Philosophy & Reason

Philosophy & Reason Senior Syllabus

CONTENTS

1 RATIONALE

Philosophy & Reason is concerned with developing the ability to reason and the role of reasoning in developing coherent world views. The contribution that the study of reasoning and philosophy makes to students lies in their attainment of the knowledge, skills and processes of rational thought. These directly affect the students' quality of life, not only determining the rational nature of their own decisions but also their responses to the views of others.

To do justice to the extensive domain of philosophy and reason, this course introduces three major areas:

- Critical Reasoning
- Deductive Logic
- Philosophy.

Critical Reasoning sets out to provide knowledge of widely used inductive reasoning processes. The student recognises and evaluates these, and identifies their associated fallacies and shortcomings. This is an intensely practical area, involving analysis of reasoning in written and oral form with widely ranging subject matter. The knowledge and skills gained by students in this area equip them to analyse information rationally. These skills have wide application for students in other subjects studied at school, in tertiary studies, and as active participants in their society.

Deductive Logic introduces the student to modern symbolic languages as an effective system for the analysis and evaluation of propositions and arguments. The focus on deductive testing and proof strategies has immediate application to formal reasoning. Students are introduced to the methods of problem analysis, solution proposal and strategy choice. The relevance of Logic languages and deductive techniques to the practical world is evident to the student because the course allows for experience with computer programming languages.

The study of Philosophy allows the student to recognise the relevance of various philosophies to different social, ethical and religious positions, and realise that decisions in these areas are the result of an acceptance of both a certain body of beliefs and of a specific mode of reasoning. Study in this area is especially useful since it allows the student to apply the reasoning skills of the previous two areas. The continued emphasis on consistency and justification gives the student a rational view on major issues which previously may have been viewed irrationally.

Students are encouraged to express and justify views about major topics. Developing a confident and open-minded attitude to social issues and the views of others is a major aim of this course.

Philosophy & Reason provides opportunities for developing the key competencies[1] in contexts that arise naturally from the learning experiences and assessment practices of the subject. In the course of their studies, students will analyse argument from everyday sources pertinent to sound and/or faulty reasoning. Individually and in

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[1] KC1: collecting, analysing and organising information; KC2: communicating ideas and information; KC3: planning and organising activities; KC4, working with others and in teams; KC5: using mathematical ideas and techniques; KC6: solving problems; KC7: using technology

groups, they will plan and organise the presentation of findings in the form of an argument, in a variety of formats and for a variety of audiences. They will choose appropriate problem-solving techniques and attempt to solve problems associated with argument. As part of their learning and classroom experiences, students will have opportunities to use symbolic reasoning techniques and algorithms, and to use computers for database construction and problem-solving using inference rules.

2 GLOBAL AIMS

At the conclusion of this course, students should have developed:

- an improved ability to think clearly, analytically and creatively
- a critical, open-minded and unprejudiced approach in the use of logical analysis, recognising the need for a balanced growth of emotions and reason.
- the ability to appreciate the processes of science and the humanities by dealing directly with the underlying rational bases of such fields as natural and social science, mathematics, linguistics, law, and computing
- an improved ability to interpret verbal information and express themselves clearly, by focusing on the important role that language plays in reasoning
- an improved understanding of cognitive and metacognitive processes (theirs and others')
- an improved understanding of the underlying cultural, social, moral and religious structures of the world.

3 GENERAL OBJECTIVES

The following general objectives set out the significant aspects of Philosophy & Reason. They have been formulated in terms of the understandings and processes that students should ideally acquire.

The general objectives include affective objectives that describe the attitudes and values that the syllabus aims to develop. They are not assessed for the awarding of exit levels of achievement.

The three objectives Knowledge, Application, and Communication are linked to the exit criteria and standards, and should be read in conjunction with sections 8.4 and 8.6

3.1 KNOWLEDGE:

Knowledge refers to the ability to bring to mind previous learned information.

At the completion of this course, students should be able to grasp and recall concepts, key ideas, methods and principles within the areas of deductive reasoning, critical reasoning, and philosophy.

3.2 APPLICATION

Application refers to the processes of identifying and clarifying questions, issues and arguments, and solving problems, drawing on a range of concepts, key ideas, methods and principles.

At the completion of this course, students should be able to:
- select and apply appropriate procedures and techniques of deductive reasoning to solve simple and complex problems
- select and apply appropriate procedures and techniques of critical reasoning to reach and evaluate conclusions and solve problems
- describe, analyse and evaluate philosophical theories and views (including those of the student).

3.3 COMMUNICATION

Communication refers to the use of written, spoken, graphical, multimodal and electronic formats to explain, discuss, argue, and reveal ideas and information.

At the completion of this course, students should be able to:
- present information using the standard conventions of language
- convey their understanding of concepts, key ideas, methods and principles
- produce explanations, descriptions, arguments and justifications.

3.4 AFFECTIVE

Affective objectives refer to the attitudes and values that this subject aims to develop in its students. At the completion of this course, students should:
- appreciate clarity and conciseness of expression and argument
- appreciate the importance of logic in forming public and private opinion
- value a commitment to rationality and philosophical thought
- respect the legitimacy of a range of philosophical attitudes.

4 COURSE ORGANISATION

4.1 TIME ALLOCATION

The minimum number of hours of timetabled school time including assessment for a course of study developed from this syllabus is 55 hours per semester.

Each unit selected within a strand should be studied for approximately six to eight weeks. Section 4.2 provides more specific guidance about selections and timeframes for constructing a course of study.

4.2 SEQUENCING OF THE COURSE

The minimum requirements for a course of study in Philosophy & Reason are:

- eight of the fifteen units available (which may include a school-based unit in each strand)
- at least two units in Critical Reasoning including unit 1, "Let's be Reasonable"
- at least two units in Deductive Logic including unit 6, "Propositional Logic"
- at least two units in Philosophy.

Each of the three strands is presented as a series of units and topics. This unitisation should be seen as a guide only. In developing a course of study, schools may choose to offer a unitised sequence or may integrate units and topics within or across strands, where subject matter is related or compatible (see section 5). For example, many of the reasoning skills developed in Critical Reasoning and Deductive Logic are integral to and applied within the study of Philosophy, and therefore should be sequenced appropriately.

Moreover, since the students' skills should develop over the entire course of study, regardless of whether a sequential, concurrent or spiralling organisation of strands and units is chosen, the course organisation should encourage revision, consolidation and improvement of the students' ability to reason and philosophise.

Unit 6 contains some content and strategies that are essential for units 7 and unit 8, and as such should be offered before or concurrently with these units, if selected.

The three school option units (5, 10 and 15) allow flexibility in structuring courses and in offering context-based and thematic approaches. They may also be useful in developing courses of study for composite classes. These units may be structured to take account of the developmental needs of each year grouping of students within the composite Year 11–12 class.

A summary that displays the sequence of units and topics and the respective time allocations must be shown in the course organisation section of the school's work program.

4.3   STRANDS AND UNITS OF STUDY

Strand	Units	
Critical Reasoning	Unit 1	Let's be Reasonable
	Unit 2	Tell me why
	Unit 3	What are the Odds?
	Unit 4	That's Debatable
	Unit 5	School option in Critical Reasoning
Deductive Logic	Unit 6	Propositional Logic
	Unit 7	Contemporary and Traditional Logic
	Unit 8	Monadic Logic
	Unit 9	Dyadic Logic
	Unit 10	School option in Logic
Philosophy	Unit 11	Choice and Action
	Unit 12	Ways of Knowing
	Unit 13	Society and the Individual
	Unit 14	Thinkers and Schools of Thought
	Unit 15	School option in Philosophy

4.4   SAMPLE COURSE ORGANISATIONS

The following examples of possible course organizations allow for the development of courses of study that emphasis particular strands.

Sample 1 (Critical Reasoning emphasis)

Year	Semester 1	Semester 2
11	Unit 6: Propositional Logic	Unit 1: Let's be Reasonable
	Unit 7: Contemporary and Traditional Logic	Unit 2: Tell me why
12	Unit 4: That's Debatable	Unit 11: Choice and Action
	Unit 3: What are the Odds	Unit 13: Society and the Individual

Sample 2 (Deductive Logic emphasis)

Year	Semester 1	Semester 2
11	Unit 6: Propositional Logic	Unit 8: Monadic Logic
	Unit 7: Contemporary and Traditional Logic	Unit 9: Dyadic Logic
12	Unit 1: Let's be Reasonable	Unit 11: Choice and Action
	Unit 2: Tell me why	Unit 12: Ways of Knowing

Sample 3 (Philosophy emphasis)

Year	Semester 1	Semester 2
11	Unit 6: Propositional Logic	Unit 1: Let's be Reasonable
	Unit 7: Contemporary and Traditional Logic	Unit 2: Tell me why
12	Unit 11: Choice and Action	Unit 13: Society and the Individual
	Unit 12: Ways of Knowing	Unit 14: Thinkers and Schools of Thought

Sample 4 (Three area emphasis)

Year	Semester 1	Semester 2
11	Unit 6: Propositional Logic	Unit 1: Let's be Reasonable
	Unit 7: Contemporary and Traditional Logic	Unit 8: Monadic Logic
12	Unit 2: Tell me why	Unit 4: That's Debatable
	Unit 11: Choice and Action	Unit 12: Ways of Knowing

4.5 COMPOSITE CLASSES

The three strands in the Philosophy & Reason syllabus provide opportunities for teachers to develop a course of study that caters for combined Year 11 and Year 12 classes, combined campuses, or other modes of delivery. Sample 5 provides a possible way of meeting the course organisation requirements of the course as described in section 4.2, and the need for suitable entry points to the course for Year 11 students entering a composite arrangement.

Sample 5 (composite classes) also recognises the requirements for verification folios — that an extended piece of writing must be completed in Year 12. Refer to section 8.5.

Sample 5 (Composite classes)

Year	Semester 1and/or 3	Semester 2 and/or 4
1	Unit 6: Propositional Logic Unit 7: Contemporary and Traditional Logic (topics 1, 2 or 3), or unit 8	A Philosophy unit, and unit 2, 3, 5 or another Philosophy unit
2	Unit 1: Let's be Reasonable Unit 10: School option in Logic (using topics 4 and 6 from unit 7)	A Philosophy unit, and unit 2, 3, 4, 5 or another Philosophy unit
3	Unit 6: Propositional Logic Unit 7: Contemporary and Traditional Logic (topics 1, 2 or 3), or unit 8	A Philosophy unit, and unit 2, 3, 5 or another Philosophy unit

4.6 WORK PROGRAM REQUIREMENTS

A work program is the school's plan of how the course will be delivered and assessed based on the school's interpretation of the syllabus. It allows for the special characteristics of the individual school and its students.

The school's work program must meet all syllabus requirements and must demonstrate that there will be sufficient scope and depth of student learning to meet the general objectives and the exit standards.

The requirement for work program approval can be accessed in the QSA's website (http://www.qsa.qld.edu.au/). This information should be consulted before writing a work program. Updates of the requirements for work program approval may occur periodically.

5 STRANDS AND UNITS OF STUDY

CRITICAL REASONING STRAND

Unit 1: Let's be Reasonable

Overview

To be "reasonable" is to be able to give clear, relevant and persuasive reasons for one's behaviour. In most circumstances this needs the use and evaluation of inductive arguments. This unit is intended to develop students' inductive reasoning skills, which include identifying, classifying, analysing and constructing the many types of inductive argument, thereby enhancing their abilities to reason critically, discern erroneous or deceptive arguments and assess the strength of arguments found in everyday and special situations.

A study of this unit includes the following subject matter and related activities:

- distinguishing inductive reasoning from deductive reasoning
- identifying, classifying, analysing and constructing the four major inductive argument types:
  - inductive generalisation
  - proportional induction
  - statistical syllogism
  - inductive analogy
- using inductive arguments in specific disciplines including at least two of:
  - scientific reasoning
  - moral/ethical arguments
  - psychology
  - advertising
  - aesthetics
  - media studies
  - religious reasoning
  - legal arguments
  - politics
  - social sciences
  - statistical reasoning
  - sociology
- the fallacies[2] that can arise when employing each of the four types of inductive reasoning
- the fallacies of illicit appeal, including at least:
  - appeal to authority (ad verecundiam)
  - appeal to ignorance (ad ignorantiam)
  - attacking the person (ad hominem, to quoque)
  - appeal to pity (ad misericordiam)
  - appeal to emotive language

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[2] The Latin terms or their modern equivalents may be used when identifying these fallacies.

- the fallacies of assumption, including at least:
  - begging the question (petitio principii)
  - complex question
  - black and white thinking
  - slippery slope
  - enthymeme
- the fallacies of scope, including at least:
  - hasty generalization
  - biased sampling
  - division
  - composition
  - assuming the cause (post hoc ergo propter hoc)
  - faulty analogy
  - accident
  - stereotyping
- the fallacies of ambiguity, including at least:
  - amphiboly
  - equivocation
  - accent
  - strawman
  - definer's
- the capacities and limitations of inductive reasoning.

Unit 2: Tell me why

Overview

Central to human understanding is the ability to "explain". Whether a thing is technical, academic or an everyday experience, being able to explain it and then justify that explanation is a crucial function of inductive reasoning. This unit is intended to explore the role, scope and types of explanations and justifications, as well as the problems and limitations of this manner of reasoning.

A study of this unit includes the following subject matter and related activities:
- distinguish between explanations and justifications
- recognise and assess explanation and justification techniques used in specific disciplines including at least two of:
  - scientific reasoning
  - moral/ethical arguments
  - journalism
  - forensic science
  - aesthetics
  - politics
  - religious reasoning
  - legal arguments
  - advertising
  - social sciences
  - statistical reasoning
  - psychology

- discuss the concepts of cause and effect, including Hume's criteria of:
  - contiguity of time and place
  - temporal priority of the cause
  - constant conjunction
- explain the difference between immediate and remote causes
- identify and evaluate causal arguments
- identify the fallacies common to causal arguments, including at least:
  - post hoc ergo propter hoc (false cause)
  - slothful induction
  - forgetful induction
  - dicto simpliciter (accident)
- select, record and chart data for the application of Mill's Methods
- apply Mill's Methods to find possible necessary and/or sufficient conditions:
  - direct method of agreement
  - inverse method of agreement
  - double method of agreement
  - method of residues
  - method of concomitant variation
- evaluate hypotheses using appropriate criteria including:
  - explanatory adequacy
  - simplicity and Occam's Razor
  - consistency with established beliefs
  - predictive ability
- form hypotheses
- explain the role and nature of the Hypothetico-deductive technique
- investigate past successful and unsuccessful hypotheses in various fields such as:
  - scientific
  - historical
  - sociological
  - economic
  - medicine
- identify the fallacies common to the use of hypotheses
- analyse the assumptions used in scientific reasoning, including:
  - uniformity of nature
  - physical determinism
  - temporal persistence of scientific laws
  - explicability/rationality of nature
- investigate the role and limitations of inductive reasoning including at least one of:
  - Hume's traditional problem of induction
  - The Goodman Induction Paradox.

Unit 3: What are the Odds?

Overview

Statistics and statistical reasoning are essential parts of modern society. Whether the decisions to be made are specific and individual (career choices, investment options

etc.) or general and collective (educational policy, marketing strategies etc.) the importance of statistical evidence and probability calculations has never been greater. This unit is intended to develop students' skills in working with statistics and probabilities by exploring the role, scope, types and applications of this type of inductive reasoning.

A study of this unit includes the following subject matter and related activities:

- discuss the nature of probability
- distinguish between experimental (empirical) and theoretical (heuristic) probability
- identify the role played by probability in evaluating the strength of inductive arguments
- distinguish between epistemic and inductive probability
- explain the significance of probability in the four major types of inductive reasoning
- use listing techniques (including simple lists, tables and trees) to calculate the probability of simple events
- use diagrammatic and/or algorithmic methods to calculate the probability of compound events, including independent events and mutually exclusive events
- use diagrammatic, algorithmic or other methods to calculate the expected value of a wager
- identify a fair bet
- identify the limitations associated with the use and calculation of probability
- identify the fallacies common to arguments that use probability, including:
    – the Monte Carlo fallacy
    – misuse of the Law of Averages
- distinguish between descriptive and inferential statistics
- outline common sampling techniques used to generate statistics
- outline the common fallacies and problems associated with statistical arguments, sampling and polling, including:
    – biased sampling
    – hasty generalization
    – loaded questions
    – complex question
    – alternatives that are not mutually exclusive
    – alternatives that are not collectively exhaustive
- identify and evaluate the use of arguments employing probability and statistics in at least two of the following disciplines:
    – scientific reasoning
    – moral/ethical arguments
    – journalism
    – forensic science
    – aesthetics
    – psychology
    – insurance
    – religious reasoning
    – legal arguments

- advertising
- social sciences
- mathematics
- sociology
- economics

Unit 4: That's Debatable!

Overview

The hallmark of good inductive reasoning is its capacity to persuade. From legal and parliamentary debate to a discussion between friends, rational argument and skills in rhetoric are indispensable tools for effective speakers. This unit aims to provide students with the theoretical and practical sides of debate. By using historical examples and present-day applications, this unit is intended to equip students with the skills that will enhance their awareness of, appreciation for, and facility with a range of formal and informal debates.

A study of this unit includes the following subject matter and related activities:

- analyse rational arguments for:
  - rational links
  - point at issue
  - kinds of response
  - rebuttal
  - presentation technique
  - onus of proof
- construct arguments for a specific purpose using a comprehensive technique
- identify the principles of debate (formal and informal)
- identify the persuasive and emotive elements in the presentation of argument, including:
  - angering the opponent
  - use of threats and promises
  - abandoning discussion and forestalling disagreement
  - character assassination and "poisoning the well"
  - appeal to popular passions and sympathies
  - association with motive and prejudice
  - exploitation of cultural bias and "motherhood" statements
  - exaggeration and understatement
  - ceremony and setting including body language, theatricality
  - using humour and ridicule
  - assuming the moral high ground
  - deflecting attention with red herrings and non sequiturs
  - appeal to relativism
  - use of scapegoat and easy targets
- identify the common fallacies associated with persuasive argument, including:
  - ad hominem (attacking the person)
  - genetic fallacy
  - to quoque ("you too" fallacy)
  - ad misericordiam (appeal to emotion)

- ad baculum (appeal to force)
- slippery slope
- ad populum (appeal to popular opinion)
- black and white fallacy
- stereotyping
- ad ignoratiam (appeal to lack of proof)
- strawman fallacy

- analyse critical reasoning processes and types of debate in at least two current issues taken from disciplines such as:
  - scientific reasoning
  - moral/ethical arguments
  - media & journalism
  - social sciences
  - psychology
  - politics
  - religious reasoning
  - legal arguments
  - advertising
  - aesthetics
  - history
  - sport

- the study and use of rhetorical skills

- analyse at least two noteworthy examples of rhetoric such as speeches and/or debates; possible sources include:

Rhetoric to inform	**Rhetoric to exhort**
Socrates	Winston Churchill
Huxley vs Wilberforce	Indira Gandhi
Russell s Copplestone	Adolf Hitler
Mary Robinson	John F & Robert Kennedy
Louisa Lawson	Aung San Suu Kyi
	Abraham Lincoln

Rhetoric to entertain	**Rhetoric to persuade**
Peter Ustinov	Shakespeare[3]
Barry Humphries[4]	Clarence Darrow
Billy Connolly	Germaine Greer
	Martin Luther King
	Nelson Mandela

- deception techniques & common fallacies used in debate

- the place and role of sophism in the modern world (politics, law, education, media, and religion).

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[3] e.g. Portia in *Merchant of Venice*, Mark Anthony in *Julius Caesar*

[4] in any of his incarnations

Unit 5: School option in Critical Reasoning

Overview

Unit 5 enables schools to amalgamate or extend units already described in the Critical Reasoning strand. For example, having selected the compulsory unit 1, schools may choose to combine elements of the remaining units to produce the school option, possibly within a context-based or thematic approach.

DEDUCTIVE LOGIC STRAND

Unit 6: Propositional Logic

Overview

Proposition and argument are the means by which facts, beliefs and conjectures are expressed and as such they are the building blocks of reasoning. Their properties, and the rules that govern their use, enable effective communication. This unit is intended to equip students with basic analysis skills that will allow them to identify, classify, represent and evaluate propositions and arguments. The acquisition of such skills brings about an enhanced awareness of, appreciation for and facility with the structure, richness and applications of clear and effectual communication.

A study of this unit includes the following subject matter and related activities:

- distinguish between sentences that express propositions and non-propositions
- classify non-propositions as questions, commands, exclamations, stipulations, wishes, hopes, paradoxes, nonsense, etc.
- classify propositions as simple or complex
- identify types of complex propositions and their logical symbols: negation ($\sim$), conjunction (&), inclusive disjunction ($\vee$), exclusive disjunction ($\not\equiv$), conditional ($\supset$) and biconditional ($\equiv$)
- translation of English into propositional logic and vice versa
    - propositions (simple and complex)
    - logical operators
    - translation of arguments
- use truth tables, truth trees and/or the method of assigning values to classify propositions as tautologies, contradictions and contingencies
- use truth tables, truth trees and/or the method of assigning values to identify the relationship between propositions (consistent, inconsistent, equivalent, contradictory, contrary, subcontrary, implication, indifferent)
- use truth tables, truth trees and/or the method of assigning values to test arguments for validity (including arguments in English)
- use truth tables, truth trees and/or the method of assigning values to produce counter-examples to invalid arguments
- classify arguments as sound or unsound
- identify common fallacies of deductive reasoning (denying the antecedent, affirming the consequent, affirming a disjunct, inconsistent premises)
- recognise the limitations of propositional logic.

Unit 7: Contemporary and Traditional Logic

Overview

Deductive reasoning has a rich tradition, stretching from the early work of Aristotle to its many present-day applications and developments within the fields of computing, mathematics and logic. The subject matter chosen in this unit should provide students with contexts within which they can develop, extend and adapt their deductive reasoning skills and expertise. This unit should provide students with opportunities to

integrate these skills while enhancing their appreciation of the role, scope and power of deductive logical reasoning.

A study of this unit includes the following subject matter and related activities for **at least two** of the following topics.

Topic 1: Logical puzzles and paradoxes

- use deductive logic techniques to solve logic puzzles, e.g. elimination grid puzzles, truth table puzzles, truthteller–liar puzzles, MAV
- use deductive logic to formalise and analyse paradoxes, e.g. self-referent paradoxes (liar paradox), circular paradoxes, infinite regress paradoxes, semantic paradoxes.

Topic 2: Switching/Logic circuits

- apply propositional logic to represent logic circuits involving "inverter", "and" and "or" gates
- use propositional logic to analyse and simplify logic circuits
- apply propositional logic to switching circuits.

Topic 3: Natural deduction

- identify arguments which have the classical valid argument forms: affirming the antecedent (modus ponens), denying the consequent (modus tollens), chain argument, disjunctive syllogism, disjunctive addition, conjunction, simplification and reductio ad absurdum
- identify tautologies which have the classical tautological forms: commutation, association, De Morgan's laws, contraposition, exportation, the law of non-contradiction, and the law of excluded middle
- construct proofs in a natural deduction system.

Topic 4: Traditional logic of categorical forms

- identify the subject class, predicate class and copula in standard propositions
- translate propositions into categorical form (A, E, I, O)
- use the square of opposition and laws of immediate inference to establish the relationships between propositions
- distinguish between the hypothetical and existential viewpoints
- put syllogisms and sorites into standard form and test them for validity by application of rules or Venn diagrams , Karnaugh-Veitch maps or other appropriate diagrammatic means
- comparison of traditional logic with modern predicate logic.

Topic 5: Set theory and identity theory

- translate and test formulae and arguments involving the special predicates of identity and/or set theory
- produce and test counter-examples for such formulae and arguments in identity and/or set theory.

Topic 6: A relational database computer language

Examples include Prolog, Amzi Logic Explorer.
- use a relational database to encode information (objects and predicates)
- construct well-formed queries to elicit required responses
- Use inferential reasoning to solve extended problems (if …, then).

Topic 7: Modal predicate logic

- translate and test formulae and arguments involving the special symbols of modal logic (◊,   )
- outline and apply the concepts of possibility and necessity in formal and natural language arguments
- produce and test counter-examples for such formulae and arguments in modal logic, e.g. contingent universe and necessary universe maps.

Topic 8: Another aspect of deductive logic selected by the school

Examples include fuzzy logic, pop logic, epistemic logic, axiomatic approaches to geometry and arithmetic, e.g. Euclid, Peano.

Unit 8: Monadic Logic

Overview

Integral to reason are the abilities to classify accurately and to describe the relationships between different predicates employed. Monadic Logic is the study of the propositions and arguments that are employed in this, namely those that involve predicates and quantifiers. This unit is intended to extend students' deductive reasoning skills, enabling them to work with these advanced propositions and arguments, and helping them to analyse this rich and powerful aspect of language that is so widely used in linguistics, the sciences, (physical and social), computing, and mathematics.

A study of this unit includes the following subject matter and related activities:

- identify singular and predicate terms
- identify quantifier phrases and their logical symbols ($\forall x$, $\exists x$)
- identify and classify standard categorical propositions (A, E, I, O)
- translate from ordinary English into Monadic Logic and from Monadic Logic into ordinary English
- identify premises and conclusions in monadic predicate arguments
- represent and analyse formulae of Monadic Logic diagrammatically and/or using trees
- classify propositions as necessary truths, contradictions and contingencies
- establish the relationship between propositions diagrammatically and/or using trees (equivalence, inconsistency, etc.)
- represent and analyse arguments of Monadic Logic diagrammatically and/or using trees
- establish the validity and invalidity of arguments diagrammatically and/or using trees
- produce counter-examples to invalid arguments using either diagrams or truth trees
- test counter-examples diagrammatically or by instantiating formulae into finite universes and assigning values
- classify arguments as sound or unsound
- recognise the limitations of Monadic Logic.

Unit 9: Dyadic Logic

Overview

This unit is intended to extend students' deductive reasoning skills even further by enabling them to deal with some of the most advanced propositions and arguments found in language, namely those that involve dyadic predicates and multiple quantifiers. This unit builds on the skills acquired in unit 2 and provides students with analytic tools that can be used to examine not only advanced propositions used in the English language, but also those found in high-level computing languages, linguistics and mathematics.

A study of this unit includes the following subject matter and related activities:

- identify singular and predicate terms (e.g. Fx, aGb)
- identify quantifier phrases and their logical symbols ($\forall$x, $\exists$x)
- translate from ordinary English into Dyadic Logic and from Dyadic Logic into ordinary English, including active and passive voice
- construct well-formed formulae in Dyadic Logic
- represent and analyse formulae of Dyadic Logic diagrammatically and/or using trees
- classify propositions as necessary truths, contradictions and contingencies
- establish the relationship between formulae of Dyadic Logic diagrammatically and/or using trees
- identify premises and conclusions in dyadic predicate arguments
- represent and analyse arguments of Dyadic Logic diagrammatically and/or using trees
- establish the validity and invalidity of arguments diagrammatically and/or using trees
- produce finite counter-examples or describe infinite counter-examples to invalid arguments
- test counter-examples diagrammatically or by instantiating formulae into finite universes and assigning values
- recognise the limitations of Dyadic Logic.

Unit 10: School option in Logic

Unit 10 enables schools to amalgamate or extend units already described in the Deductive Logic strand. For example, having selected the compulsory unit 6, schools may choose to combine elements of the remaining units to produce the school option, possibly within a context-based or thematic approach.

PHILOSOPHY STRAND

Unit 11: Choice and Action

Overview

To defend, promote or attack a person's actions will normally involve an appeal to concepts such as rightness, consistency, freedom of choice, appropriateness and effectiveness. Understanding such philosophical concepts is vital if such a discussion of actions and choices is to be informed, rational and convincing. The subject matter in this unit focuses on these and other ethical and metaphysical issues by examining them in the context of historical and current philosophical debates.

Either topic 1, Moral philosophy, or topic 2, Philosophy of mind, may be studied individually, or a unit that incorporates aspects of both topics may be devised by the school.

Schools that wish to offer both of the following as separate topics can do so by selecting one of them in unit15.

Topic 1: Moral philosophy

- outline the distinctions between moral philosophy, scientific and factual enquiry, and normative ethics
- discuss key ethical terms and concepts including:
  - goodness
  - duty
  - the categorical imperative
  - justice
  - rights
  - utilitarianism
  - equality
  - fairness
- outline and assess at least one of the following moral topics:
  - the "open question" argument and the concepts of rationalism, naturalism, and non-cognitivism in ethics
  - the nature of moral reasoning, the principle of universalisability and the scope of "the moral"
  - morality, science and religion — their relationships and consequent problems
- analyse a present-day moral issue such as:
  - euthanasia
  - animal rights
  - censorship
  - amnesty and immunity
  - genetic manipulation
  - civil rights
  - crime & punishment
  - abortion
  - detention and torture
  - environmental responsibility
  - stem-cell research
  - justice and the law

Topic 2: Philosophy of mind

- describe the mind–body problem, including the inconsistent tetrad
- outline and evaluate theories of the relationship between person, mind and body, including interactions, materialism and at least one other, such as:
  - occasionalism
  - pre-established harmony
  - neutral monism
  - parallelism
  - epiphenomenalism
  - dual-aspect theory
  - idealism
- explain, compare and contrast at least two views on the freewill–determinism debate
- analyse a current or recent issue pertinent to the philosophy of mind; examples include:
  - other mind
  - virtual reality
  - déjà vu
  - telekinesis
  - behaviourism
  - artificial intelligence
  - dreams and illusions
  - intuition
  - multiple personalities
  - extra-sensory perception

Unit 12: Ways of Knowing

Overview

This unit is concerned with what people believe and their justification for believing it. Through critical analysis of the views expressed by significant past and present philosophers, this unit is intended to enhance students' understanding of the characteristics of belief systems, such as science and religion. This examination will focus on issues such as the axioms and assumptions employed, the concept of truth, and the applications of the belief system involved.

Either topic 3, Philosophy of religion, or topic 4, Philosophy of science, may be studied individually, or a unit that incorporates aspects of both topics may be devised by the school.

Schools that wish to offer both of the following as separate topics can do by selecting one of them in unit15.

Topic 3: Philosophy of religion

- discuss and evaluate possible definitions of the terms "religion" and "God"
- outline and assess at least two traditional arguments for the existence of God
- outline and assess at least one traditional argument against the existence of God
- discuss and evaluate concepts of immortality
- discuss arguments for and against the belief in immortality

- analyse a current or recent issue pertinent to the philosophy of religion; examples include:
  - creation and evolution
  - personal belief and institutional dogma
  - faith and knowledge

Topic 4: Philosophy of science

- outline and investigate the assumptions of science including:
  - physical determinism
  - temporal persistence of scientific laws
  - explicability/rationality of nature
  - the principle of the uniformity of nature
- discuss the nature and role of hypotheses in science
- discuss the nature of causality in science
- investigate the views of Karl Popper on science and the hypothetico-deductive method
- discuss the difference between science and pseudoscience
- discuss the strengths and limitations of science
- analyse a current or recent issue pertinent to the philosophy of science; examples include:
  - science and religion
  - indeterminism and uncertainty
  - cosmology and science
  - science and morality

Unit 13: Society and the Individual

Overview

One of the most appropriate studies for humans is humanity itself. What is human nature? what is the best type of social and political structure? what is the role and nature of education? what is the significance of gender? By examining such concepts within the contexts of ancient and modern philosophical debate, this unit provides students with contrasting responses to such questions. Through analysing the theories and their justifications the students should use and develop their critical reasoning skills, thereby enhancing their appreciation of the force and value of well-reasoned, informative and cogent arguments.

Any one of the following topics may be studied individually, or a unit that incorporates aspects of several topics may be devised by the school.

Schools that wish to offer two or more of the following topics as separate units can do so by selecting one or more of them in unit15.

Topic 5: Philosophy of human nature

- outline and evaluate at least two of the major philosophical theories of human nature in terms of the:
  - nature of the universe
  - nature of human beings
  - diagnoses of human ills
  - prescriptions for solving them

- examples of major philosophical theories of human nature include:
  - Plato's theory
  - Christian theories
  - Marx's theory
  - Freud's theory
  - Sartre's theory
  - Hinduism
  - Jung's theory
  - Wittgenstein's theory
  - Skinner's theory
  - Lorenz-type theory
  - Mao's theory
  - Fromm's theory
  - Buddhism
  - Confucianism
  - Neitzsche's theory
  - Darwin's theory
- analyse and discuss one of the dominant theories of human nature found in present-day Australian society.

Topic 6: Social and political philosophy

- discuss key sociopolitical terms and concepts including:
  - freedom
  - the state
  - democracy
  - morality
  - authority
  - society
  - rights
- clarify the nature of social and political philosophy
- outline, compare and contrast at least two of the following major sociopolitical philosophies:
  - liberalism
  - anarchism
  - democratic socialism
  - Marxism
  - conservatism
  - fascism
- outline , compare and contrast at least two of the following major types of state constitutions:
  - democracy
  - timocracy
  - plutocracy
  - oligarchy
  - monarchy
  - tyranny
- discuss and assess the dominant Australian social philosophy or philosophies.

Topic 7: Feminist philosophy

- discuss the question "is philosophy biased towards a masculine viewpoint?"
- analyse the relationship between gender, identity and personhood
- investigate the differences, if any, between masculine and feminine reason
- discuss the roles of nature and culture in the determination of gender roles
- discuss the application and justification of "affirmative action" programs
- discuss whether concepts of equality, rights and social organisation are gender-specific
- outline the views of at least one major female philosopher; examples include:
  – Simone de Beauvoir
  – Phillipa Foot
  – Germaine Greer
  – Toril Moi
  – Kristine Korsgaard
  – Sara Ruddick
  – Carole Pateman
  – Simone Weil

Topic 8: Philosophy of education

- discuss the distinction between education and schooling
- outline and assess some of the assumptions underlying schooling in Australia
- discuss the development of human potential and its social and ethical dimensions
- explain key terms and concepts in educational philosophy including some of the following:
  – knowledge and value, socialisation
  – moral acceptability, equality
  – educational goals, personal and/or social needs
  – institutionalisation of choice, education and jobs
  – education and the future.

Unit 14: Thinkers and Schools of Thought

Overview

Unlike almost all other subjects, the study of the history of philosophy is a philosophical study in itself. Throughout its rich history, philosophy has had star performers and winning teams. The study of these remarkable individuals or of the teams of philosophers who supported a particular school of thought is both instructive and challenging. This unit aims to provide students with the opportunity to apply and develop their skills in logical analysis and critical reasoning within the study of a significant philosophy or philosopher.

Any one of the following topics may be studied individually, or a unit that incorporates aspects of several topics may be devised by the school.

Schools that wish to offer two or more of the following as separate units can do by selecting one or more of them in unit 15.

Topic 9: History of Western philosophy

Compare and analyse the competing philosophical views in a historical period

involving at least three major philosophers (or schools of philosophy) on one common philosophical topic. (The subject matter covered in the option should significantly differ from the other options offered by the school in other units offered.)

Suitable periods/philosophers may include:

- the pre-Socratics (e.g. Thales, Herakleitos, the Pythagoreans, Parmenides)
- Socrates, Plato and Aristotle
- medieval philosophers (e.g. Aquinas, Augustine, Anselm, Occam, Scotus)
- continental rationalists (e.g. Descartes, Leibniz, Spinoza, Kant)
- British empiricists (e.g. Hobbes, Locke, Hume)
- logical positivists (e.g. Schlick, Carnap, Ayer)
- linguistic philosophers (e.g. Ryle, Austin, Wittgenstein).

Topic 10: Eastern philosophy

- outline the development of philosophy in at least one major Eastern country (e.g. Japan, China, India)
- discuss the similarities and differences between Eastern and Western modes of philosophical thinking
- outline some of the major contributions to philosophy which have originated in the East
- discuss whether Eastern and Western views are incompatible or whether a synthesis can be achieved, by investigating at least one of the following questions:
    - is Western logic applicable to Mahayana Buddhism?
    - is reality non-differentiated?
    - can knowledge be derived by intuition?
    - what status should one attach to the concepts of li, yin, yang and ch'i?

Topic 11: A significant philosophical school of thought

Investigate and analyse a significant philosophical school such as:

- rationalism
- logical positivism
- empiricism
- non-cognitivism
- linguistic philosophy
- libertarianism
- philosophy of mathematics
- deontologists
- logical atomism

- skepticism
- idealism
- realism
- existentialism
- determinism
- monism
- nihilism
- consequentialism

(The philosophical school covered in this option should offer significantly different learning experiences from the other philosophical units offered by the school.)

Topic 12: A significant philosopher

Investigate and analyse the concepts and legacy of a significant philosophical thinker, either individually or in interaction with other philosophers:

• Socrates	• Plato	• Aristotle
• Epictetus	• Augustine	• Nagarjuna
• Aquinas	• Descartes	• Hobbes
• Spinoza	• Locke	• Hume
• Leibniz	• Rousseau	• Bentham
• Kant	• Hegel	• Mill
• Santayana	• Popper	• Ayer
• Wittgenstein	• Ryle	• Kripke
• Chomsky	• Foucault	• Singer
• Neitzsche	• Foot	• Ruddick
• De Beauvoir	• Weil	

Unit 15: School option in Philosophy

Overview

Unit 15 enables schools to amalgamate or extend units already described in the Philosophy strand. For example, having selected the minimum requirement of two units, schools may choose to combine elements of the remaining units to produce the school option, possibly within a context-based or thematic approach. In addition, schools may revisit a unit and select another topic.

6 LEARNING EXPERIENCES

6.1 SUGGESTED LEARNING EXPERIENCES

Typically the Philosophy & Reason classroom is an interactive environment (teacher–student, student–student, group–group). Examples are commonly attempted by the individual student but can also be given as group exercises. A dominant focus of discussion and reporting is the ability of students to express clearly and logically the reasons for the conclusions they have drawn.

Critical Reasoning strand

Generally

Learning experiences for the student of this unit seek to:

- provide a vocally interactive classroom in which the students collectively explore the human mind and individually learn about their own reasoning
- develop a classroom characterised by free expression of opinion, encouraging responsibility for and justification of those opinions
- promote role-modelling by the teacher of diverse attitudes and opinions towards the point at issue, thus encouraging open-mindedness and analytical flexibility
- encourage and reinforce the recognition of argument types, strengths and weaknesses in all types of media, including television programs concerned with science, sociology, news and entertainment (e.g. "Catalyst", "Four corners", lifestyle shows, reality shows)
- arouse alertness to and expressions of assumptions, preconceptions and beliefs underlying opinions and explanations
- develop a well-researched approach to mind differences through the pursuit of information about the human mind (e.g. perceived left- and right-brain characteristics, gender and cultural differences, personality types, multiple intelligences)
- identify the strengths and weaknesses of common inductive argument types, the need for comparability and evidential support when debating or reaching conclusions based on information or in arriving at a course of action.

Specifically

Unit 1: Let's be Reasonable

- analyse and classify arguments from everyday sources: newspapers (letters to the editor, feature columns including latest survey information) and television programs ("A Current Affair", "60 Minutes", "The 7.30 Report")
- identify and classify fallacies from everyday sources as above
- identify argument types in the various disciplines:
  - use of generalization and analogy with information from psychological and sociological experiments (Stanley Milgram 1974; Zimbardo1973)
  - religious reasoning (teleological argument)
  - proportional induction and statistical syllogism in statistical reasoning

- projects:
  - collect examples of argument types with analysis, identification and evaluation
  - collect examples of fallacies with analysis and identification.

Unit 2: Tell me why

- recognise, analyse and criticise (using short paragraphs) causal reasoning found in the media (e.g. letters to the editor, feature columns, television programs), especially when it involves bias or unsupported links
- recognise, analyse and evaluate (using short paragraphs) the use of hypothesis formation and the concept of proof found in the media (e.g. television programs such as the "Catalyst" episode on homeopathy and "Quantum" on the Zulu wars)
- chart/mindmap data for finding causes from causal candidates
- projects such as:
  - investigating past well-known hypotheses in history, science, sociology, etc. and assessing them using the criteria for good hypothesis (e.g. who killed the two princes in the tower? do continents drift?) presenting the results in extended written form
  - forming one's own hypothesis, with justification and evidence, of a defined phenomena (e.g. the recent popularity of private schools, the increase in teenage female smoking), presenting the findings in oral or written form
  - for an identified phenomenon, selecting, compiling and investigating its possible causes, devising experiments and charting the causal chain/links. This could be presented orally (in monologue or as a play or debate) or in writing, possibly with overheads and PowerPoint displays.

Unit 3: What are the Odds?

- recognise, classify and evaluate arguments using the concepts of probability (e.g. how insurance companies fix their charges, the likelihood of victory by a political party or sporting team)
- identify and list the factors that influence people's estimation of the probability of the occurrence of an everyday event (such as rain, loss of job, traffic accident, a lottery win)
- use lists, tables, trees and/or algorithms to calculate the mathematical probability of the occurrence of simple and compound events
- research the use of polls and surveys, critically evaluating the procedures used and types of conclusions drawn, especially the effects that arise when poll results are published (e.g. bandwagon effect)
- projects might include:
  - constructing a survey using various sampling techniques, devising suitable questions, collating the results and drawing reasonable conclusions
  - investigating and analysing the use of probability in the reasoning employed in selected disciplines (e.g. law, psychology, anthropology); the findings can be presented in an extended written format.

Unit 4: That's Debatable

- identify and define key terms in a debate
- identify and classify relevant characteristics of arguments, employing the analysis to support or rebut the argument (e.g. direct or indirect attacks of arguments)

- recognise and express the unspoken beliefs, assumptions and values that underpin people's arguments (e.g. "Jack doesn't deserve to be wealthy. He won his money from Gold Lotto")
- investigate appropriate and widely accepted principles of informal and formal debate
- anticipate the line of argument and points likely to be raised in a debate, and prepare a rebuttal in advance or undermine the argument before it can be raised
- write short paragraphs that:
  - provide reasons for a specified point of view on a issue (e.g. an argument against co-education, an argument for capital punishment)
  - assess the reasons that are given for a point of view and the effectiveness of a provided rebuttal
  - construct an argument using a generic structure such as a standard argument technique, or argument in the context of a committee meeting
  - construct an argument using a specified structure for a particular purpose, e.g. an appeal to fear to win support for a political decision
- identify and classify the persuasive and emotive elements in a provided passage (a justification of that classification may be required)
- identify and name the fallacies present in a given passage
- perceive and list persuasive techniques (including fallacies) found in media, such as
  - television presentations featuring persuasive argument (e.g. interviews or speeches given by Princess Diana, Bill Clinton, Winston Churchill)
  - presentation of points of view (e.g. "Foreign Correspondent", *Time-Life* and *Newsweek* editorials, Alan Jones' comments on breakfast news television)
  - presentation of informal and formal debates (e.g. "talking heads" programs such as "The Panel", political debates, "The Great Debate" television series, movies such as *Inherit the Wind* and *To Kill a Mockingbird*)
- write extended responses that:
  - analyse the techniques used in debates in selected disciplines (e.g. appeal to fear of consequences in politics, appeal to authority in sport)
  - analyse well-known speeches (e.g. Winston Churchill's war speeches, Socrates' trial).

Deductive Reasoning strand

Generally

Learning experiences for the student of this unit seek to:

- include a dialectic approach involving open discussion and guided questioning that characterises the dynamic Philosophy & Reason classroom
- predominantly involve practising deductive logic processes to present information, construct proofs and categorise statements and arguments
- consist, usually, of short teacher exposition and demonstration followed by student practice of the process, with examples of increasing difficulty
- use selected exercises requiring specific recall elements that provide immediate feedback on student success
- provide regular practical examples of simple statements and/or arguments found in everyday situations

- encourage students to work out the logic rules and definitions for themselves
- frequently call upon students to explain concepts and compare answers to the examples presented.

Specifically

Units 6, 8 and 9

- access available websites that enable students to practise truth tables and truth trees and that offer immediate feedback
- having found a counter-example to an argument, modify the argument (by either changing or adding premises) so that it becomes valid
- reach a conclusion that is necessarily true provided a given set of premises is true
- apply a progression of steps to achieve the required answer (e.g. well-formed formulae, truth tables, truth trees, method of assigning values)
- identify different meanings of ambiguous statements (e.g. what meanings can be given to the sentence "The boy made the mince with his own hands"?)
- attempt to write a meaningful dialogue using only non-propositions
- describe two contexts in which the same statement changes meaning (e.g. "the peasants are revolting")
- do a "symbol walk" around the school, listing and explaining the visible symbols used (e.g. fire)
- research the use of symbols for communication (e.g. hieroglyphics, road signs, company logos)
- play the "symbol game" (e.g. students are given cards with words such as *badge* or *Fred* or *necklace*, and they classify it as a "symbol" or "non-symbol", justifying their choice)
- play games that depend on deductive reasoning (e.g. Cluedo, Mastermind, Tic-Tack-Toe, Connect Four, Sherlock, card games) and contrast these with non-deductive games (e.g. Pictionary, Scattegories, Compatibility)
- collect examples of deductive reasoning (valid and invalid) from daily life
- interpret pictures such as editorial cartoons and extrapolate the arguments involved.

Suggested textual resource for these units is *Introduction to Logic*, by R. A. Girle, published by Prentice Hall, 2002.

Unit 7: Contemporary and Traditional Logic

It is common for the learning experiences in unit 7 to be incorporated in the other units when appropriate and not necessarily experienced in isolation.

Topic 1: Logical puzzles and paradoxes
- use the logic processes (truth tables, MAV, truth trees) of unit 1 to solve puzzles
- solve truthteller-liar puzzles using systematic trial and error (reductio ad absurdum)
- set out tables for the solution of elimination logic puzzles (news agencies have magazines full of these)
- apply strategies to decoding and word-division puzzles

- create a logic puzzle to be included into a class collection
- research historic examples of paradoxes
- discuss possible reconciliations of paradoxes (e.g. Tortoise and the Hare).

Topic 2: Switching/Logic circuits
- develop links between symbolic logic and Boolean algebra/logic switches
- create smaller but equivalent logic circuits (e.g. using either Karnaugh maps, natural deduction or other techniques)
- construct a logic circuit using gates and/or switches to perform simple tasks
- compare logic circuits that use "nand", "nor" and "not" gates, to those using "and", "or" and "not" gates.

Topic 3: Natural deduction
- play games in which identifying and naming traditional valid arguments and tautologies are employed; examples are flashcards, concentration games, quizzes and crosswords
- identify valid argument forms that are present in media sources, e.g. cartoons, letters to the editor, advertisements, and short arguments such as those found in Pospesel 1999 (see Resources section)
- name the valid steps present in a short deduction proof, using appropriate abbreviations in the justification column
- identify false steps and/or justifications in a provided proof
- provide the missing information in an incomplete proof, both justifications and steps
- set out a systematic proof linking the premises of an argument to the provided conclusion, providing justification
- demonstrate the use of conditional proof.

Suggested textual resource for these units is *Introduction to Logic*, by R. A. Girle, published by Prentice Hall, 2002.

Topic 4: Traditional logic of categorical forms
- classify academic and everyday propositions using the four categorical forms
- use Venn diagrams and Karnaugh maps to represent different statements, including categorical forms, set descriptions and mathematical statements
- write statements which accurately describe the situation represented by completed Venn or Karnaugh maps, ranging from simple to complex situations
- link the diagrams of categorical forms to propositional statements (eg. $p \supset q$, $p \& q$, $p \lor q$)
- given a categorical statement (e.g. "all gophers are mammals") use the rules of immediate inference to develop a complete list of all equivalent and implied statements (making clear any existential viewpoint adopted)
- given a full list of the valid syllogisms, develop rules to identify a valid or invalid argument
- develop techniques for handling sorites arguments by rules or maps, in toto or in steps.

Suggested text for these units is from Nolt, J. & Rohatyn, D. 1998, *Theory and problems of LOGIC* (Schaum's Outline), McGraw-Hill, New York.

Topic 5: Set theory and identity theory

- use Venn diagrams and/or Karnaugh maps to represent set relationships, intersection and union of sets
- use maps to represent Boolean propositions and to evaluate Boolean arguments
- use xIy (x is identical to y), Fx (x is female) and xPy (x is the parent of y) to represent a range of genealogical propositions such as "Tom is the grandfather of Alice" and "Tom is Alice's uncle"
- generate counter-examples by inspection for arguments in identity theory
- develop predicates to represent the set relationship given in a Venn diagram or Karnaugh map.

Suggested textual resource for these units is *Introduction to Logic*, by R. A. Girle, published by Prentice Hall, 2002.

Topic 6: A relational database computer language

- put data into a database such as Amzi Logic Explorer (or other relational computer language) using facts and rules (Amzi Logic Explorer is a free download available at http://www.amzi.com/)
- develop and use questions to retrieve data
- construct a program that sorts data in databases such as family trees, sporting results, predatory ecosystems
- select a area of interest and construct a database and set of questions by which information can be accessed
- investigate tautologies, contradictions and rules of inference that are valid within a given database
- any Prolog, or similar relational database can be used in this unit since relational data base computer languages provide the opportunity for the student to use a logic language and inferences on the computer — this is a valuable extension for any of the other deductive units.

Topic 7: Modal predicate logic

- identify the terms commonly used with contingent propositions (can, might, etc.) and necessary propositions (must, will, etc.)
- research the "possible worlds" theories (e.g. Saul Kripke) that underpin modal language (especially concepts of time paradoxes found in modern movies like *Back to the Future* and *Terminator*)
- discuss the properties that are/may be necessarily true or contingently true about the world around us
- use the modal operators to represent necessary and contingent propositions, developing rules of inference that can be used in truth trees
- investigate the use of maps and diagrams to represent counter-examples to modal arguments and claims.

Suggested text for these units is from Nolt, J. & Rohatyn, D. 1998, *Theory and problems of LOGIC* (Schaum's Outline), McGraw-Hill, New York.

Topic 8: Another aspect of deductive logic selected by the school

Learning experiences to suit the topic chosen.

Philosophy strand

Generally

The learning experiences for the student of this unit seek to:

- generate philosophical discussion in the classroom in an atmosphere of openness, generosity and respect
- encourage the reading of philosophy articles, extracts and critiques
- promote research in philosophy papers through the internet and libraries
- enhance the writing of summaries and analytic philosophical reviews
- promote the watching of videos, movies and television programs about philosophers and philosophies (e.g. de Botton's "Consolations of Philosophy", "The Great Philosophers" series, movies such as *The Unbearable Lightness of Being*, *Wittgenstein*)
- encourage the identification and application of philosophies in everyday situations, e.g. the role of honour, honesty and sincerity in personal relationships, fatalistic and stoic responses to stress or trauma, concepts of utility and duty in making decisions
- analyse themes in movies and books for philosophical assumptions (e.g. *The Matrix*, *Mad Max*, *Minority Report*, Woody Allen movies)
- foster the ability to express philosophical positions and the criticism and rebutting of these positions
- recognise philosophical belief systems underlying people's opinions and attitudes.

Suitable text: *Thinking through Philosophy: An introduction* by C. Horner and E. Westacott, published by Cambridge University Press , Cambridge, in 2000.

7 LANGUAGE EDUCATION, AND QUANTITATIVE CONCEPTS AND SKILLS

7.1 LANGUAGE EDUCATION

Language is a means by which meaning is constructed, shared and communicated. Teachers of philosophy reason and logic have a particular responsibility to develop and monitor students' abilities to use language in that their subject depends on its clear use and accurate interpretation. This area of language education is concerned with the specific relationship between reasoning and the English language.

In the study of Philosophy & Reason, facility with language, especially philosophical language, is a major and basic requirement. If a student is unclear about what is meant then it is impossible to symbolise it, analyse it or assess it. In particular the logician is required to distinguish the formal structure of statements, recognise intent, interpret correctly what is being claimed, recognise argument, identify assumptions and implications and calculate degrees of inference. Such requirements as these demand close study of the language of reasoning and much practice to communicate clearly both assertion and argument, to express the philosophical views of others, and to formulate and justify one's own philosophical positions. These activities are contained in the work for each unit of the course and should provide the student with the appropriate skills of precision and comprehension.

The study of Philosophy & Reason also requires familiarity with modern symbolic languages in analysing and evaluating propositions and arguments, in translating from English into logic symbols and vice versa, and in symbolising information with logic languages. In addition, the course allows for experience with computer programming languages.

The more general responsibilities of language education are those shared with other subjects. These include developing:

- the ability to comprehend appropriately complex passages in English
- the use of correct grammar, spelling, punctuation and layout
- the ability to use correctly the terms, language and style appropriate to the subject
- the ability to select and organise pertinent information for clear and appropriate communication
- the ability to select information appropriate for a given topic and organise this for the development of an argument that involves analysis and synthesis of ideas for essay presentation.

Meeting the language needs of the course, as outlined above, must be an integral part of this subject. To do this, the following strategies are recommended for inclusion in the preparation and teaching of each topic.

(a) Development of a range of communication forms

Modelling, constructing and analysing appropriate structure and layout should develop the use of various written communication forms.

(b) Understanding the use of technical terms

Technical terms should be taught and practised in context and concepts placed in students' own language to help in understanding. Students should be expected to use appropriate technical terms in their writing.

(c) Use of correct spelling, punctuation, grammar and logical exposition

Students should be taught how to select and sequence information into a coherent, logical response. Assessment must take students' appropriate use of language into consideration.

7.2 QUANTITATIVE CONCEPTS AND SKILLS

Success in dealing with social issues and complicated situations in life and at work comes when a person develops and uses abilities such as:

- comprehending basic concepts and terms underpinning the areas of probability and statistics
- extracting, converting or translating information given in numerical forms, or as diagrams, graphs or tables, truth trees and truth tables
- representing and analysing arguments diagrammatically
- using symbolic language to represent complex propositions
- applying algorithms or progressions of steps to achieve a required outcome
- managing and manipulating electronic sources of data, databases, and software applications
- using skills or applying concepts from one problem or one subject domain to another.

Some subjects focus on developing and applying numerical and other mathematical concepts and skills. These subjects may provide a basis for the general development of such quantitative skills or have a distinct aim, such as to prepare students to cope with the quantitative demands of their personal lives or to participate in a specific workplace.

Nevertheless, in all subjects, including Philosophy & Reason, students are to be encouraged to develop their understanding and to learn through the incorporation of mathematical strategies and approaches to tasks which are appropriate to Philosophy & Reason. Similarly, students should be presented with experiences that stimulate their mathematical interest and hone those quantitative skills that contribute to operating successfully within each of their subject domains.

Philosophy & Reason makes use of a variety of numerical and other mathematical concepts and skills, especially those relating to graphs and tables, statistics, and maps. It also uses computer databases and software packages to manipulate and represent social data and concepts.

The distinctive nature of Philosophy & Reason may require that new mathematical concepts be introduced and new skills be developed for some students. All students need opportunities to practise the quantitative skills and understandings that they have developed previously. Within appropriate learning contexts and experiences in the subject, opportunities are to be provided for revision, maintenance and extension

7.3   LEARNING EXPERIENCES AND THE KEY COMPETENCIES

In developing learning experiences, teachers of Philosophy & Reason have ample opportunities to incorporate the key competencies, many of which occur naturally in classroom interactions.

In the course of their studies, students will analyse argument from everyday sources pertinent to sound and/or faulty reasoning. Both individually and in groups, they will plan and organise the presentation of findings in the form of an argument, in a variety of formats and for a variety of audiences. They will choose appropriate problem-solving techniques and attempt to solve problems associated with argument. As part of their learning and classroom experiences, students will have opportunities to use symbolic reasoning techniques and algorithms, and to use computers for database construction and problem-solving using inference rules.

8 ASSESSMENT

The purposes of assessment are to provide feedback to students and parents about learning that has occurred, to provide feedback to teachers about the teaching and learning processes, and to provide information on which to base judgments about how well students meet the general objectives of the course. In designing an assessment program, it is important that the assessment tasks, conditions and criteria are compatible with the general objectives and the learning experiences. Assessment then is an integral aspect of a course of study. It can be formative or summative. The distinction between formative and summative assessment lies in the purpose for which that assessment is used.

Formative assessment is used to provide feedback to students, parents, and teachers about achievement over the course of study. This enables students and teachers to identify the students' strengths and weaknesses so students may improve their achievement and better manage their own learning. The formative techniques used should be similar to summative assessment techniques, which students will meet later in the course. This provides students with experience in responding to particular types of tasks, under appropriate conditions. So that students can prepare for assessment tasks it is advisable that each assessment technique be used formatively before being used summatively.

Summative assessment, while also providing feedback to students, parents and teachers, provides cumulative information on which levels of achievement are determined at exit from the course of study. It follows, therefore, that it is necessary to plan the range of assessment techniques and instruments/tasks to be used, when they will be administered, and how they contribute to the determination of exit levels of achievement. Students' achievements are matched to the standards of exit criteria, which are derived from the general objectives of the course. Thus, summative assessment provides the information for certification at the end of the course.

8.1 UNDERLYING PRINCIPLES OF EXIT ASSESSMENT

The QSA's policy on exit assessment requires consideration to be given to the following principles when devising an assessment program for the two-year course of study:

- Information is gathered through a process of continuous assessment.
- Balance of assessments is a balance over the course of study and not necessarily a balance over a semester or between semesters.
- Exit achievement levels are devised from student achievement in all areas identified in the syllabus as being mandatory.
- Assessment of a student's achievement is in the significant aspects of the course of study identified in the syllabus and the school's work program.
- Selective updating of a student's profile of achievement is undertaken over the course of study.
- Exit assessment is devised to provide the fullest and latest information on a student's achievement in the course of study.

These principles are to be considered together and not individually in developing an assessment program. Exit assessment must satisfy concurrently the six principles associated with it.

Continuous assessment

The major operating principle is "continuous assessment". The process of continuous assessment provides the framework in which all the other five principles of balance, mandatory aspects of the syllabus, significant aspects of the course, selective updating, and fullest and latest information exist and operate.

This is the means by which assessment instruments are administered at suitable intervals and by which information on student achievement is collected. It involves a continuous gathering of information and the making of judgments in terms of the stated criteria and standards throughout the two-year course of study.

Decisions about levels of achievement are based on information gathered, through the process of continuous assessment, at points in the course of study appropriate to the organisation of the learning experiences. Levels of achievement must not be based on students' responses to a single assessment task at the end of a course or instruments set at arbitrary intervals that are unrelated to the developmental course of study.

Balance

Balance of assessments is a balance over the course of study and not necessarily a balance within a semester or between semesters.

Within the two-year course for Philosophy & Reason it is necessary to establish a suitable balance in the general objectives, assessment techniques and instruments/tasks, conditions of assessment, and across the criteria. The exit criteria are to have equal emphasis across the range of summative assessment. The exit assessment program must ensure an appropriate balance over the course of study as a whole.

Mandatory aspects of the syllabus

Judgment of student achievement at exit from a two-year course of study must be derived from information gathered about student achievement in those aspects stated in the syllabus as being mandatory, namely:

- the general objectives of Knowledge, Application, and Communication, and
- the minimum requirements for a course of study as detailed in section 4.2.

The exit criteria and standards stated in section 8 must be used to make the judgment of student achievement at exit from a two-year course of study.

Significant aspects of the course of study

Significant aspects refer to those areas in the school's course of study selected from the choices permitted by the syllabus. Significant aspects can complement mandatory aspects or be in addition to them. They will be determined by the context of the school and the needs of students at that school to provide choice of learning experiences appropriate to the location of the school, the local environment and the resources available.

The significant aspects must be consistent with the general objectives of the syllabus and complement the developmental nature of learning in the course over two years.

Selective updating

In conjunction with the principle of fullest and latest information, information on student achievement should be selectively updated throughout the course.

Selective updating is related to the developmental nature of the two-year course of study and operates within the context of continuous assessment. As subject matter is treated at increasing levels of complexity, assessment information gathered at earlier stages of the course may no longer be representative of student achievement. The information therefore should be selectively and continually updated (not averaged) to accurately reflect student achievement.

The following conceptions of the principle of selective updating apply:

- A systemic whole subject-group approach in which considerations about the whole group of students are made according to the developmental nature of the course and, in turn, the assessment program. In this conception, developmental aspects of the course are revisited so that later summative assessment replaces earlier formative information.

- An act of decision-making about individual students — deciding from a set of assessment results the subset which meets syllabus requirements and typically represents a student's achievements, thus forming the basis for a decision about a level of achievement. In the application of decisions about individual students, the set of assessment results does not have to be the same for all students. However, the subset which represents the typical achievement of a student must conform to the parameters set in requirements for verification folios.

Selective updating must not involve students reworking and resubmitting previously graded assessment tasks. Opportunities may be provided for students to complete and submit additional tasks. Such tasks may provide information for making judgments where achievement on an earlier task was unrepresentative or atypical, or there was insufficient information upon which to base a judgment.

Fullest and latest information

Judgments about student achievement made at exit from a school course of study must be based on the fullest and latest information available. This information is recorded on a student profile.

"Fullest" refers to information about student achievement gathered across the range of general objectives. "Latest" refers to information about student achievement gathered from the most recent period in which the general objectives are assessed. As the assessment program in Philosophy & Reason is developmental, fullest and latest information will most likely come from Year 12.

Information recorded on a student profile will consist of the latest assessment data on mandatory and significant aspects of the course, which includes the data gathered in the summative assessment program that is not superseded.

8.2   PLANNING AN ASSESSMENT PROGRAM

At the end of Year 12, judgments are made about how students have achieved in relation to the standards stated in the syllabus for each of the criteria. These summative judgments are based on achievement in each of the general objectives.

When planning an assessment program, schools must consider:

- the general objectives (refer to section 2)
- the learning experiences (refer to section 6
- the underlying principles of assessment (refer to section 8.1)
- a variety of assessment techniques and instruments over the two-year course (refer to section 8.4)
- conditions under which the assessment is implemented
- the exit criteria and standards (refer to section 8.4 and table 2)
- verification folio requirements, especially the number and the nature of student responses to assessment tasks to be included (refer to section 8.5)
- minimum assessment necessary to reach a judgment of the student's standard of achievement.

Students should be conversant with the assessment techniques and have knowledge of the criteria to be used in assessment instruments.

8.2.1 Special consideration

Guidance about the nature and appropriateness of special consideration and special arrangements for particular students may be found in the QSA's policy statement on special consideration, *Special Consideration: Exemption and special arrangements in senior secondary school-based assessment* (30 May 1994). This statement also provides guidance on responsibilities, principles and strategies that schools may need to consider in their school settings.

To enable special consideration to be effective for students so identified, it is important that schools plan and implement strategies in the early stages of an assessment program and not at the point of deciding levels of achievement. The special consideration might involve alternative teaching approaches, assessment plans and learning experiences.

8.3 SUGGESTED ASSESSMENT TECHNIQUES

The following techniques are all appropriate for the assessment of students in Philosophy & Reason. The school's assessment program must ensure a balance across assessment techniques.

Short, written responses

Examples might include:

- explanations to demonstrate understanding
- identification of arguments and fallacies
- explanations of argument
- justification of argument
- formation of hypothesis
- explanation for choice and use of techniques.

Practical exercises, such as:

- selecting and organising data for tabular presentation

- organizing and analyzing data in truth trees and tables
- obtaining information from tables and charts
- constructing hypotheses from data
- constructing and evaluating formula
- using appropriate strategy for solving problems of mathematical probability
- collecting examples of deductive puzzles with appropriate techniques for solution
- collecting and analysing examples of faulty reasoning from everyday sources (media)
- devising experiments and collecting data for hypothesis testing.

Non-written presentations, such as:
- presenting oral argument on given and researched issues
- presenting philosophy papers on researched topics
- presenting arguments and debate multimodally, using spoken, written, audio, video, electronic or other visual means
- presenting the results of practical exercises multimodally.

Extended written responses

These may be set for any unit but are especially suited for assessment in strands 2 and 3. Examples include:
- essays under test conditions — word lengths may vary according to task, but in general should be approximately 400 words in Year 11 and 600 words in Year 12
- extended responses, for example projects, or responses written under assignment conditions — word lengths may vary according to task, but in general should be approximately 1000 words in Year 11 and 1500 words in Year 12.

Extended written responses allow students to:
- demonstrate depth of understanding of the subject
- use philosophical language
- express the philosophical views of others, clearly and accurately
- analyse and synthesise philosophical ideas
- recognise and explore points requiring justification
- highlight controversy and fallacy
- formulate and justify own philosophical positions and develop a major, consistent line of thought.

8.4 EXIT CRITERIA

The following three criteria must be used when making judgments on student exit levels of achievement.

Criterion 1: Knowledge

This includes knowledge of:
- terms, definitions, translational procedures, algorithmic processes, and characteristics of valid argument within deductive reasoning

- categories of argument, factors affecting the strengths and limitations of arguments, and types of justification and explanation within critical reasoning
- terms, principles and theories of various philosophies and philosophers.

Criterion 2: Application

This includes:

- the selection and application of translational procedures, algorithmic processes and deductive reasoning techniques to classify propositions, evaluate arguments and solve problems
- the classification, evaluation, construction and justification of arguments using critical reasoning techniques
- the identification, analysis and evaluation of various philosophical theories and their presuppositions, the relationships among them, and the outlining and justification of the student's own and others' viewpoints.

Criterion 3: Communication

The assessment information gathered for this criterion is drawn principally from those sections of the course in which it naturally occurs, such as critical reasoning and philosophy.

This includes:

- organising and presenting information using the standard conventions of language, e.g. spelling, punctuation, grammar, syntax and subject-specific vocabulary
- clearly, cogently and unambiguously conveying understanding of concepts, key ideas, methods and principles
- producing explanations, descriptions, arguments and justifications that are succinct, pertinent and purposeful.

The exit criteria reflect the general objectives, and have been defined in that section of the syllabus.

8.5 REQUIREMENTS FOR VERIFICATION FOLIO

For certification purposes, schools must submit folios of student work to review panels.

A verification folio is a collection of student responses to summative assessment instruments for October verification. It demonstrates the student's achievement on the range of tasks in the school's assessment program and supports the judgments about levels of achievement that have been made. Schools must ensure that the folios presented contain all summative assessment tasks and corresponding student responses upon which judgments about levels of achievement have been made.

Schools should also provide sufficient information to the panel to demonstrate the techniques of assessment which have been used and how the criteria have been applied.

This information should be included in the folio that is sent to the panel at verification and should include:

- a copy of each assessment instrument used for summative assessment
- the student responses to all summative assessment instruments as indicated in the work program
- appropriate description of the actual assessment task, i.e. time allowed, information given to the student, teacher assistance, test conditions
- the assessment scheme, where appropriate
- an overall assessment profile that records all student achievement data in the three exit criteria
- a statement of the mechanism by which the fullest and latest judgments of the student's overall performance have been made.

Each verification folio should contain work that represents a balanced range of assessment techniques demonstrating student performance in the three criteria, Knowledge, Application, and Communication. Evidence must be shown that each of the three strands has been assessed summatively.

The following assessment tasks, used to gather information on student performance in the three criteria, must be included in each verification folio:

- at least 2 unseen assessment tasks from each year level completed under supervised conditions, with no access to resources, consisting of short written responses and/or practical exercises, use of logic symbols, use of logic proof methods, etc.
- at least one piece of extended writing (e.g. an essay) taken from Year 12 completed under supervised conditions and with limited access to resources (for example, up to 100 words of notes, to be submitted with the assessment response) — the topic of the extended writing may be seen
- at least 1 research-based response from Year 12, such as a project, completed under assignment conditions (i.e. unsupervised, and with open access to resources which are acknowledged in conventional manner in the response).

Each verification folio must contain six to eight assessment tasks.

8.6   DETERMINING EXIT LEVELS OF ACHIEVEMENT

On completion of the course of study, the school is required to award each student an exit level of achievement from one of the five categories:
Very High Achievement
High Achievement
Sound Achievement
Limited Achievement
Very Limited Achievement.

The school must award an exit standard for each of the three criteria Knowledge and application, Problem solving, and Communication, based on the principles of assessment described in this syllabus. The criteria are derived from the general objectives and are described in section 3. The standards associated with the three exit criteria are described in section 8 . When teachers are determining a standard for each criterion, it is not always necessary for the student to have met each descriptor for a particular standard; the standard awarded should be informed by how the qualities of the work match the descriptors overall.

For Year 11, particular standards descriptors may be selected from the matrix and/or adapted to suit the task. These standards are used to inform the teaching and learning process. For Year 12 tasks, students should be provided with opportunities to understand and become familiar with the expectations for exit. The exit standards are applied to the summative body of work selected for exit.

Of the seven key competencies, the four that are most relevant to assessment in this subject[5] are embedded in the descriptors in the standards matrix. Direct assessment and reporting on student levels of achievement in the key competencies is not a requirement of this syllabus. However, there are clear links between elements of the key competencies and the exit criteria and standards. The descriptors refer, for example, to demonstrating the ability to solve complex problems, to comprehending, analysing and justifying viewpoints, and to using language to express and justify philosophical positions.

When standards have been determined in each of the three criteria of Knowledge and application, Problem solving, and Communication, the following table is used to determine the exit level of achievement, where *A* represents the highest standard and *E* the lowest.

Table1: Minimum requirements for exit levels

VHA	Standard *A* in any two exit criteria and no less than a *B* in the remaining criterion
HA	Standard *B* in any two exit criteria and no less than a *C* in the remaining criterion
SA	Standard *C* in any two exit criteria and no less than a *D* in the remaining criterion
LA	Standard *D* in any two exit criteria
VLA	Does not meet the requirements for Limited Achievement

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[5] KC1: collecting, analysing and organising information; KC2: communicating ideas and information, KC5: using mathematical ideas and techniques; KC6: solving problems

Table 2 : Typical standards associated with exit criteria

Criterion	Standard A	Standard B	Standard C	Standard D	Standard E
Knowledge	The student demonstrates an accurate recall and extensive understanding of a comprehensive range of concepts, ideas, procedures and principles. Occasional minor errors may be made, but do not indicate fundamental misunderstandings.	The student demonstrates accurate recall and understanding of a range of concepts, ideas, procedures and principles.	The student recalls and describes most concepts, ideas, procedures and principles.	The student recalls and describes some concepts, ideas, procedures and principles.	The student describes few concepts, ideas, procedures and principles.
Application	The student: • applies appropriate techniques and procedures of deductive reasoning with facility and accuracy to simple and complex tasks • classifies and evaluates a wide range of simple and complex arguments, both sourced and artificial, and constructs well-supported arguments drawing on a wide range of inductive skills • outlines, analyses and evaluates philosophical theories, by: – explaining intrinsic concepts, – explaining simple and complex relationships within and between theories – discerning and describing the application of theories in different contexts (including the formulation of own and others' views).	The student: • applies appropriate techniques and procedures of deductive reasoning with accuracy to simple and some complex tasks • classifies and evaluates a range of simple and complex arguments, both sourced and artificial, and constructs, with some support, arguments that draw on a range of inductive skills • outlines, analyses and evaluates philosophical theories, by explaining: – most intrinsic concepts – simple and some complex relationships within and between theories.	The student: • uses prescribed techniques and procedures of deductive reasoning in most simple tasks and applies them with accuracy • classifies and evaluates simple arguments, and constructs arguments drawing on some inductive skills • outlines philosophical theories, and explains primary concepts.	The student: • uses prescribed techniques and procedures of deductive reasoning in some simple tasks, with some lapses in accuracy • classifies some simple arguments; few inductive skills are evident • describes some primary philosophical concepts.	The student: • uses prescribed techniques and procedures of deductive reasoning inaccurately and incompletely • occasionally classifies some simple arguments • describes very few philosophical concepts.
Communication	The student: • consistently and accurately employs discriminating vocabulary, and adheres to the conventions of language • consistently organises and presents information cogently and coherently, and communicates both evident and implied meaning effectively • produces explanations, descriptions, arguments and justifications that are precise, pertinent and purposeful.	The student: • consistently employs appropriate vocabulary, and adheres to the conventions of language • organises and presents information coherently, and communicates meaning effectively • produces clear and purposeful explanations, descriptions, arguments and justifications.	The student: • usually employs appropriate vocabulary and conventions of language • organises and presents information so that meaning is usually evident • produces explanations, descriptions and argument that are adequate to convey intention.	The student: • makes some appropriate choices of vocabulary, and obeys some conventions of language • presents information and produces explanations that lack detail and clarity.	The student: • makes inconsistent and inaccurate choices of basic vocabulary and conventions of language • presents disjointed information and descriptions.

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9 EDUCATIONAL EQUITY

Equity means fair treatment of all. In developing work programs from this syllabus, schools are urged to consider the most appropriate means of incorporating the following notions of equity.

Schools need to provide opportunities for all students to demonstrate what they know and what they can do. All students, therefore, should have equitable access to educational programs and human and material resources. Teachers should ensure that the particular needs of the following groups of students are met: female students; male students; Aboriginal students; Torres Strait Islander students; students from non–English-speaking backgrounds; students with disabilities; students with gifts and talents; geographically isolated students; and students from low socioeconomic backgrounds.

The subject matter chosen should include, whenever possible, the contributions and experiences of all groups of people. Learning contexts and community needs and aspirations should also be considered when selecting subject matter. In choosing appropriate learning experiences teachers can introduce and reinforce non-racist, non-sexist, culturally sensitive and unprejudiced attitudes and behaviour. Learning experiences should encourage the participation of students with disabilities and accommodate different learning styles.

It is desirable that the resource materials chosen recognise and value the contributions of both females and males to society and include the social experiences of both sexes. Resource materials should also reflect the cultural diversity within the community and draw from the experiences of the range of cultural groups in the community.

Efforts should be made to identify, investigate and remove barriers to equal opportunity to demonstrate achievement. This may involve being proactive in finding out about the best ways to meet the special needs, in terms of learning and assessment, of particular students. The variety of assessment techniques in the work program should allow students of *all* backgrounds to demonstrate their knowledge and skills in a subject in relation to the criteria and standards stated in this syllabus. The syllabus criteria and standards should be applied in the same way to all students.

Teachers may find the following resources useful for devising an inclusive work program:

Australian Curriculum, Assessment and Certification Authorities 1996, *Guidelines for Assessment Quality and Equity*, Australian Curriculum, Assessment and Certification Authorities, available through QBSSSS, Brisbane.

Department of Education, Queensland 1991, *A Fair Deal: Equity guidelines for developing and reviewing educational resources*, Department of Education [Education Queensland], Brisbane.

Department of Training and Industrial Relations 1998, *Access and Equity Policy for the Vocational Education and Training System*, DTIR, Brisbane.

[Queensland] Board of Senior Secondary School Studies 1994, *Policy Statement on Special Consideration*, QBSSSS, Brisbane.

[Queensland] Board of Senior Secondary School Studies 1995, *Language and Equity: A discussion paper for writers of school-based assessment instruments*, QBSSSS, Brisbane.

[Queensland] Board of Senior Secondary School Studies 1995, *Studying Assessment Practices: A resource for teachers in schools*, QBSSSS, Brisbane.

10 RESOURCES

In each section we have given a list for students, and a further list for teachers. Some students will profit from reading material listed for teachers. For unit 4 we have listed books which span several areas. We draw attention especially to the *Encyclopedia of Philosophy* and to Edward's and Pap's *Introduction to Philosophy*. The former has become a standard work. The second has in it many long, discursive bibliographies in which books are not simply listed, but are discussed.

The source list is set out, as is the syllabus, with a separate section for each unit.

The entries are annotated according to the following key:

RT = recommended text

SR = student's reference

TR = teacher's reference

It is assumed that every SR is also a TR.

The lists are arranged in alphabetical order.

STRAND 1: CRITICAL REASONING

Source list
Brown, M. N. & Keeley, S. M. 2003, *Asking the Right Questions: A guide to critical thinking*, Prentice Hall, Sydney.
Cederbloom, J. & Paulsen, D. 1996, *Critical Reasoning*, 4th edn, Wadsworth. (TR)
Copi, I. M. & Cohen, C. 2001, *Introduction to Logic*, Prentice Hall College Division.
Corbett, E. P. J. 1990, *Classical Rhetoric for the Modern Student*, 3rd edn, Oxford University Press, Oxford.
Engel, S. M. 1982, *With Good Reason*, 2nd edn, St Martin's Press, New York. (SR)
Epstein, R. 1999, *Critical Thinking*, Wadsworth (SR)
Fogelin, R. & Sinnott-Armstrong, W. 2001, *Understanding Arguments*, 6th edn, Harcourt College Publishers. (TR)
Gardner, M. *The Paradox Box* (a logic game), W. H. Freeman & Co. (TR)
Hollis, M. 1970, *Tantalizers,* George Allen and Unwin, London. (SR)
Johnson, S. 1980, *The Stuff of Argument*, Nelson. (SR)
Kahane, H. Cavender, N. 2001, *Logic and Contemporary Rhetoric (with Infotrac): The use of reason in everyday life*, Wadsworth, Belmont.
Reichenbach, B. 2001, *Introduction to Critical Thinking*, McGraw-Hill. (SR)
Rudinow, J. & Barry, V. 1999, *Invitation to Critical Thinking*, 4th edn, Harcourt-Brace. (TR)

STRAND 2: DEDUCTIVE LOGIC
Students should use the following text as a recommended text:
Girle, R. A. 2002, *Introduction to Logic*, Prentice Hall. (RT)

Source list
Cresswell, M. J. & Hughes, G. E. 1996, *A New Introduction to Modal Logic*, Routledge. (TR)

Edwards, P. 1973, *Encyclopedia of Philosophy*, Free Press, New York. (TR)

Gardner, M. *The Paradox Box*, W. Freeman & Co. (slides and tapes). (TR)

Girle, R. A. 2000, *Modal Logic and Philosophy*, Acumen. (TR).

Howson, C. 1997, *Logic With Trees*, Routledge. (TR)

Hurley, P. J. 2002, *A Concise Introduction to Logic (with Infotrac)*, Wadsworth, Belmont.

Kelley, D. 1998, *The Art of Reasoning*, Norton, New York (Logic Tutor website).

Nolt, J. & Rohatyn, D. 1998, *Theory and problems of Logic* (Schaum's Outline), McGraw-Hill, New York.

Pospesel, H. 1999, Introduction to Logic (CD-ROM) Prentice Hall, Belmont.

Priest, G. 2001, *Logic: A very short introduction*, Oxford University Press. (SR)

Read, S. 1995, *Thinking about Logic*, Oxford University Press. (SR)

Restall, G. 2000, *Logic: The fundamentals of philosophy*, University College London Press, London. (TR)

Richards, T. J. 1978, *The Language of Reason*, Pergamon, Sydney. (SR)

Sainsbury, R. M. 1995, *Paradoxes*, Cambridge University Press. (SR)

Smullyan, R. M. 1995, *First Order Logic*, Dover. (TR)

STRAND 3: PHILOSOPHY

Source list

Appiah, A. 1989, *Necessary Questions*, Prentice Hall, Englewood Cliffs, New Jersey. (SR)

Collinson, D. 1988, *Fifty Major Philosophers*, Routledge, London. (TR)

Falzon, C. 2002, *Philosophy Goes to the Movies: An introduction to philosophy*, Routledge, New York.

Honderich, T. (ed.) 1995, *The Oxford Companion to Philosophy*, Oxford University Press, Oxford. (All areas.)

Horner, C. & Westacott, E. 2000, *Thinking through Philosophy: an introduction*, Cambridge University Press, Cambridge.

Lacey, A. R. 1982, *Modern Philosophy: An introduction*, Routledge & Kegan Paul, Boston. (TR)

Olen, J. 1983, *Persons and Their World*, Random House, New York. (TR)

Urmson, J. O. and Rée, J. (eds) 1991, *The Concise Encyclopedia of Western Philosophy and Philosophers*, Routledge, London, New York.

Source list for each area: (See also general source list)

Moral philosophy

Arrington, R. L. 1998, *Western Ethics: An historical introduction*, Blackwell, London. (SR)

Blackburn, S. 2001, *Being Good: A short introduction to ethics*, Oxford University Press, Oxford. (TR)

Blackburn, S. 2003, *Ethics: A very short introduction*, Oxford University Press. (SR)

Crisp, R. 1996, *How Should we Live?: Essays on the virtues*, Clarendon Press, Oxford. (TR)

Gensler, H. J. 1998, *Ethics: A contemporary introduction*, Routledge, London. (TR)

Glover, J. 1999, *Humanity: A moral history of the twentieth century*, Jonathan Cape, London. (SR)

Hudson, W. D. 2000, *A Century of Moral Philosophy*, Lutterworth Press, London.

Hudson, W. D. 1998, *The Moral Philosophers: an introduction to ethics*, Oxford University Press, Oxford. (both Hudson books TR)

La Follette, H. (ed.) 2003, *Oxford Handbook of Practical Ethics*, Oxford University Press, Oxford. (SR)

Olen, J. & Barry, V. 1998, *Applying Ethics*, Wadsworth, CA.

Pojman, L. P. (ed.) 2002, *Ethical Theory: Classical and contemporary readings*, Wadsworth, Belmont. (TR)

Rachels, J. 1999, *The Elements of Moral Philosophy*, McGraw-Hill, Boston. (SR)

Thomson, A. 1999, *Critical Reasoning in Ethics: A practical introduction*, Routledge, London. (TR)

Singer, P. (ed.) 1993, *A Companion to Ethics*, Blackwell, Cambridge.

Singer, P. 2001, *Writings on an Ethical Life*, Fourth Estate, London. (SR)

Tiles, T. E. 2000, *Moral Measures: An introduction to ethics west and east*, Routledge, New York. (TR)

Philosophy of mind

Guttenplan, S. (ed.) 1996, *A Companion to the Philosophy of Mind*, Blackwell. (SR)

Franklin, R. L. 1968, *Freewill and Determinism*, Routledge, London. (TR)

Glover, J. (ed.) 1976, *The Philosophy of Mind*, Oxford University Press, Oxford. (TR)

Braddon-Mitchell, D. and Jackson, F. 1996, *Philosophy of Mind and Cognition,* Blackwell, Oxford. (TR)

Smith, P. & Jones, O. R. 1986, *The Philosophy of Mind: An introduction*, Cambridge University Press, Cambridge. (SR)

Philosophy of religion

Hick, J. 1983, *Philosophy of Religion*, 3rd edn, Prentice Hall, Englewood Cliffs, New Jersey. (RT)

Oppy, G. 1995, *Ontological Arguments and Belief in God*, Cambridge University Press, Cambridge. (TR)

Purtill, R. L. 1974, *Reason to Believe*, Eerdmans, Grand Rapids, Michigan. (TR)

Smart, N. 1970, *The Philosophy of Religion*, Random House, New York. (TR)

Swinburne, R. 1991, *The Existence of God*, Oxford University Press, Oxford.

Philosophy of Science

Curd, M. (ed) 1998, *Philosophy of Science: The Central Issues*, Norton & Company, New York. (TR)

Dawkins, R. 2000, *Unweaving the Rainbow: Science, delusion, and the appetite for wonder*, Houghton Mifflin, Boston. (TR, SR)

Fuller, S. 1992, *Philosophy of Science and its Discontents*, Guilford Press, New York. (TR, SR)

Laudan, L. 1981, *Progress and Its Problems*, University of California Press, Berkely.(TR)

Popper, K. 2002, *The Logic of Scientific Discovery*, Routledge, London.

Rosenberg, A. 2000, *The Philosophy of Science: A contemporary introduction* (Routledge Contemporary Introductions to Philosophy), Routledge, London. (TR)

Snow, C. P. 1961, *The Two Cultures and the Scientific Revolution*, Cambridge University Press, Cambridge. (TR)

Philosophy of human nature

Abel, D. C. 1992, *Theories of Human Nature: Classical and contemporary Readings*, McGraw-Hill, New York. (TR)

Stevenson, L. & Haberman, D. 1998, *Ten Theories of Human Nature*, Oxford University Press, New York. (TR)

Stevenson, L. (ed.) 1981, *The Study of Human Nature: Readings*, Oxford University Press, New York. (TR)

Trigg, R. 1988, *Ideas of Human Nature: An historical introduction*, Oxford. (TR)
Trigg, R. 1988, *Ideas of Human Nature*, Basil Blackwell, New York. (SR)

Social philosophy and political philosophy
Feinberg, J. 1973, *Social Philosophy*, Prentice Hall, Englewood Cliffs, New Jersey. (SR)
Fitzgerald, R. 1980, *Comparing Political Thinkers*, Pergamon Press, Sydney. (TR)
Goodin, R. & Pettit, P. 1996, *A Companion to Contemporary Political Philosophy*, Blackwell, Oxford. (SR)
Mill, J. S. 1982, *On Liberty*, Penguin Classics, Penguin Books, London. (SR)
Miller, D. 2003, *Political Philosophy: A very short introduction*, Oxford University Press. (SR)
Plato, *The Republic*, Penguin, London, 1987. (TR)
Wolff, J. 1996, *An Introduction to Political Philosophy*, Opus, Oxford. (SR)

Feminist philosophy
Atherton, M. 1993, *Women Philosophers of the Early Modern Period*, Hackett Publishing. (TR)
Fallaize, E. 1998, *Simone de Beauvoir: A critical reader*, Routledge, London. (TR, SR)
Jagger, A. & Young, I. 2000, *A Companion to Feminist Philosophy*, Blackwell, New York. (TR)
Lloyd, G. (ed) 2002, *Feminism and the History of Philosophy*, Oxford University Press, Oxford. (TR)
Panichas, G. A. 1985, *The Simone Weil Reader*, Moyer Bell/Acorn Alliance, Rhode Island. (TR)
Hypatia: a journal of feminist philosophy, Indiana University Press Journals, Indiana University Press, Bloomington, IN. (TR)

Philosophy of education
Cahn, S. (ed.) 1996, *Classic and Contemporary Readings in the Philosophy of Education*, McGraw-Hill. (TR)
Ozmon, H. and Craver, S. 1998, *Philosophical Foundations of Educat*ion., 6th edn, Prentice-Hall. (TR)

History of Western philosophy
Augustine, St., *The Confessions*, Benton, Chicago, 1952.
Copleston, S. J. 1962, *History of Philosophy* (volumes 1–8), Image, New York.
Descartes, R. 1966, "Meditations" from *Philosophical Writings*, Nelson, Sydney.
Guthrie, W. K. C. 1950, *The Greek Philosophers: From Thales to Aristotle*, Methuen, London.
Plato, *The Last Days of Socrates*, Penguin, Harmondsworth, 1959.
Scruton, R. 1989, *A Short History of Modern Philosophy*, Routledge, London. (SR)

Eastern philosophy
Bronowski, J. 1974, *The Ascent of Man*, Little, Brown, Boston.
Hansen, C. 2000, *A Daoist Theory of Chinese Thought: A philosophical interpretation*, Oxford University Press. (TR)
Kjellberg, P. & Ivanhoe, P. (eds) 1996, *Essays on Skepticism, Relativism, and Ethics in the Zhuangzi*, SUNY Press. (TR)
Smart, N. 1969, *The Religious Experience of Mankind*, Charles Scribner's Sons, New York.