✓ | | | |
| | 2. One report on one of the attended seminars | 20% | ✓ | ✓ | | | |
| Total | 100 % | | | | | | |

Subject Description Form

| | | | | | | |
|--|---|-------------|--|---|--|--|
| Subject Code | AMA67721 | | | | | |
| Subject Title | Practicum | | | | | |
| Credit Value | 1 | | | | | |
| Level | 6 | | | | | |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for PhD students of AMA | | | | | |
| Objectives | The aim of this subject is to provide students with the opportunity to engage in teaching / research supporting activities in AMA. | | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <p>(a) Gain an understanding of teaching activities.</p> <p>(b) Learn to support organized research activities.</p> | | | | | |
| Subject Synopsis/ Indicative Syllabus | Teaching/research supporting activities are assigned by the HoD or his/her delegate. | | | | | |
| Teaching/Learning Methodology | <p>To earn one credit, students will be required to engage in teaching/research supporting activities assigned by the HoD or his/her delegate for 6 hours/week in any 13-week semester.</p> <p>The HoD or his/her delegate is required to:</p> <p>a. ensure that the activities are structured and can be assessed properly;</p> <p>b. submit, at the end of the training session, an assessment report on the performance of the relevant student(s), with details of activities undertaken and an overall assessment grade of Pass or Fail.</p> | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | |
| | | | a | b | | |
| | 1. Undertake teaching/research supporting activities | 100% | ✓ | ✓ | | |
| | | | | | | |

Subject Description Form

| | | | | | | |
|--|---|-------------|--|---|--|--|
| Subject Code | AMA67722 | | | | | |
| Subject Title | Practicum | | | | | |
| Credit Value | 1 | | | | | |
| Level | 6 | | | | | |
| Pre-requisite / Co-requisite/ Exclusion | A compulsory subject for PhD students of AMA | | | | | |
| Objectives | The aim of this subject is to provide students with the opportunity to engage in teaching / research supporting activities in AMA. | | | | | |
| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <p>(a) Gain an understanding of teaching activities.</p> <p>(b) Learn to support organized research activities.</p> | | | | | |
| Subject Synopsis/ Indicative Syllabus | Teaching/research supporting activities are assigned by the HoD or his/her delegate. | | | | | |
| Teaching/Learning Methodology | <p>To earn one credit, students will be required to engage in teaching/research supporting activities assigned by the HoD or his/her delegate for 6 hours/week in any 13-week semester.</p> <p>The HoD or his/her delegate is required to:</p> <p>a. ensure that the activities are structured and can be assessed properly;</p> <p>b. submit, at the end of the training session, an assessment report on the performance of the relevant student(s), with details of activities undertaken and an overall assessment grade of Pass or Fail.</p> | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | |
| | | | a | b | | |
| | 1. Undertake teaching/research supporting activities | 100% | ✓ | ✓ | | |
| | | | | | | |