



# AFCP855

## Life Cycle Investing

AFC Term 3 City 2019

*Department of Applied Finance*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Lecturer

Aaron Minney

[aaron.minney@mq.edu.au](mailto:aaron.minney@mq.edu.au)

Contact via Email

Credit points

2

Prerequisites

(Admission to MAppFin or MAppFin(Adv) or GradDipAppFin) and (AFCP801 or ECFS865)

Corequisites

Co-badged status

Unit description

This unit provides an in-depth knowledge of the challenge of understanding the nature of whole of life investing. A framework is developed to model the various risks followed with techniques to solve it whilst addressing the various complexities and uncertainties including longevity, inflation, and interaction with age pension. This unit will assist those involved in developing, managing and analysing any investment strategy for whole of life investing, particularly in the accumulation and retirement phases of the superannuation and retirement industry.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.

Ability to specify, develop and apply solution techniques for whole of life investing within an asset-liability framework.

Incorporate various complexities where required into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.

Critically evaluate various solutions to whole of life investment management within the

framework of their impact on (risk-adjusted) retirement outcomes.

Critically evaluate mechanisms, as an individual and in groups, to manage uncertainties impacting retirement outcomes as they arise through life.

## General Assessment Information

To pass this unit the student needs to (1) Achieve an aggregate mark of 50 or more, and; (2) Pass the Final Exam.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">In Class Group Exercise</a>	10%	No	Last day of class
<a href="#">Assignment</a>	40%	No	Refer to iLearn
<a href="#">Final Exam</a>	50%	Yes	Refer to Timetable

### In Class Group Exercise

Due: **Last day of class**

Weighting: **10%**

#### Summary of Assessment Task

**Individual / Group:** Group.

**Due Date:** Last day of class (details will be handed out in class).

**Submission Method:** In class.

**Duration:** Approx. 15 minutes presentation from each group with 30 minutes preparation.

#### Extension Requests:

- Students who do not attend receive a mark of zero. This penalty does not apply in cases where an application for Special Consideration has been made and approved.
- Note: Applications for Special Consideration must be made within 5 (five) business days of the due date and time.
- Refer to MAFC Program Rules at <https://mafcstudents.mq.edu.au/> for information on the University's [Special Consideration Policy](#).

On successful completion you will be able to:

- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms, as an individual and in groups, to manage uncertainties

impacting retirement outcomes as they arise through life.

## Assignment

Due: **Refer to iLearn**

Weighting: **40%**

### Summary of Assessment Task

**The assignment will require you to apply the knowledge and skills from the course to a whole of life projection. It will involve quantitative spreadsheet modelling through the use of Microsoft Excel.**

**Individual / Group:** A combination of individual and group work (refer to Assignment coversheet).

**Due Date:** Refer to the unit's iLearn site.

**Submission Method:** Via Turnitin on iLearn.

**Duration:** Refer to Assignment coversheet.

### Extension Requests:

- No extensions will be granted. There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission incurs a 20% penalty). This penalty does not apply for cases in which an application for Special Consideration is made and approved.
- Late submissions will be accepted up to 96 hours after the due date and time.
- Note: Applications for Special Consideration must be made within 5 (five) business days of the due date and time.
- Refer to MAFC Program Rules at <https://mafcstudents.mq.edu.au/> for information on the University's [Special Consideration Policy](#).

On successful completion you will be able to:

- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Ability to specify, develop and apply solution techniques for whole of life investing within an asset-liability framework.
- Incorporate various complexities where required into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.
- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.

- Critically evaluate mechanisms, as an individual and in groups, to manage uncertainties impacting retirement outcomes as they arise through life.

## Final Exam

Due: **Refer to Timetable**

Weighting: **50%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)**

### Summary of Assessment Task

**Individual / Group:** Individual.

**Due Date:** Refer to Timetable.

**Submission Method:** As per MAFC Program Rules at <https://mafcstudents.mq.edu.au/>

**Duration:** 2 hours plus 10 minutes reading time.

### Examination Conditions:

- All examinations are closed book. However, permitted materials and aids are:
  - A study sheet, prepared by the student (typically one double-sided A4 page).
  - Calculators. Permitted calculators are noted under 'Calculators' below.
- Exam times and locations are noted in the unit timetable at <https://www.mq.edu.au/about/about-the-university/faculties-and-departments/business/study-with-us/macquarie-applied-finance-centre/timetables>.
- Refer to MAFC Program Rules at <https://mafcstudents.mq.edu.au/>.

### Extension Requests:

- You are expected to present yourself for examination at the time and place designated in the relevant MAFC Timetable at <https://www.mq.edu.au/about/about-the-university/faculties-and-departments/business/study-with-us/macquarie-applied-finance-centre/timetables>.
- Deferral of an examination is not permitted unless an application for Special Consideration is made and approved.
- Students who do not attend receive a mark of zero. This penalty does not apply in cases where an application for Special Consideration has been made and approved.
- Note: Applications for Special Consideration must be made within 5 (five) business days of the due date and time.
- Refer to MAFC Program Rules at <https://mafcstudents.mq.edu.au/> for information on the University's [Special Consideration Policy](#).

On successful completion you will be able to:

- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Incorporate various complexities where required into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.
- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms, as an individual and in groups, to manage uncertainties impacting retirement outcomes as they arise through life.

## Delivery and Resources

### CLASSES

**Face-to-Face Teaching:** Generally 18 hours.

**Timetable:** Detailed timetable for classes are available at <https://www.mq.edu.au/about/about-the-university/faculties-and-departments/business/study-with-us/macquarie-applied-finance-centre/timetables>.

#### **Consultation Times:**

Students who wish to contact any of the teaching staff may do so through:

- iLearn, in relation to general queries (so that all students may benefit); or
- Individual consultation with the lecturer by email in the first instance, if necessary.

### REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

**Text:** There is no text for this unit.

**Lecture Notes:** Available in printed form and electronically via iLearn. Students should make themselves familiar with the notes ahead of the lectures.

#### **Additional Readings:**

- Additional readings are included in the unit notes and or iLearn.
- **Students should assume these readings are examinable unless otherwise advised.**

#### **Study Problems:**

- Students are required to work systematically through end of chapter problem sets. These problems will not be collected but they will help you prepare for the exams. Answers, but not worked solutions, to set problems are provided on iLearn.

#### **Pre-unit Materials:**

- Information papers on statistics, regression, accounting and other material may be found at <http://mafcstudents.mq.edu.au/new-to-mafc/pre-course-materials/>
- Students should work through this material prior to commencing the degree.
- The material will remain a useful reference as students progress through the program.

#### **Calculators:**

- A financial calculator that can handle time value of money calculations, logs and power functions is required.
- The Hewlett Packard calculator hp17bII+ is recommended.
- In examinations, hand held calculators are permitted. Mobile phones and computers are not permitted.

#### **Assumed Access:**

- Access to a computer with word processing and spreadsheet capability is assumed, as is general student computer literacy.
- Also assumed is access to a Web browser (e.g. Internet Explorer or Firefox) and email software and a student's own connection to an internet service provider.

## **TECHNOLOGY USED AND REQUIRED**

#### **Unit iLearn Site:**

- Found by logging on to iLearn [ilearn.mq.edu.au](http://ilearn.mq.edu.au), then clicking on ***AFCP855 Life Cycle Investing***.
- This is where you will find a link to forums, downloadable resources and other important pages.
- Forums allow you to communicate with other students and lecturer(s) and may provide supplementary material.
- You are requested to post questions to forums at least 24 hours prior to an assignment submission date or examination date. Questions posted after that time may not be answered. **Please try to not leave your questions to the last few days.**

#### **Important Notice:**

- It is important that you familiarise yourself with iLearn.
- Students should check iLearn regularly (minimum twice a week and prior to all lectures) and look for updates and distribution of materials (including case studies) related to the unit or assessments and, if relevant, participate in forum discussions.

## Unit Schedule

The topics are covered over 6 lectures.

### TOPIC 1: INTRODUCTION TO LIFE CYCLE INVESTING

- 1.1. Introduction to Life Cycle analysis
- 1.2. Life Cycle of liabilities
- 1.3. Industry background
- 1.4. What is the safe withdrawal rate?

### TOPIC 2 : THE PROBLEM TO SOLVE

- 2.1. State as an asset-liability problem
- 2.2. Life Cycle cash flows
- 2.3. Developing a Life Cycle cash flow model
- 2.4. How do you solve this problem
- 2.5. Analyse investment volatility

### TOPIC 3: TECHNIQUES TO SOLVE THE INVESTMENT STRATEGY PROBLEM

- 3.1. Solving the LCI problem
- 3.2. Case studies: Some known solutions
- 3.3. Apply Monte Carlo technique
- 3.4. Using the Monte Carlo technique

### TOPIC 4: APPLY TO VARIOUS CASES

- 4.1. Introduction
- 4.2. Estimated retirement outcomes for a young person
- 4.3. Is there time for an empty nester to improve their retirement outcome?
- 4.4. Now that I'm at my retirement date, what can I spend?
- 4.5. Case study: Safe withdrawal rates

### TOPIC 5: ROUND OUT THE SOLUTION

- 5.1. Longevity risk
- 5.2. Impact of social security
- 5.3. Inflation risk
- 5.4. Sequencing risk
- 5.5. Concepts to add additional features



## TOPIC 6: MANAGING THE END GAME: TECHNIQUES TO MANAGE THE UNCERTAINTIES IN RETIREMENT

- 6.1. Recap
- 6.2. Monitor, assess and adjust
- 6.3. Strategies to manage some risks
- 6.4. In class exercise - monitoring

## Learning and Teaching Activities

### Strategy

The Master of Applied Finance degree adopts a deep teaching and learning strategy, in which students acquire and retain knowledge and also are able to make sense of the issues and concepts and apply them in the “real world”. The degree relies heavily on student engagement and participation by: (a) Continuous learning throughout the term. This is encouraged through a combination of students undertaking prescribed reading throughout the units and/or completion of practice problems, case studies, assignments, class presentations etc and interaction via forums in the unit’s iLearn site; and (b) Assessments, which enable the student to demonstrate his/her understanding of the learning objectives achieved through the continuous learning.

### Student Participation

Students participate in this unit by: (a) Attending lectures and participating in class discussion; (b) Before each class, completing the recommended readings of notes and text, and working systematically through suggested problem sets; (c) Interacting on the unit’s iLearn site; and (d) Completing all assessment tasks and exams. On average, the unit will require students to complete, for every hour of class time, approximately 3 hours private study.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4*

*December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

Students should also consult the MAFC Program Rules found at <https://mafcestudents.mq.edu.au/>.

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student enquiry service (MAFC-specific)

For all student enquiries, please contact [studentsupport@mafcmq.edu.au](mailto:studentsupport@mafcmq.edu.au)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Learning Skills

Learning Skills ([http://www.students.mq.edu.au/support/learning\\_skills/](http://www.students.mq.edu.au/support/learning_skills/)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

#### Learning outcomes

- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Ability to specify, develop and apply solution techniques for whole of life investing within an asset-liability framework.
- Incorporate various complexities where required into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.
- Critically evaluate various solutions to whole of life investment management within the framework of their impact on (risk-adjusted) retirement outcomes.
- Critically evaluate mechanisms, as an individual and in groups, to manage uncertainties impacting retirement outcomes as they arise through life.

## Assessment tasks

- In Class Group Exercise
- Assignment
- Final Exam

## PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

## Learning outcomes

- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Ability to specify, develop and apply solution techniques for whole of life investing within an asset-liability framework.
- Incorporate various complexities where required into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.
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- Critically evaluate mechanisms, as an individual and in groups, to manage uncertainties impacting retirement outcomes as they arise through life.

## Assessment tasks

- In Class Group Exercise
- Assignment
- Final Exam

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

## Learning outcomes

- Apply investment theory to understand and communicate the different perspective of long term multi-time period investing.
- Ability to specify, develop and apply solution techniques for whole of life investing within an asset-liability framework.
- Incorporate various complexities where required into the asset-liability model aiming to capture the material drivers impacting retirement outcomes.

## Assessment tasks

- In Class Group Exercise
- Assignment
- Final Exam

## Important Notice

This Unit Guide may be subject to change. Students will be advised, via an "Announcement" on iLearn, if the Unit Guide is changed.

The latest version is available at <https://unitguides.mq.edu.au/>.

Students should read the Unit Guide carefully at the start of term. It contains important information about the unit. If anything is unclear, please consult one of the unit lecturers.