

# Course Outline

**Title:** PROFIT LOSS AND GAMBLING (INTERMEDIATE LEVEL)

**Code:** MATHS2003

**Formerly:** MA653

**Faculty / Portfolio:** Faculty of Science

## Program Level:

	AQF Level of Program					
	5	6	7	8	9	10
Level						
Introductory						
Intermediate			✓			
Advanced						

**Pre-requisites:** (At least one introductory level maths course or equivalent)

**Co-requisites:** Nil

**Exclusions:** (MA653) (MATHS1003) (MA553)

**Progress Units:** 15

**ASCED Code:** 010101

## Learning Outcomes:

### Knowledge:

- K1.** describe the mathematical models which underpin games of chance;
- K2.** explain concepts of probability with a discussion of historical and contemporary applications;
- K3.** employ techniques for exploring the impact of gambling using descriptive statistics;
- K4.** apply techniques for comparing alternative financial investment strategies.

### Skills:

- S1.** perform calculations of probabilities;
- S2.** explain and calculate conditional probabilities and independent events;
- S3.** discuss and use Bayes` rule;
- S4.** use conventional mathematical notation associated with probability and combinatorics;
- S5.** describe and do calculations involving discrete probability distributions;
- S6.** discuss the probability of winning various games of chance;
- S7.** apply the concepts of variance and standard deviation for discrete distributions;
- S8.** use graphs, tables and formulas for financial calculations and modelling investment;

### Application of knowledge and skills:

- A1.** use technology to create simulations, explore mathematical models and perform calculations.

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**A2.** discuss the long term expected outcomes for both the player and the casino (or other gaming host);

**A3.** compare different investments and choose the best one;

### Values and Graduate Attributes:

#### Values:

**V1.** appreciate the role of mathematics in modelling the physical world;

**V2.** master new techniques;

**V3.** appreciate that theory can only approximate the real world;

**V4.** appreciate the need for continuous learning.

**V5.** ponder the social impact of gambling;

#### Graduate Attributes:

Attribute	Brief Description	Focus
Continuous Learning	Technology is not static, and students will appreciate that learning is a life long process.	Low
Self Reliance	Students will be made aware that acquisition of independence and enterprise are essential for their future role in society.	Low
Engaged Citizenship	Although often hidden from view, mathematics underpins many important aspects of modern society. Successful graduates will be mathematically capable professionals, fully appreciating its fundamental role.	Low
Social Responsibility	Accepted norms of ethical behaviour are introduced and students are encouraged to act in a socially responsible manner in the classroom, work place and elsewhere.	Low

#### Content:

Topics may include:

- probability theory (including conditional probability and Bayes` rule);
- discrete probability distributions;
- games of chance;
- simple and compound interest;
- time value of money, annuities, present and future values.

#### Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K1-K4, S1-S8	Participate in class activities	Portfolio of completed work	10 - 25%
K1-K4, S1-S8, A1-A3	Self-directed or group exploration	Projects, assignments, homework exercises	25 - 50%
K1-K4, S1-S8	Review and skills practice	Tests/examination(s)	30 - 60%

#### Adopted Reference Style:

APA

#### Presentation of Academic Work:

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<https://federation.edu.au/students/assistance-support-and-services/academic-support/general-guide-for-the-presentation-of-academic-work>