

Senior External Syllabus

Philosophy & Reason

Syllabus for the Senior External Examination



Philosophy & Reason Syllabus for the Senior External Examination

To be used for the first time in the 2006 Senior External Examination.

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I Rationale

Philosophy & Reason is concerned with developing the ability to reason, and the role of reasoning in developing coherent world views. To do justice to the extensive domain of philosophy and reason, this course introduces three major areas of study:

- Critical Reasoning
- Deductive Logic
- Philosophy.

Critical Reasoning sets out to provide knowledge of widely used inductive reasoning processes. The candidate 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 a wide range of subject matter. The knowledge and skills gained by candidates in this area equip them to analyse information rationally. These skills have wide application for candidates in tertiary studies, and as active participants in their society.

Deductive Logic introduces 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. Candidates are introduced to the methods of problem analysis, solution proposal and strategy choice. The course allows for experience with computer programming languages.

The study of Philosophy allows the candidate to recognise the relevance of various philosophies to different social, ethical and religious positions, and to understand that decision making in these arenas is the product of both an acceptance of a particular body of beliefs, and of specific modes of reasoning. Study in this area is especially useful since it allows for the application of reasoning skills learned in the Critical Reasoning and Deductive Logic areas of study. The constant emphasis on the importance of consistency of reasoning, and of being able to justify positions, allows candidates to develop rational views on major issues which they may previously have viewed irrationally.

2 Global aims

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

- an improved ability to think clearly, analytically and creatively
- a critical, open-minded and unprejudiced approach to 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 to express themselves clearly, through 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 reflect the key aspects of knowledge and understanding of reasoning processes that candidates should acquire.

The three objectives Knowledge, Application, and Communication are linked to the exit criteria and standards, and should be read in conjunction with sections 7.4 and 7.5.

3.1 Knowledge

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

On completion of this course, candidates 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 by drawing on a range of concepts, key ideas, methods and principles.

On completion of this course, candidates 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 their own).

3.3 Communication

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

On completion of this course, candidates 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.

4 Course organisation

4.1 Requirements for the course of study

The three strands — Critical Reasoning, Deductive Logic, and Philosophy — and the nine units included in them (three per strand) must be studied as part of a course of study in Philosophy & Reason.

Each of the three strands is presented as a series of units and topics. However, many of the reasoning skills developed in the course of studying Critical Reasoning and Deductive Logic are applied while studying the Philosophy strand, and therefore these courses should be offered first.

For example, Unit 5 (Monadic Logic) requires an understanding of the information presented in Unit 4 (Propositional Logic), and should be offered after or concurrently with that unit.

4.2 Time allocation

Time allocation depends on method of study. For institutions preparing candidates for the external examination, a minimum of 100 hours contact time is recommended. Candidates who elect to study without systematic tuition must organise their time according to syllabus requirements and individual circumstances. The time allocation suggested for teaching institutions provides a guide for the effective planning of individual courses of study.

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? |
| Deductive Logic | Unit 4 Propositional Logic |
| | Unit 5 Monadic Logic |
| | Unit 6 Dyadic Logic |
| Philosophy | Unit 7 Choice and Action |
| | Unit 8 Ways of Knowing |
| | Unit 9 Society and the Individual |

5 Strands and units of study

5.1 Critical Reasoning strand

Unit I: 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 candidates’ inductive reasoning skills, which include identifying, classifying, analysing and constructing the many different types of inductive argument. The acquisition of these skills enhances the candidates’ ability to reason critically, discern erroneous or deceptive arguments, and assess the strength of arguments in everyday and special situations.

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

- distinguishing inductive reasoning from deductive reasoning, and identifying the capacities and limitations of inductive reasoning
- identifying, classifying, analysing and constructing the four major inductive argument types:
 - inductive generalisation
 - proportional induction
 - statistical syllogism
 - inductive analogy

(examples of these inductive types can be drawn from any of the following:

- scientific reasoning
- moral or ethical arguments
- psychology
- advertising
- aesthetics
- media studies
- religious reasoning
- legal arguments
- politics
- social sciences
- statistical reasoning
- sociology.)

- the fallacies¹ that can arise when employing each of the four types of inductive reasoning:
 - the fallacies of illicit appeal, including:
 - appeal to authority (*ad verecundiam*)
 - appeal to ignorance (*ad ignorantiam*)
 - attacking the person (*ad hominem, tu quoque*)
 - appeal to pity (*ad misericordiam*)
 - appeal to emotive language (e.g. use of loaded questions)
 - the fallacies of assumption, including:
 - begging the question (*petitio principii*)
 - complex question
 - “black and white” thinking
 - slippery slope
 - enthymeme
 - the fallacies of scope, including:
 - hasty generalisation
 - biased sampling
 - division
 - composition
 - assuming the cause (*post hoc ergo propter hoc*)
 - faulty analogy
 - accident
 - stereotyping
 - slothful induction
 - forgetful induction
 - the fallacies of ambiguity, including:
 - amphiboly
 - equivocation
 - accent
 - straw man
 - definers
 - the fallacies of statistics
 - Monte Carlo
 - misuse of the Law of Averages.

Unit 2: Tell Me Why

Overview

Central to human understanding is the ability to explain. Being able to explain something — whether it be technical, academic or an everyday experience — 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.

¹ Candidates may choose to use the Latin terms or their modern equivalents when identifying these fallacies.

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

- 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.

Unit 3: What are the Odds?

Overview

Statistics and statistical reasoning play an important role in modern society. Whether the decisions to be made are specific and individual (such as career choices, investment options) or general and collective (such as educational policy, marketing strategies), the importance of statistical evidence and probability calculations has never been greater. This unit is intended to develop skills in working with statistics and probabilities by exploring the role, scope, types and applications of this form of inductive reasoning.

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

- Discuss the nature of probability, and evaluate the use of arguments employing probability and statistics in two of the following disciplines:
 - scientific reasoning
 - moral and ethical arguments
 - journalism
 - forensic science
 - aesthetics
 - psychology
 - insurance
 - religious reasoning
 - legal arguments
 - advertising
 - social sciences
 - mathematics
 - sociology
 - economics.

- 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 generalisation
 - loaded questions
 - complex question
 - alternatives that are not mutually exclusive
 - alternatives that are not collectively exhaustive.

5.2 Deductive Logic strand

Unit 4: Propositional Logic

Overview

Proposition and argument are the building blocks of reasoning: the means by which facts, beliefs and conjectures are expressed. Effective communication is based on their properties and the rules that govern their use. This unit is intended to equip candidates with basic analytical 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 (\neq), conditional (\supset) and biconditional (\equiv).
- Translate 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 5: Monadic Logic

Overview

The abilities to classify accurately and to describe the relationships between different predicates are fundamental to reasoning. Monadic Logic is the study of the propositions and arguments employed in these processes, namely those that involve predicates and quantifiers. This unit is intended to extend candidates' 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 using trees.
- Classify propositions as necessary truths, contradictions and contingencies.
- Using truth trees:
 - represent and analyse arguments of Monadic Logic
 - establish the validity and invalidity of arguments
 - produce counter-examples to invalid arguments.

- 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 6: Dyadic Logic

Overview

This unit is intended to extend candidates' 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 candidates 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.
- Using truth trees
 - represent and analyse formulae of Dyadic Logic using trees
 - represent and analyse arguments of Dyadic Logic
 - establish the validity and invalidity of arguments.
- Classify propositions as necessary truths, contradictions and contingencies.
- Identify premises and conclusions in dyadic predicate arguments.
- Produce finite counter-examples or describe infinite counter-examples to invalid arguments.
- Test counter-examples by instantiating formulae into finite universes and assigning values.
- Recognise the limitations of Dyadic Logic.

5.3 Philosophy strand

The Philosophy strand comprises the following topics, **any two** of which must be studied. Topics are discussed in pairs for the reasons given in the overviews of the topics that follow. There is no requirement that both or either topic in any pairing be selected for study; nor is there a restriction on such choices.

Note that the topics contain elements of choice within the suggested theories and philosophies.

| | |
|---------|---------------------------------|
| Topic 1 | Moral Philosophy |
| Topic 2 | Philosophy of Mind |
| Topic 3 | Philosophy of Religion |
| Topic 4 | Philosophy of Science |
| Topic 5 | Philosophy of Human Nature |
| Topic 6 | Social and Political Philosophy |

Topics 1 and 2 (Moral Philosophy, Philosophy of Mind)

Overview

Defending, promoting or attacking 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 any discussion of actions and choices is to be informed, rational and convincing. The subject matter in these topics is focussed on these and other ethical and metaphysical issues, which are examined in the context of historical and current philosophical debates.

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
 - utility
 - equality
 - fairness.
- Outline and assess one of the following moral topics:
 - the “open question” argument and the concepts of rationalism, naturalism, and non-cognitivism in ethics
 - the principle of universalisability and its scope
 - utilitarianism and criticisms of utilitarianism
 - morality, science and religion — their relationships and consequent problems.
 The context of such discussions could include:
 - 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 one monistic and one dualistic theory of the relationship between person, mind and body.

Possible dualistic theories include:

- interactionism
- occasionalism
- pre-established harmony
- parallelism

Possible monistic theories include:

- materialism
- neutral monism
- epiphenomenalism
- dual-aspect theory
- idealism

- Explain, compare and contrast at least two views on the free will versus determinism debate.

Contexts for this debate include:

- other minds
- virtual reality
- déjà vu
- telekinesis
- behaviourism
- artificial intelligence
- dreams and illusions
- intuition
- multiple personalities
- extra-sensory perception.

Topics 3 and 4 (Philosophy of Religion, Philosophy of Science)

Overview

These topics are concerned with what people believe and their justification for believing it. Through critical analysis of the views expressed by significant philosophers of the past and present, the topics are intended to enhance candidates' 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.

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:
 - ontological
 - cosmological
 - moral
 - teleological.
- Outline and assess the problem of evil as a 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.

Topic 4: Philosophy of science

- Outline and investigate the assumptions of science including:
 - physical determinism
 - temporal persistence of scientific laws
 - explicability or rationality of nature
 - the principle of the uniformity of nature.
- Discuss the nature and role of hypotheses in science.
- Evaluate hypotheses using appropriate criteria including:
 - explanatory adequacy
 - simplicity and Occam’s Razor
 - consistency with established beliefs
 - predictive ability.
- Discuss the nature of causality in science.
- Outline and evaluate the hypothetico-deductive technique; explain its role and nature.
- Discuss the strengths and limitations of science. Contexts could include:
 - history
 - sociology
 - economics
 - medicine.
- Analyse a topical issue pertinent to the philosophy of science; examples include:
 - science and religion
 - indeterminism and uncertainty
 - cosmology and science
 - science and morality
 - the influence of Karl Popper.
- 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 or rationality of nature.
- Investigate the role and limitations of inductive reasoning including at least one of the following problems:
 - Hume’s traditional problem of induction
 - The Goodman Induction Paradox.

Topics 5 and 6 (Philosophy of Human Nature, Social and Political Philosophy)

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 organisation? By examining such concepts within the contexts of ancient and modern philosophical debate, these topics provide candidates with contrasting responses to such questions. Through analysing the theories and their justifications candidates should use and develop their critical reasoning skills, thereby enhancing their appreciation of the force and value of well-reasoned, informative and cogent arguments.

Topic 5: Philosophy of human nature

- Outline, evaluate, compare and contrast any 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
- Christianity
- 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
- Nietzsche’s theory
- Darwin’s theory.

Topic 6: Social and political philosophy

- Discuss key socio-political terms and concepts including:
 - freedom
 - order
 - the state
 - democracy
 - morality
 - authority
 - society
 - rights.
- Clarify the nature of social and political philosophy.
- Outline, compare and contrast any two of the following major socio-political philosophies:
 - liberalism
 - anarchism
 - democratic socialism
 - Marxism
 - conservatism
 - fascism.
- Outline, compare and contrast any two of the following major types of state:
 - democracy
 - timocracy
 - plutocracy
 - oligarchy
 - monarchy
 - tyranny.

6 Learning experiences

Suggested learning experiences

The following suggestions may be useful to teachers and candidates in developing the subject matter for each strand.

6.1 Critical Reasoning strand

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 suggested above).
- Identify argument types in various disciplines:
 - use of generalisation and analogy with information from psychological and sociological experiments (Stanley Milgram 1974; Zimbardo 1973)
 - 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 or mindmap data for finding causes from causal candidates.

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 employment, 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).

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.”)
- Write short paragraphs that:
 - provide reasons for a specific 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 given 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’s 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).

6.2 Deductive Logic strand

Units 4, 5 and 6

- Access websites that enable candidates to practise truth tables and truth trees and 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 without using any propositions.
- Describe two contexts in which the same statement changes meaning (e.g. “the peasants are revolting”).
- Research the use of symbols for communication (e.g. hieroglyphics, road signs, company logos).
- Play games that depend on deductive reasoning (e.g. Cluedo, Mastermind, Tic-Tac-Toe, Connect Four, Sherlock, card games) and contrast these with non-deductive games (e.g. Pictionary, Scattogories, Compatibility).
- Collect examples of deductive reasoning (valid and invalid) from daily life.
- Interpret pictures such as topical cartoons and extrapolate the arguments involved.

A suitable text for these units: *Introduction to Logic*, by R. A. Girle, published by Prentice Hall, 2002.

6.3 Philosophy strand

Learning experiences for this strand are intended to:

- generate philosophical discussion in an atmosphere of openness, generosity and respect
- encourage the reading of philosophy articles and critiques
- promote candidates’ research of 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*, and *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, criticise and rebut philosophical 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 Assessment

7.1 Format of the external examination

Summative assessment takes the form of an external written examination. The examination will consist of two papers, the duration of each paper being between two hours and three hours. In addition, there will be a perusal time of ten minutes for each paper.

Paper 1 assesses the Deductive Logic strand. Part A covers Propositional Logic. Part B covers Monadic Logic and Dyadic Logic. The paper will contain questions and tasks requiring short written responses and practical exercises. See section 7.2.

Paper 2 assesses the Critical Reasoning strand in Part A and the Philosophy strand in Part B. Part A will contain questions requiring short written responses. Part B consists of two essays, to be written on two topics selected by the candidate from the choice offered on the paper. See section 7.2.

Any changes to the above organisation of papers will be conveyed to candidates in the advice issued by the Chief Examiner each year. Changes might, for example, include changing the balance of the three strands on the two papers to provide opportunities to answer more questions on Critical Reasoning or Philosophy.

Each year the Chief Examiner will provide advice about:

- the duration of papers
- the number and characteristics of questions
- additional conditions (such as open-book provisions) or equipment, materials, required readings, or the like.

7.2 Special consideration

Under certain circumstances, special arrangements or consideration may be available to candidates for the Senior External Examination. The special consideration provisions are detailed in the annual Handbook for the Senior External Examination, available on the QSA website at www.qsa.qld.edu.au/testing/extern-exams.

7.3 Assessment techniques

The following techniques are all appropriate for the assessment of candidates in Philosophy & Reason.

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

Essay responses

These are especially suited for assessment in strands 2 and 3.

Essay length may vary according to task, but in general should be approximately 600 words.

Essay responses allow candidates 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 their own philosophical positions and develop a major, consistent line of thought.

7.4 Exit criteria

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

Criterion I: 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 candidate'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.

7.5 Awarding exit levels of achievement

On completion of the course of study, the examiner will award each candidate an exit level of achievement from one of the five categories:

- Very High Achievement
- High Achievement
- Sound Achievement
- Limited Achievement
- Very Limited Achievement.

The exit level of achievement will be based on the exit standard for each of the three criteria of knowledge, application, and communication. 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 Table 2.

The process of arriving at a judgment about a candidate's responses to examination questions is essentially a process of matching the candidate's responses against the syllabus standards associated with exit criteria. A level of achievement that best describes the pattern of performance across the examination as a whole is then awarded.

When standards have been determined in each of the three criteria, the following table (Table 1) is used to determine the exit level of achievement, where *A* represents the highest standard and *E* the lowest.

Table 1: Minimum requirements for exit levels

| | |
|-----|---|
| VHA | Standard <i>A</i> in any two exit criteria and no less than a <i>B</i> in the remaining criterion |
| HA | Standard <i>B</i> in any two exit criteria and no less than a <i>C</i> in the remaining criterion |
| SA | Standard <i>C</i> in any two exit criteria and no less than a <i>D</i> in the remaining criterion |
| LA | Standard <i>D</i> in any two exit criteria |
| VLA | Standard <i>E</i> — does not meet the requirements for Limited Achievement |

Information about how scripts are marked is provided in the annual Handbook for the Senior External Examination, available on the QSA website (www.qsa.qld.edu.au/testing/extern-exams).

Table 2: Standards associated with exit criteria

| Criterion | Standard A | Standard B | Standard C | Standard D | Standard E |
|----------------------|---|---|---|---|---|
| Knowledge | <p>The candidate demonstrates 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.</p> | <p>The candidate demonstrates accurate recall and understanding of a range of concepts, ideas, procedures and principles.</p> | <p>The candidate recalls and describes most concepts, ideas, procedures and principles.</p> | <p>The candidate recalls and describes some concepts, ideas, procedures and principles.</p> | <p>The candidate describes few concepts, ideas, procedures and principles.</p> |
| Application | <p>The candidate:</p> <ul style="list-style-type: none"> • applies appropriate techniques and procedures of deductive reasoning to simple and complex tasks with facility and accuracy • 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: <ul style="list-style-type: none"> – explaining intrinsic concepts, – explaining simple and complex relationships within and between theories – discerning and describing the application of theories in different contexts (including in the formulation of own and others' views). | <p>The candidate:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – most intrinsic concepts – simple (and some complex) relationships within and between theories. | <p>The candidate:</p> <ul style="list-style-type: none"> • 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. | <p>The candidate:</p> <ul style="list-style-type: none"> • 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. | <p>The candidate:</p> <ul style="list-style-type: none"> • uses prescribed techniques and procedures of deductive reasoning inaccurately and incompletely • occasionally classifies some simple arguments • describes very few philosophical concepts. |
| Communication | <p>The candidate:</p> <ul style="list-style-type: none"> • 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. | <p>The candidate:</p> <ul style="list-style-type: none"> • 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. | <p>The candidate:</p> <ul style="list-style-type: none"> • usually employs appropriate vocabulary and conventions of language • organises and presents information so that meaning is usually evident • produces explanations, descriptions and arguments that are adequate to convey intention. | <p>The candidate:</p> <ul style="list-style-type: none"> • makes some appropriate choices of vocabulary, and obeys some conventions of language • presents information and produces explanations that lack detail and clarity. | <p>The candidate:</p> <ul style="list-style-type: none"> • makes inconsistent and inaccurate choices of basic vocabulary and conventions of language • presents disjointed information and descriptions. |

8 Resources

8.1 Information about External Examinations

The QSA website (www.qsa.qld.edu.au/testing/extern-exams) provides essential resources for all candidates for the Senior External Examination, including:

- the annual Handbook
- lists of subject resources/materials
- notices to candidates
- important dates.

8.2 Strands

Resources are listed for each strand. In some cases it is indicated that resources are suitable for candidates, while others are better suited to teachers. Some candidates will profit from reading material listed for teachers. 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

CR = candidate's reference

TR = teacher's reference

It is assumed that every CR is also a TR. The lists are arranged in alphabetical order.

Strand I: 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, Belmont. (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. (CR)
- Epstein, R. 1999, *Critical Thinking*, Wadsworth, Belmont. (CR)
- 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. (CR)
 Johnson, S. 1980, *The Stuff of Argument*, Nelson. (CR)
 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. (CR)
 Rudinow, J. & Barry, V. 1999, *Invitation to Critical Thinking*, 4th edn, Harcourt-Brace (TR)

Strand 2: Deductive Logic

Candidates 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, *Encyclopaedia of Philosophy*, Free Press, New York. (TR)
 Gardner, M. *The Paradox Box*, (slides and tapes) W. Freeman & Co. (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. (CR)
 Read, S. 1995, *Thinking about Logic*, Oxford University Press, Oxford. (CR)
 Restall, G. 2000, *Logic: The fundamentals of philosophy*, University College London Press, London. (TR)
 Richards, T. J. 1978, *The Language of Reason*, Pergamon, Sydney. (CR)
 Sainsbury, R. M. 1995, *Paradoxes*, Cambridge University Press, Cambridge. (CR)
 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. (CR)
 Collinson, D. 1988, *Fifty Major Philosophers*, Routledge, London. (TR)
 Falzon, C. 2002, *Philosophy Goes to the Movies: An introduction to philosophy*, Routledge, New York.
 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)
The Concise Encyclopaedia of Western Philosophy and Philosophers, eds. J Urmson & J Rée, Routledge, London, New York.
The Oxford Companion to Philosophy, ed. T. Honderich, Oxford University Press, Oxford. (All areas.)

Source list for each topic

Moral philosophy

- A Companion to Ethics* 1993, ed. P. Singer, Blackwell, Cambridge
- Arrington, R. L. 1998, *Western Ethics: An historical introduction*, Blackwell, London. (CR)
- 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, Oxford. (CR)
- Crisp, R. 1996, *How Should we Live?: Essays on the virtues*, Clarendon Press, Oxford. (TR)
- Ethical Theory: Classical and contemporary readings* 2002, ed. L.P. Pojman, Wadsworth, Belmont. (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)
- Olen, J. & Barry, V. 1998, *Applying Ethics*, Wadsworth, CA.
- Oxford Handbook of Practical Ethics* 2003, ed. H. La Follette, Oxford University Press, Oxford. (SR)
- Rachels, J. 1999, *The Elements of Moral Philosophy*, McGraw-Hill, Boston. (CR)
- Thomson, A. 1999, *Critical Reasoning in Ethics: A practical introduction*, Routledge, London. (TR)
- Singer, P. 2001, *Writings on an Ethical Life*, Fourth Estate, London. (CR)
- Tiles, T. E. 2000, *Moral Measures: An introduction to ethics west and east*, Routledge, New York. (TR)

Philosophy of mind

- A Companion to the Philosophy of Mind*, 1996, ed. S. Guttenplan, Blackwell. (CR)
- Franklin, R. L. 1968, *Free Will and Determinism*, Routledge, London. (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. (CR)
- The Philosophy of Mind*, 1976. ed. J. Glover, Oxford University Press, Oxford. (TR)

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

- Dawkins, R. 2000, *Unweaving the Rainbow: Science, delusion, and the appetite for wonder*, Houghton Mifflin, Boston. (TR, CR)
- Fuller, S. 1992, *Philosophy of Science and its Discontents*, Guilford Press, New York. (TR, CR)
- Laudan, L. 1981, *Progress and Its Problems*, University of California Press, Berkeley. (TR)
- Philosophy of Science: The Central Issues* 1998, ed. M. Curd, Norton & Company, New York. (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)
- The Study of Human Nature: Readings* 1981, ed. L. Stevenson, 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. (CR)

Social philosophy and political philosophy

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