SACE BOARD
SOUTH AUSTRALIA

# Nutrition

## 2021 Subject Outline

Stage 1



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Government of South Australia

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*It is anticipated that this subject outline will be accredited for teaching at Stage 1 from 2021*

# CONTENTS

# INTRODUCTION

## SUBJECT DESCRIPTION

Nutrition is a 10-credit subject or a 20-credit subject at Stage 1.

Nutrition is a contemporary science which immerses students in the fundamentals of human nutrition, physiology and health and promotes investigation of current and emerging trends. It is the study of dietary, lifestyle, and healthy eating patterns with specific focus on nutrients in food, how the body uses nutrients, and the relationship between diet, health and disease. Students will apply knowledge and understanding of nutrition to conduct investigations and examine scenarios. Students use technologies, scientific evidence and research to critically analyse information and make informed decisions or recommendations.

Students consider how population demographics and their food and nutritional needs will be impacted by food availability and product development. Political, economic, cultural, and ethical influences and ecological sustainability will be examined to recommend actions or develop arguments about future food needs. Using critical food literacy skills and a deep understanding of food composition will enable students to analyse diets that in turn improve health outcomes for individuals, community groups and/or society.

Students develop an understanding of the need to evaluate marketing of food, food systems and food quality standards, food availability and cultural influences on food selection. Through this they develop a growth in their personal and social capabilities, and ethical and intercultural understanding. Students explore the link between food systems, environmental impacts, climate change, and food sustainability. They suggest solutions to complex issues informed by current research and Australian consumer protection practices.

Students will have opportunities to investigate global and local food trends, advancement in technology, and development of new foods and food packaging. These will impact on the future health.

## CAPABILITIES

The capabilities connect student learning within and across subjects in a range of contexts.

The SACE identifies seven capabilities. They are:

- literacy
- numeracy
- information and communication technology (ICT) capability
- critical and creative thinking
- personal and social capability
- ethical understanding
- intercultural understanding

### Literacy

In this subject students extend and apply their literacy capability by, for example:

- communicating appropriately using nutritional and food literacy for specific purposes and audiences
- using a range of communication formats to express ideas logically and fluently, incorporating the terminology and conventions of nutrition
- comprehending and interpreting the work of scientists across disciplines, using scientific/ nutritional knowledge
- critically analysing and evaluating primary and secondary data
- identifing nutritional information presented in a variety of modes
- synthesising evidence to produce a logical argument
- formulating appropriate questions, hypotheses, and purposes that guide nutrition investigations and their design

### Numeracy

In this subject students extend and apply their numeracy capability by, for example:

- solving problems using calculations and critical thinking skills
- measuring with appropriate instruments
- recording, collating, representing, and analysing primary data
- accessing and interpreting secondary data
- identifying and interpreting trends and relationships between data sets
- calculating and predicting values by manipulating data and using appropriate scientific conventions

### Information and communication technology (ICT) capability

In this subject students extend and apply their ICT capability by, for example:

- locating and accessing information
- collecting, analysing, and representing data electronically

- modelling concepts and relationships
- using technologies to create new ways of thinking about nutrition
- communicating ideas, processes, and information about nutrition
- understanding the impact of technological devices on the development of nutrition and its application in society
- evaluating the application of ICT to advance understanding and investigations in nutrition

## Critical and creative thinking

In this subject students extend and apply their critical and creative thinking capability by, for example:

- analysing and interpreting problems or issues from different perspectives
- constructing an hypothesis to design an experiment, observational study or investigation
- interpreting and evaluating data and procedures to develop logical conclusions
- analysing interpretations and claims, for validity and reliability
- devising innovative solutions to nutritional issues and making reasonable predictions
- recognising the value of creative thinking on the development of nutritional knowledge

## Personal and social capability

In this subject students extend and apply their personal and social capability by, for example:

- understanding the importance of nutritional knowledge on health and well-being, both personally and globally
- making decisions and taking initiative while working independently and collaboratively
- effectively planning, managing time, following procedures, and working safely
- sharing and discussing ideas about nutritional issues, developments, and innovations while respecting the perspectives of others
- analyse the role of their own beliefs and attitudes on personal nutrition status
- analyse cultural beliefs and attitudes and their impact on nutrition
- seeking, valuing, and acting on feedback

## Ethical understanding

In this subject students extend and apply their ethical understanding capability by, for example:

- considering the implications of their investigations on food production sustainability
- making ethical decisions based on an understanding of nutrition principles
- using data and reporting the outcomes of investigations accurately and fairly
- acknowledging the need to plan for the future and to protect and sustain the biosphere
- recognising the importance of their responsible participation in influencing practices in society and policy
- respecting individual values and preferences relating to nutritional choices

- understanding the influence of food production on environmental sustainability

## Intercultural understanding

In this subject students extend and apply their intercultural understanding capability by, for example:

- recognising that nutrition is a science with significant global contributions
- respecting and engaging with different cultural views and customs
- understanding that nutrition is influenced by cultural factors
- acknowledgment of traditional foods within the Aboriginal and Torres Strait Islanders communities

# ABORIGINAL AND TORRES STRAIT ISLANDER KNOWLEDGE, CULTURES, AND PERSPECTIVES

In partnership with Aboriginal and Torres Strait Islander communities, and schools and school sectors, the SACE Board of South Australia supports the development of high-quality learning and assessment design that respects the diverse knowledge, cultures, and perspectives of Indigenous Australians.

The SACE Board encourages teachers to include Aboriginal and Torres Strait Islander knowledge and perspectives in the design, delivery, and assessment of teaching and learning programs by:

- providing opportunities in SACE subjects for students to learn about Aboriginal and Torres Strait Islander histories, cultures, and contemporary experiences
- recognising and respecting the significant contribution of Aboriginal and Torres Strait Islander peoples to Australian society
- drawing students' attention to the value of Aboriginal and Torres Strait Islander knowledge and perspectives from the past and the present
- promoting the use of culturally appropriate protocols when engaging with and learning from Aboriginal and Torres Strait Islander peoples and communities

# LEARNING SCOPE AND REQUIREMENTS

## LEARNING REQUIREMENTS

The learning requirements summarise the knowledge, skills, and understanding that students are expected to develop and demonstrate through their learning in Stage 1 Nutrition

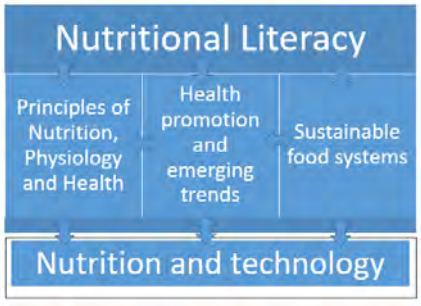
In this subject, students are expected to:

1. apply knowledge and understanding of nutritional concepts and food ethics
2. conduct nutritional investigations, using appropriate methodologies
3. evaluate data and /or information from nutritional investigations and form conclusions
4. apply critical and creative thinking skills in response to nutritional issues
5. explore and understand science as a human endeavour
6. communicate knowledge and understanding of nutritional concepts and nutritional literacy

## CONTENT, CONCEPTS AND CONTEXTS

Stage 1 Nutrition is a 10-credit subject or a 20-credit subject. That consist of the following interrelated concepts areas:

- Nutritional literacy
- Principles of nutrition, physiology, and health
- Health promotion and emerging trends
- Sustainable food systems
- Nutrition and technology



For a 10-credit subject, students study three nutritional understandings from different concepts. These understandings may be selected from the list on page 12 or developed by the teacher.

For a 20-credit subject, students study five nutritional understandings from different concepts. These understandings may be selected from the list on page 12 or developed by the teacher.

Decisions about what is studied for study should reflect areas in nutrition that have personal relevance and significance for students within a learning group and should take into account the students' interests, contexts, and geographical location..

The list of possible contexts is presented as a guide to the scope of the nutritional understandings considered appropriate at Stage 1. The list is neither prescriptive nor exhaustive.

The concepts in Stage 1 Nutrition provide the framework for developing integrated programs of learning through which students extend their skills, knowledge, and understanding of the three strands of science.

The three strands of science to be integrated throughout the student learning are:

- science inquiry skills
- science as a human endeavor
- Nutritional science understanding.

Together with science as a human endeavour, the science inquiry skills and science understanding form the basis of teaching, learning, and assessment in this subject.

## Science Inquiry Skills

In Nutrition, inquiry is an integral part of the learning and understanding of concepts.,

Practical investigations involve a range of both individual and collaborative activities, during which students extend the science inquiry skills described in the table that follows.

Practical activities may take a range of experimental or observational forms. Students develop investigable questions and/or testable hypotheses. The data may be observations, measurements, or other information obtained during the investigation. Students represent and analyse the data they have collected; evaluate procedures, and describe the limitations of the data and procedures; consider explanations for their observations; and present and justify conclusions appropriate to the initial question or hypothesis.

It is recommended that class time involves some practical activities.

Science inquiry skills are fundamental to students investigating the social, ethical, and environmental impacts and influences of the development of scientific understanding and the applications, possibilities, and limitations of science. These skills enable students to critically consider the evidence they obtain so that they can present and justify conclusions.

| Science Inquiry Skills | Possible contexts |
|---|---|
| Scientific methods enable systematic investigation to obtain measurable evidence.<br>• Design or conduct an investigation, including:<br>◆ a hypothesis or inquiry question<br>◆ types of variables<br>– dependent<br>– independent<br>– factors held constant (how and why they are controlled)<br>◆ materials required<br>◆ the method to be followed<br>◆ the type and amount of data to be collected<br>◆ identification of ethical and safety considerations | Develop inquiry skills by, for example:<br>• designing investigations that require investigable questions and imaginative solutions (with or without implementation)<br>• critiquing proposed investigations<br>• using the conclusion of one investigation to propose subsequent experiments<br>• changing an independent variable in a given procedure and adapting the method<br>• researching, developing, and trialling a method<br>• improving an existing procedure<br>• identifying options for measuring the dependent variable<br>• identifying relevant ethical and/or legal considerations in different contexts<br>• comparing experimental and observational research methodologies |
| Obtaining meaningful data depends on conducting investigations using appropriate procedures and safe, ethical working practices.<br>• Conduct investigations, including:<br>◆ collection of appropriate primary and/or secondary data (numerical, visual, descriptive)<br>◆ individual and collaborative work | Develop inquiry skills by, for example:<br>• practising techniques and safe use of apparatus<br>• comparing resolution of different measuring tools<br>• distinguishing between, and using, primary and secondary data |

| Science Inquiry Skills | Possible contexts |
|---|---|
| Results of investigations are represented in a well-organised way to allow them to be interpreted.<br>• Represent results of investigations in appropriate ways, including:<br>◆ use of appropriate SI units, symbols<br>◆ construction of appropriately labelled tables<br>◆ drawing of graphs | Develop inquiry skills by, for example:<br>• practising constructing tables to tabulate data, including column and row labels with units<br>• identifying the appropriate representations to graph different data sets<br>• selecting appropriate axes and scales to graph data<br>• comparing data from different sources to describe as quantitative or qualitative |
| Scientific information can be presented using different types of symbols and representations.<br>• Select, use, and interpret appropriate representations, to explain concepts, solve problems, and make predictions | Develop inquiry skills by, for example:<br>• writing chemical equations<br>• drawing and labelling diagrams<br>• recording images<br>• constructing flow diagrams |
| Analysis of the results of investigations allows them to be interpreted in a meaningful way.<br>• Analyse data, including:<br>◆ identification and discussion of trends, patterns, and relationships | Develop inquiry skills by, for example:<br>• analysing data sets to identify trends and patterns<br>• determining relationships between independent and dependent variables<br>• using graphs from different sources (e.g. CSIRO or the Australian Bureau of Statistics (ABS), FSANZ) to predict values other than plotted points<br>• calculating mean values |
| Critical evaluation of procedures and data can determine the meaningfulness of the results.<br>• Identify sources of uncertainty<br>• Evaluate reliability, accuracy, and validity of results, by discussing factors including:<br>◆ sample size<br>◆ random error<br>◆ systematic error<br>◆ improvements | Develop inquiry skills by, for example:<br>• discussing how the repeating of an investigation with different materials/equipment may detect a systematic error<br>• using an example of an investigation report to develop report-writing skills |
| Conclusions can be formulated that relate to the hypothesis or inquiry question.<br>• Select and use evidence and scientific understanding to make and justify conclusions.<br>• Recognise the limitations of conclusions.<br>• Recognise that the results of some investigations may not lead to definitive conclusions. | Develop inquiry skills by, for example:<br>• evaluating procedures and data sets provided by the teacher to determine and hence comment on the limitations of possible conclusions<br>• using data sets to discuss the limitations of the data in relation to the range of possible conclusions that could be made |

| Science Inquiry Skills | Possible contexts |
|---|---|
| Effective scientific communication is clear and concise.<br>• Communicate to specific audiences and for specific purposes using:<br>◆ appropriate language<br>◆ terminology<br>◆ conventions | Develop inquiry skills by, for example:<br>• reviewing scientific articles or presentations to recognise conventions<br>• developing skills in referencing and/or footnoting<br>• distinguishing between reference lists and bibliographies<br>• practising scientific communication in written, oral, and multimodal formats (e.g. presenting a podcast or writing a blog) |

## Science as a Human Endeavour

The science as a human endeavour strand highlights the development of science as a way of knowing and doing, and explores the purpose, use, and influence of science in society.

By exploring science as a human endeavour, students develop and apply their understanding of the complex ways in which science interacts with society, and investigate the dynamic nature of nutritional science. They explore how scientists develop new understanding and insights, and produce innovative solutions to everyday and complex problems and challenges in local, national, and global contexts. In this way, students are encouraged to think scientifically and make connections between the work of others and their own learning. This enables them to explore their own solutions to current and future problems and challenges.

Students understand that the development of science concepts, models, and theories is a dynamic process that involves analysis of evidence and sometimes produces ambiguity and uncertainty. They consider how and why science concepts, models, and theories are continually reviewed and reassessed as new evidence is obtained and emerging technologies enable new avenues of investigation. They understand that scientific advancement involves a diverse range of individual scientists and teams of scientists working within an increasingly global community of practice.

Students explore how scientific progress and discoveries are influenced and shaped by a wide range of social, economic, ethical, and cultural factors. They investigate ways in which the application of science may provide great benefits to individuals, the community, and the environment, but may also pose risks and have unexpected outcomes. They understand how decision-making about socio-scientific issues often involves consideration of multiple lines of evidence and a range of needs and values. As critical thinkers, they appreciate science as an ever-evolving body of knowledge that frequently informs public debate, but is not always able to provide definitive answers.

The key concepts of science as a human endeavour underpin the contexts, approaches, and activities in this subject, and must be integrated into all teaching and learning programs.

The key concepts of science as a human endeavour, with elaborations that are neither comprehensive nor exclusive, in the study of Nutrition are:

### Communication and Collaboration

- Science is a global enterprise that relies on clear communication, international conventions, and review and verification of results.
- Collaboration between scientists, governments, and other agencies is often required in scientific research and enterprise.

### Development

- Development of complex scientific models and/or theories often requires a wide range of evidence from many sources and across disciplines.
- New technologies improve the efficiency of scientific procedures and data collection and analysis. This can reveal new evidence that may modify or replace models, theories, and processes.

### Influence

- Advances in scientific understanding in one field can influence and be influenced by other areas of science, technology, engineering, and mathematics.
- The acceptance and use of scientific knowledge can be influenced by social, economic, cultural, and ethical considerations.

### Application and Limitation

- Scientific knowledge, understanding, and inquiry can enable scientists to develop solutions, make discoveries, design action for sustainability, evaluate economic, social, cultural, and environmental impacts, offer valid explanations, and make reliable predictions.
- The use of scientific knowledge may have beneficial or unexpected consequences; this requires monitoring, assessment, and evaluation of risk, and provides opportunities for innovation.
- Science informs public debate and is in turn influenced by public debate; at times, there may be complex, unanticipated variables or insufficient data that may limit possible conclusions.

## STAGE 1 CONCEPTS AND NUTRITIONAL UNDERSTANDING

| Concepts | Nutritional Understanding | Possible Contexts |
|---|---|---|
| Principles of Nutrition | 1. Fundamentals of nutrition | • Macronutrients and over nutrition<br>• Micronutrients and under nutrition<br>• Dietary disorders |
| Health promotion | 2. Food marketing and nutritional guidelines concepts | • The psychology of food marketing<br>• Australian dietary guidelines<br>• Nutrition in the life cycle<br>• Indigenous Australians: food changes from the traditional to the contemporary<br>• Organic food versus genetically modified food<br>• Health promotion for specific community groups |
| | 3. Food trends | • Specific foods and nutritional value<br>• Future foods<br>• Harvest to plate |
| Sustainable food systems | 4. Water and sustainable food supply | • Water quality and health<br>• Famine<br>• Sustainable food futures<br>• Waste management<br>• Food bank |
| | 5. Food processing | • Fresh versus processed foods<br>• Food packaging and labelling<br>• Contaminated food<br>• Safe food handling<br>• Preservation methods<br>• Chemical and functional changes in macronutrients |

# ASSESSMENT SCOPE AND REQUIREMENTS

Assessment at Stage 1 is school based.

## EVIDENCE OF LEARNING

The following assessment types enable students to demonstrate their learning in Stage 1 Nutrition:

- Assessment Type 1: Investigation Folio
- Assessment Type 2: Skills and Application Tasks

For a 10-credit subject, students should provide evidence of their learning through three assessments. Each assessment type should have a weighting of at least 20%. Students undertake:

- one practical investigation
- one investigation with a focus on science as a human endeavor
- one skills and application task

For a 20-credit subject, students should provide evidence of their learning through six assessments. Each assessment type should have a weighting of at least 20%. Students undertake:

- two practical investigations
- two investigations with a focus on science as a human endeavor
- two skills and application tasks

## ASSESSMENT DESIGN CRITERIA

The assessment design criteria are based on the learning requirements and are used by teachers to:

- clarify for the student what they need to learn
- design opportunities for students to provide evidence of their learning at the highest possible level of achievement

The assessment design criteria consist of specific features that:

- students should demonstrate in their learning
- teachers look for as evidence that students have met the learning requirements

For this subject the assessment design criteria are:

- knowledge and application
- investigation, analysis and evaluation

The specific features of these criteria are described below.

The set of assessments, as a whole, must give students opportunities to demonstrate each of the specific features by the completion of study of the subject.

## Knowledge and Application

The specific features are as follows:

KA1 demonstration of knowledge and understanding of nutritional concepts

KA2 application of nutritional concepts in familiar and unfamiliar contexts

KA3 exploration and understanding of the relationship between nutritional science and society

KA4 communication of nutritional concepts and nutritional literacy

## Investigation, Analysis and Evaluation

The specific features are as follows:

IAE1 design or conduct investigations using appropriate methodologies

IAE2 obtain, record, and display findings of investigations, using appropriate conventions and formats

IAE3 analysis and interpretation of data and /or information to form conclusions

IAE4 evaluate methodologies and/ or research processes and the effect on data

# SCHOOL ASSESSMENT

## Assessment Type 1: Investigation Folio

For a 10-credit subject, students undertake one practical investigation and one investigation with a focus on science as a human endeavour.

For a 20-credit subject, students undertake two practical investigations and two investigations with a focus on science as a human endeavour.

Students inquire into aspects of nutrition through practical discovery and data analysis, and/or by selecting, analysing, and interpreting information.

## Practical Investigations

As students design and safely carry out investigations, they demonstrate their science inquiry skills by:

- designing or conducting an appropriate method for experiments, observational studies or investigations
- formulating a hypothesis
- using appropriate equipment, apparatus, and techniques
- identifying variables
- collecting, representing, analysing, and interpreting data
- evaluating procedures and considering the impact on results
- drawing conclusions
- communicating knowledge and understanding of concepts

Practical investigations can be conducted individually or collaboratively. For each investigation, students present an individual report.

A practical report **may** include:

- introduction with relevant nutritional concepts
- hypothesis
- variables (independent, dependent, controlled) in an experiment
- materials/apparatus (table or image) used in an experiment
- the method that was implemented (flow chart, table or image)
- identification and management of safety and/or ethical risks
- results, including table(s) and/or graph(s)
- analysis of results, including identifying trends and linking results to concepts
- evaluation of procedures and their effect on data, and identifying sources of uncertainty
- conclusion, with justification

The report should be a maximum of 1000 words if written, or a maximum of 6 minutes for an oral presentation, or the equivalent in multimodal form.

Only the following sections of the report are included in the word count:

- introduction
- analysis of results
- evaluation of procedures
- conclusion and justification

Suggested formats for presentation of a practical investigation report include:

- a written report
- an oral presentation
- a multimodal product.

## Science as a Human Endeavour Investigation

Students investigate a contemporary example of how nutritional science interacts with society. This may focus on one or more of the key concepts of nutritional science as a human endeavour described on pages 10 and 11 and may draw on a context suggested in the topics or relate to a new context.

Students could consider, for example, how:

- humans seek to improve their understanding and explanation of nutritional science in society
- working scientifically is a way of obtaining knowledge that allows for testing scientific claims
- scientific theory can change in the light of new evidence
- technological advances change ways of working scientifically
- links between advances in nutritional science impact and influence society
- society influences scientific research
- emerging careers and pathways relating to nutrition

Students access information from different sources, select relevant information, analyse their findings, and explain the connection to nutritional science as a human endeavour.

Possible starting points for the investigation could include, for example:

- the announcement of a discovery in the field of nutritional science
- an expert's point of view on a controversial innovation
- a TED talk based on a nutritional development
- an article from a scientific publication (e.g. *Cosmos, Nutridate*)
- public concern about an issue that has environmental, social, economic, or political implications

Based on their investigation, students prepare a scientific text, which must include the use of scientific terminology.

The text should be a maximum of 1000 words if written, or a maximum of 6 minutes for an oral presentation, or the equivalent in multimodal form. For this assessment type, students provide evidence of their learning primarily in relation to the following assessment design criteria:

- knowledge and application
- investigation, analysis, and evaluation

## Assessment Type 2: Skills and Application Task

For a 10-credit subject, students undertake one skills and applications task.

For a 20-credit subject, students undertake two skills and applications tasks.

Skills and applications tasks allow students to provide evidence of their learning in tasks that may:

- be applied, analytical, and/or interpretative
- pose problems in familiar and unfamiliar contexts
- involve individual and/ or collaborative tasks

A skills and applications task may involve, for example:

- solving problems
- design an investigation to test a hypothesis or question
- considering different scenarios in which to apply knowledge and understanding
- graphing, tabulating, and/or analysing data
- evaluating procedures and identifying their limitations
- formulating and justifying conclusions
- representing information diagrammatically or graphically
- using nutritional terms, conventions, and notations

The skills and applications task should be designed to enable students to apply their science inquiry skills, demonstrate knowledge and understanding of key nutritional concepts and learning, and explain connections with science as a human endeavour. Problems and scenarios should be set in a relevant context, which may be practical, social, or environmental.

Skills and applications tasks may include, for example:

- modelling or representing concepts
- developing simulations
- practical and/or graphical skills
- a multimodal product
- an oral presentation
- participation in a debate
- an extended response
- responses to short-answer questions
- a structured interview
- an excursion report
- a response to science in the media

For this assessment type, students provide evidence of their learning primarily in relation to the following assessment design criteria:

- knowledge and application
- investigation, analysis and evaluation

## PERFORMANCE STANDARDS

The performance standards describe five levels of achievement, A to E.

Each level of achievement describes the knowledge, skills, and understanding that teachers refer to in deciding how well students have demonstrated their learning on the basis of the evidence provided.

During the teaching and learning program the teacher gives students feedback on their learning, with reference to the performance standards.

At the student's completion of study of a subject, the teacher makes a decision about the quality of the student's learning by:

- referring to the performance standards
- taking into account the weighting of each assessment type
- assigning a subject grade between A and E

## Performance Standards for Stage 1 Nutrition

| | Knowledge and Understanding | Investigation, Analysis and Evaluation |
|---|---|---|
| **A** | Demonstrates deep and broad knowledge and understanding of a range of nutritional concepts<br>Highly effective application of nutritional concepts in familiar and unfamiliar contexts<br>Critically explores and understands the relationship between nutritional science and society<br>Coherent and clear communication of nutritional concepts and nutritional literacy | Logical and detailed planning of investigations using appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats accurately and highly effectively<br>Systematically analyses and interprets data and /or information to justify logical conclusions<br>Critically and logically evaluates methodologies and/ or research processes and the effect on data |
| **B** | Demonstrates some depth and breadth of knowledge and understanding to a range of nutritional concepts<br>Mostly effective application of nutritional concepts in familiar and unfamiliar contexts<br>Logically explores and understands the relationship between nutritional science and society.<br>Mostly coherent and clear communication of nutritional concepts and nutritional literacy | Well considered planning of investigations using appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats mostly accurately and effectively<br>Analysis and interpretation of data and /or information to justify reasonable conclusions<br>Logically evaluates methodologies and/ or research processes and the effect on data |
| **C** | Demonstrates knowledge and understanding of a general range of nutritional concepts<br>Generally effective application of nutritional concepts in familiar and unfamiliar contexts<br>Explores and understands aspects of the relationship between nutritional science and society<br>Generally coherent and clear communication of nutritional concepts and nutritional literacy | Considered planning of investigations using appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats, with some errors but generally accurately and effectively<br>Interpretation of data and /or information to justify generally appropriate conclusions<br>Evaluates methodologies and/ or research processes and some of the effect on data |

| | Knowledge and Understanding | Investigation, Analysis and Evaluation |
|---|---|---|
| **D** | Demonstrates some basic knowledge and partial understanding of nutritional concepts<br>Application of some nutritional concepts in familiar contexts<br>Partially explores and recognises aspects of the relationship between nutritional science and society<br>Some clear communication of nutritional concepts and nutritional literacy | Basic planning of investigations using some appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats inconsistently, with occasional accuracy and effectiveness<br>Describes data and /or information to formulate basic conclusions<br>Attempts to evaluate methodologies and/ or research processes and suggest ian effect on data |
| **E** | Demonstrates limited recognition and awareness of nutritional concepts<br>Attempted application of nutritional concepts in contexts<br>Attempts to explore and identify an aspect of the relationship between nutritional science<br>Attempted communication of nutritional concepts and nutritional literacy | Attempts an outline of a plan for an investigations<br>Attempts to record and represent some data, with limited accuracy or effectiveness<br>Attempts to describe data and /or information and formulates a simple conclusions<br>Acknowledges that methodologies and/ or research processes effect data |

## ASSESSMENT INTEGRITY

The SACE Assuring Assessment Integrity Policy outlines the principles and processes that teachers follow to assure the integrity of student assessments. This policy is available on the SACE website (www.sace.sa.edu.au) as part of the SACE Policy Framework.

The SACE Board uses a range of quality assurance processes so that the grades awarded for student achievement in the school assessment are applied consistently and fairly against the performance standards for a subject, and are comparable across all schools.

Information and guidelines on quality assurance in assessment at Stage 1 are available on the SACE website (www.sace.sa.edu.au).

# SUPPORT MATERIALS

## SUBJECT-SPECIFIC ADVICE

Online support materials are provided for each subject and updated regularly on the SACE website (www.sace.sa.edu.au). Examples of support materials are sample learning and assessment plans, annotated assessment tasks, annotated student responses, and recommended resource materials.

## ADVICE ON ETHICAL STUDY AND RESEARCH

Advice for students and teachers on ethical study and research practices is available in the guidelines on the ethical conduct of research in the SACE, which are on the SACE website (www.sace.sa.edu.au).

SACE BOARD
SOUTH AUSTRALIA

# Nutrition

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Stage 2



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*It is anticipated that this subject outline will be accredited for teaching at Stage 1 from 2021*

# CONTENTS

# INTRODUCTION

## SUBJECT DESCRIPTION

Nutrition is 20-credit subject at Stage 2.

Nutrition is a contemporary science which immerses students in the fundamentals of human nutrition, physiology and health and promotes investigation of current and emerging trends. It is the study of dietary, lifestyle, and healthy eating patterns with specific focus on nutrients in food, how the body uses nutrients, and the relationship between diet, health and disease. Students will apply knowledge and understanding of nutrition to conduct investigations and examine scenarios. Students use technologies, scientific evidence and research to critically analyse information and make informed decisions or recommendations.

Students consider how population demographics and their food and nutritional needs will be impacted by food availability and product development. Political, economic, cultural, and ethical influences and ecological sustainability will be examined to recommend actions or develop arguments about future food needs. Using critical food literacy skills and a deep understanding of food composition will enable students to analyse diets that in turn improve health outcomes for individuals, community groups and/or society.

Students develop an understanding of the need to evaluate marketing of food, food systems and food quality standards, food availability and cultural influences on food selection. Through this they develop a growth in their personal and social capabilities, and ethical and intercultural understanding. Students explore the link between food systems, environmental impacts, climate change, and food sustainability. They suggest solutions to complex issues informed by current research and Australian consumer protection practices.

Students will have opportunities to investigate global and local food trends, advancement in technology, and development of new foods and food packaging. These will impact on the future health of populations through nutritional needs.

## CAPABILITIES

The capabilities connect student learning within and across subjects in a range of contexts.

The SACE identifies seven capabilities. They are:

- literacy
- numeracy
- information and communication technology (ICT) capability
- critical and creative thinking
- personal and social capability
- ethical understanding
- intercultural understanding

### Literacy

In this subject students extend and apply their literacy capability by, for example:

- communicating appropriately using nutritional and food literacy for specific purposes and audiences
- using a range of communication formats to express ideas logically and fluently, incorporating the terminology and conventions of nutrition
- comprehending and interpreting the work of scientists across disciplines, using scientific/ nutritional knowledge
- critically analysing and evaluating primary and secondary data
- identifying nutritional information presented in a variety of modes
- synthesising evidence to produce a logical argument
- formulating appropriate questions, hypotheses, and purposes that guide nutrition investigations and their design

### Numeracy

In this subject students extend and apply their numeracy capability by, for example:

- solving problems using calculations and critical thinking skills
- measuring with appropriate instruments
- recording, collating, representing, and analysing primary data
- accessing and interpreting secondary data
- identifying and interpreting trends and relationships between data sets
- calculating and predicting values by manipulating data and using appropriate scientific conventions

### Information and communication technology (ICT) capability

In this subject students extend and apply their ICT capability by, for example:

- locating and accessing information
- collecting, analysing, and representing data electronically

- using technologies to create new ways of thinking about nutrition
- communicating ideas, processes, and information about nutrition
- understanding the impact of technological devices on the development of nutrition and its application in society
- evaluating the application of ICT to advance understanding and investigations in nutrition

## Critical and creative thinking

In this subject students extend and apply their critical and creative thinking capability by, for example:

- analysing and interpreting problems or issues from different perspectives
- constructing an hypothesis to design an experiment, observational study or investigation
- interpreting and evaluating data and procedures to develop logical conclusions
- analysing interpretations and claims, for validity and reliability
- devising innovative solutions to nutritional issues and making reasonable predictions
- recognising the value of creative thinking on the development of nutritional knowledge

## Personal and social capability

In this subject students extend and apply their personal and social capability by, for example:

- understanding the importance of nutritional knowledge on health and well-being, both personally and globally
- making decisions and taking initiative while working independently and collaboratively
- effectively planning, managing time, following procedures, and working safely
- sharing and discussing ideas about nutritional issues, developments, and innovations while respecting the perspectives of others
- analyse the role of their own beliefs and attitudes on personal nutrition status
- analyse cultural beliefs and attitudes and their impact on nutrition
- seeking, valuing, and acting on feedback

## Ethical understanding

In this subject students extend and apply their ethical understanding capability by, for example:

- considering the implications of their investigations on food production sustainability
- making ethical decisions based on an understanding of nutrition principles
- using data and reporting the outcomes of investigations accurately and fairly
- acknowledging the need to plan for the future and to protect and sustain the biosphere
- recognising the importance of their responsible participation in influencing practices in society and policy
- respecting individual values and preferences relating to nutritional choices
- understanding the influence of food production on environmental sustainability

## Intercultural understanding

In this subject students extend and apply their intercultural understanding capability by, for example:

- recognising that nutrition is a science with significant contributions from diverse cultures
- respecting and engaging with different cultural views and customs
- understanding that nutrition is influenced by cultural factors
- acknowledgment of traditional foods within the Aboriginal and Torres Strait Islander communities

## ABORIGINAL AND TORRES STRAIT ISLANDER KNOWLEDGE, CULTURES, AND PERSPECTIVES

In partnership with Aboriginal and Torres Strait Islander communities, and schools and school sectors, the SACE Board of South Australia supports the development of high-quality learning and assessment design that respects the diverse knowledge, cultures, and perspectives of Indigenous Australians.

The SACE Board encourages teachers to include Aboriginal and Torres Strait Islander knowledge and perspectives in the design, delivery, and assessment of teaching and learning programs by:

- providing opportunities in SACE subjects for students to learn about Aboriginal and Torres Strait Islander histories, cultures, and contemporary experiences
- recognising and respecting the significant contribution of Aboriginal and Torres Strait Islander peoples to Australian society
- drawing students' attention to the value of Aboriginal and Torres Strait Islander knowledge and perspectives from the past and the present
- promoting the use of culturally appropriate protocols when engaging with and learning from Aboriginal and Torres Strait Islander peoples and communities

# LEARNING SCOPE AND REQUIREMENTS

## LEARNING REQUIREMENTS

The learning requirements summarise the knowledge, skills, and understanding that students are expected to develop and demonstrate through their learning in Stage 2 Nutrition.

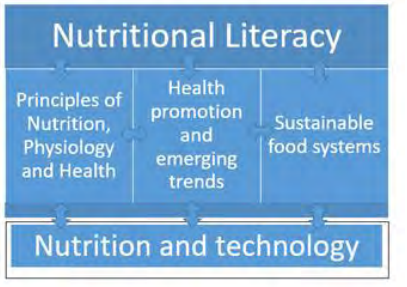
In this subject, students are expected to:

1. apply knowledge and understanding of nutritional concepts and food ethics in diverse contexts
2. plan and conduct nutritional investigations, using appropriate methodologies
3. analyse and interpret data and/or information from nutritional investigations and justify conclusions
4. apply critical and creative thinking skills in response to nutritional issues
5. explore and understand nutritional science as a human endeavour
6. communicate knowledge and understanding of nutritional concepts and nutritional literacy

## CONTENT, CONCEPTS AND CONTEXTS

Stage 2 Nutrition is a 20-credit subject that consists of the following interrelated concepts areas:

- Nutritional literacy
- Principles of nutrition, physiology, and health
- Health promotion and emerging trends
- Sustainable food systems
- Nutrition and technology



Students study all five concepts. The concepts in Stage 2 Nutrition provide the framework for developing integrated programs of learning through which students extend their skills, knowledge, and understanding of the following three strands of science:

- science inquiry skills
- science as a human endeavor
- science understanding.

The descriptions of the science inquiry skills and the areas for science understanding are structured in two columns: the left-hand column sets out the science inquiry skills or science understanding and the right-hand column sets out possible contexts.

Together with science as a human endeavour, the science inquiry skills and science understanding form the basis of teaching, learning, and assessment in this subject.

The possible contexts are suggestions for potential inquiry approaches, and are neither comprehensive nor exclusive. Teachers may select from these and are encouraged to consider other inquiry approaches according to local needs and interests

Within the area descriptions, the following symbols are used in the possible contexts to show how a strand of science can be integrated:

indicates a possible science inquiry activity

indicates a possible focus on science as a human endeavour

indicates a possible teaching and learning strategy for science understanding

## Science Inquiry Skills

In Nutrition, investigation is an integral part of the learning and understanding of concepts.

Practical investigations must involve a range of both individual and collaborative activities, during which students extend the science inquiry skills described in the table that follows.

Practical activities may take a range of experimental and observational forms. Students develop investigable questions and/or testable hypotheses, and select and use equipment appropriately to collect data. The data may be observations, measurements, or other information obtained during the investigation. Students represent and analyse the data they have collected; evaluate procedures, and describe the limitations of the data and procedures; consider explanations for their observations; and present and justify conclusions appropriate to the initial question or hypothesis.

It is recommended that class time involves some practical activities.

Science inquiry skills are fundamental to students investigating the social, ethical, and environmental impacts and influences of the development of scientific understanding and the applications, possibilities, and limitations of science. These skills enable students to critically consider the evidence they obtain so that they can present and justify conclusions.

| Science Inquiry Skills | Possible contexts |
|---|---|
| Scientific methods enable systematic investigation to obtain measurable evidence.<br>• Design or conduct an experiment, observational study or investigation, including:<br>◆ a hypothesis or inquiry question<br>◆ types of variables<br>– dependent<br>– independent<br>– factors held constant (how and why they are controlled)<br>◆ materials required<br>◆ the method to be followed with justification<br>◆ the type and amount of data to be collected<br>◆ identification of ethical and safety considerations | Develop inquiry skills by, for example:<br>• designing investigations that require investigable questions and imaginative solutions (with or without implementation)<br>• critiquing proposed investigations<br>• using the conclusion of one investigation to propose subsequent experiments<br>• changing an independent variable in a given procedure and adapting the method<br>• researching, developing, and trialling a method<br>• improving an existing procedure<br>• identifying options for measuring the dependent variable<br>• developing safety audits<br>• identifying relevant ethical and/or legal considerations in different context.<br>• comparing experimental and observational research methodologies |

| | |
|---|---|
| Obtaining meaningful data depends on conducting investigations using appropriate procedures and safe, ethical working practices.<br>• Conduct investigations, including:<br>◆ selection and safe use of appropriate materials, apparatus, and equipment<br>◆ collection of appropriate primary and/or secondary data (numerical, visual, descriptive)<br>◆ individual and collaborative work | Develop inquiry skills by, for example:<br>identifying equipment, materials, or instruments fit for purpose<br>practising techniques and safe use of apparatus<br>comparing resolution of different measuring tools<br>distinguishing between, and using, primary and secondary data |
| Results of investigations are represented in a well-organised way to allow them to be interpreted.<br>• Represent results of investigations in appropriate ways, including:<br>◆ use of appropriate SI units, symbols<br>◆ construction of appropriately labelled tables<br>◆ drawing of graphs | Develop inquiry skills by, for example:<br>• practising constructing tables to tabulate data, including column and row labels with units<br>• identifying the appropriate representations to graph different data sets<br>• selecting appropriate axes and scales to graph data<br>• comparing data from different sources to describe as quantitative or qualitative |
| Scientific information can be presented using different types of symbols and representations.<br>• Select, use, and interpret appropriate representations to explain concepts, solve problems, and make predictions | Develop inquiry skills by, for example:<br>• writing equations<br>• drawing and labelling diagrams<br>• recording images<br>• constructing flow diagrams |
| Analysis of the results of investigations allows meaningful interpretation of data including identification and discussion of trends, patterns, and relationships | Develop inquiry skills by, for example:<br>• analysing data sets to identify trends and patterns<br>• determining relationships between independent and dependent variables<br>• using graphs from different sources (e.g. CSIRO or the Australian Bureau of Statistics (ABS), FSANZ) to predict values other than plotted points<br>• calculating mean values |
| Critical evaluation of procedures and data can determine the meaningfulness of the results.<br>• Identify sources of uncertainty, including:<br>◆ random and systematic errors<br>• Evaluate reliability, accuracy, and validity of results, by discussing factors including:<br>◆ sample size<br>◆ random error<br>◆ systematic error<br>◆ improvements | Develop inquiry skills by, for example:<br>• discussing how the repeating of an investigation with different materials/equipment may detect a systematic error<br>• using an example of an investigation report to develop report-writing skills |

| | |
|---|---|
| Conclusions can be formulated that relate to the hypothesis or inquiry question.<br>• Select and use evidence and scientific understanding to make and justify conclusions.<br>• Recognise the limitations of conclusions.<br>• Recognise that the results of some investigations may not lead to definitive conclusions | Develop inquiry skills by, for example:<br>• evaluating procedures and data sets to determine and hence comment on the limitations of possible conclusions<br>• using data sets to discuss the limitations of the data in relation to the range of possible conclusions that could be made |
| Effective scientific communication is clear and concise.<br>• Communicate to specific audiences and for specific purposes using:<br>◆ respectful language<br>◆ terminology<br>◆ conventions | Develop inquiry skills by, for example:<br>• reviewing scientific articles or presentations to recognise conventions<br>• developing skills in referencing and/or footnoting<br>• distinguishing between reference lists and bibliographies<br>• practising scientific communication in written, oral, and multimodal formats (e.g. presenting a podcast or writing a blog. |

## Science as a Human Endeavour

The science as a human endeavour strand highlights the development of science as a way of knowing and doing, and explores the purpose, use, and influence of science in society.

By exploring science as a human endeavour, students develop and apply their understanding of the complex ways in which science interacts with society, and investigate the dynamic nature of nutritional science. They explore how nutritionists develop new understanding and insights, and produce innovative solutions to everyday and complex problems and challenges in local, national, and global contexts. In this way, students are encouraged to think scientifically and make connections between the work of others and their own learning. This enables them to explore their own solutions to current and future problems and challenges.

Students understand that the development of science concepts, models, and theories is a dynamic process that involves analysis of evidence and sometimes produces ambiguity and uncertainty. They consider how and why science concepts, models, and theories are continually reviewed and reassessed as new evidence is obtained and emerging technologies enable new avenues of investigation. They understand that scientific advancement involves a diverse range of individual scientists and teams of scientists working within an increasingly global community of practice.

Students explore how scientific progress and discoveries are influenced and shaped by a wide range of social, economic, ethical, and cultural factors. They investigate ways in which the application of science may provide great benefits to individuals, the community, and the environment, but may also pose risks and have unexpected outcomes. They understand how decision-making about socio-scientific issues often involves consideration of multiple lines of evidence and a range of needs and values. As critical thinkers, they appreciate science as an ever-evolving body of knowledge that frequently informs public debate, but is not always able to provide definitive answers.

The key elements of science as a human endeavour underpin the contexts, approaches, and activities in this subject, and must be integrated into all teaching and learning programs.

The key elements of science as a human endeavour, with elaborations that are neither comprehensive nor exclusive, in the study of Nutrition are:

### Communication and Collaboration

- Science is a global enterprise that relies on clear communication, international conventions, and review and verification of results.
- Collaboration between scientists, governments, and other agencies is often required in scientific research and enterprise.

### Development

- Development of complex scientific models and/or theories often requires a wide range of evidence from many sources and across disciplines.
- New technologies improve the efficiency of scientific procedures and data collection and analysis. This can reveal new evidence that may modify or replace models, theories, and processes.

### Influence

- Advances in scientific understanding in one field can influence and be influenced by other areas of science, technology, engineering, and mathematics.
- The acceptance and use of scientific knowledge can be influenced by social, economic, cultural, and ethical considerations.

### Application and Limitation

- Scientific knowledge, understanding, and inquiry can enable scientists to develop solutions, make discoveries, design action for sustainability, evaluate economic, social, cultural, and environmental impacts, offer valid explanations, and make reliable predictions.
- The use of scientific knowledge may have beneficial or unexpected consequences; this requires monitoring, assessment, and evaluation of risk, and provides opportunities for innovation.
- Science informs public debate and is in turn influenced by public debate; at times, there may be complex, unanticipated variables or insufficient data that may limit possible conclusions.

## Topic 1: Principles of nutrition, physiology, and health

Students will critically analyse the impact of diet on health and wellbeing throughout the lifecycle. They will develop the skills to explore the nature of diet-related disorders whilst exploring links with biochemistry of nutrients, their structure, function and interaction. The study of the digestive system will generate discussion about the influence of the microbiome on health and malabsorption syndromes. Students analyse and evaluate scenarios and provide solutions to complex problems requiring analysis.

Students:

- understand the biochemistry of nutrients, their structure, function and interaction
- understand the nature of nutrition related disorders
- understand the digestive system
- understand the impact of diet on health and wellbeing throughout the lifecycle
- analyse and evaluate data or scenarios.

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| The importance of the macronutrients: (protein, carbohydrates, lipids) and water and their respective energy values.<br>• Nutrient energy values kJ per gram<br>• Food sources and their nutritional and energy value<br>• Recommended proportions of individual macronutrients as a % of the total macronutrients<br>• Nutrient reference values<br>o Recommended Daily Intake (RDI)<br>o Estimated Average Requirement (EAR)<br>o Adequate Intake (AI)<br>o Tolerable Upper Intake Level (UL)<br>• EARs for energy through life cycle | Explain why hydration and micronutrients are important to human health.<br>Identify the Nutrient Energy Values of each Macronutrient, Protein, Carbohydrate, Lipids, Alcohol and Water.<br>Determine the energy (kJ) provided, and percentage provided of one or more macronutrients from a lunch box or meals.<br>Investigate the energy provided by each macronutrient of a specific food e.g meat pie to compare the nutritional information panel to assess the accuracy of this information |  |
| | Research statistics to determine the average macronutrient distribution range for different ages and gender<br>Compare, using a case study, the RDI, EAR, AI and UL of different nutrient consumption over a 24hr period. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| Digestion and metabolism of food influences the absorption and use of nutrients<br>• the processes of ingesting and digesting food/fluids and the absorption of macronutrients<br>- Gastrointestinal tract<br>• organs involved in digestion<br>• digestion of macronutrients and their enzymes<br>• mechanical and chemical digestion<br>- Absorption of products of macronutrient digestion in the villi and large intestine<br>• water absorption<br>• microbiome synthesis of nutrients<br>• factors that interfere with the absorption of nutrients<br>- malabsorption syndromes such as coeliac disease and intolerance to lactose<br>• factors that determine basal metabolic rates (BMR) and estimated energy expenditure (EER) | Illustrate and explain the structure and function of the primary and secondary organs of the digestive system.<br><br>Explore digestion of different food containing different macronutrients.<br><br>Determine the mechanical and chemical digestion of different macronutrients and where they occur in the digestive system<br><br>Compare the absorption of the products of digestion in the villi and digestive system.<br><br>Describe the chemical processes related to metabolism and release of energy.<br><br>Explore the different malabsorption syndromes of coeliac disease and lactose intolerance in different populations<br><br>Compare the Basal Metabolic Rate of females and males. Determine the factors that makes them different |  |
| | Demonstrate the emulsification of bile by using oil, water and detergent<br><br>Explain and calculate, using a case study, the estimated energy expenditure of a person.<br><br>Conduct an experiment to measure the absorption of iron with a varying pH environment using dialysis tubing |  |
| | Explore how the use of antibiotics in food has impacted on human health.<br><br>Research the development of different cereals to produce gluten free bread |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| Recognition that macro nutrients have a specific function and structure<br>*Proteins:*<br>• the structure and functional roles of protein as a nutrient<br>• the general structure of amino acids<br>• essential, non-essential and conditional (babies, illness and vegan) amino acids<br>• biological value of protein sources including;<br>- complete and incomplete proteins<br>- Complementation<br>• plant, animal and novel sources of protein in the diet | Explain the function of protein in different parts of the body such as for muscle growth and repair, hormones, enzymes, and antibodies.<br><br>Explain nitrogen balance in relation to protein requirements in specific groups such as athletes, the elderly or the immunocompromised.<br><br>Discuss the different types, of amino acids, essential, conditional and non-essential when research different populations such as vegans and vegetarians<br><br>Compare complete and incomplete proteins and determine, both animal and plant food sources |  |
| | Conduct an experiment to recognize and compare the amount of macronutrients in different foods |  |
| | Assess the validity of the claim that low-protein, high carbohydrate diets lead to longer life in humans.<br><br>Investigate the applications and limitations of lactose free milk.<br><br>Investigate the nutritional value obtained from edible insects and assess the potential benefits for future populations. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| *Lipids*<br>• the functions of lipids (fats) as a nutrient<br>• the structure, sources of the following fatty acids:<br>- saturated vs unsaturated<br>- monounsaturated<br>- polyunsaturated<br>- trans-fatty acids<br>• the role of essential fatty acids in the diet including Omega 3 and Omega 6<br>• sources and functions of blood cholesterol | Compare and describe the structural characteristic differences between saturated, polyunsaturated, monounsaturated and trans fatty acids.<br><br>Explore the differences between low density lipoproteins (LDLs) and high density lipoproteins (HDLs) and the health effects, including dietary diseases.<br><br>Determine and make links to the consumption of saturated fatty acids to obesity, cardiovascular disease (CVD) and hypertension. |  |
| | Investigate and observe the difference when changing the temperature and cooking with monounsaturated fatty acids and saturated fatty acids |  |
| | Discuss the potential of lipids found in different seeds to improve health outcomes of communities and the ethical and environmental impacts of production |  |
| *Carbohydrates*<br>• the sources and functions of carbohydrate as a nutrient<br>• the nutritional significance of the following carbohydrates:<br>- poly saccharides<br>- disaccharide<br>- monosaccharide<br>- glucose molecule<br>• the effects of different carbohydrates on blood sugar levels<br>• the role of soluble and insoluble fibre in the body. | Represent the chemical structure of glucose and the bonding to synthesise disaccharides and polysaccharides.<br><br>Determine the food sources for the different types of carbohydrate including monosaccharides, disaccharides and polysaccharides.<br><br>Determine the effects of a high consumption of different food sources containing simple sugars with links to dietary disorders such as type 2 diabetes<br><br>Describe the food sources of insoluble and soluble fibre and their role in the body. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| | Use the nutritional information panel and ingredient lists of different products to compare the total carbohydrate and the simple sugar content to determine the best option for consumption. |  |
| | Investigate the changing health of individuals through the use of prebiotics and the link to different insoluble and soluble fibre. |  |
| *Water and other fluids*<br>• sources and functions of water and other fluids in the diet<br>• benefits derived from consuming fluids other than water<br>• factors that impact on hydration<br>• the effects of dehydration | Research food sources from different food groups that are high in water content as an alternative to water<br><br>Explain the role of water and the importance of it being an essential macronutrient<br><br>Determine the adverse effects of a deficiency of water in the diet. |  |
| | Investigate the application and limitation of hydration in sport. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| Micronutrients are required by the body for good health and the prevention of diet related disorders. These are known as vitamins and minerals.<br>• The difference between vitamins and minerals.<br><br>Vitamins<br>- the differences between fat-soluble and water-soluble vitamins<br>- function of vitamins<br><br>Minerals<br>• factors affecting bioavailability and absorption of minerals<br>- Haem/non-haem iron<br><br>• the interrelationship of different micronutrients<br>- promotes absorption<br>▪ Foods rich in Vitamin C are eaten with foods that contain non-haem iron,<br>- Inhibits absorption<br>▪ Calcium<br>▪ Iron<br><br>• Other minerals relating to dietary disorders<br>- sodium<br>- calcium<br>- potassium | Compare the difference between fat soluble and water soluble vitamins including absorption, transport, storage, toxicity and excretion<br><br>Describe how particular vitamins can cause adverse effects to the body and can be considered toxic when consumed above their upper limit.<br><br>Explain how the bioavailability of different nutrients can be effected when consuming different food sources high in specific vitamins.<br><br>Explain how vitamins and minerals can have a similar role and function in the body.<br><br>Describe the function and food sources for a specific vitamins or mineral.<br><br>Determine the different food sources of non-haem and haem iron.<br><br>Explore how calcium inhibits iron absorption<br><br>Debate the role of dietary supplements of folate in a balanced diet |  |
| | Investigate different cooking methods, for example, boiling, steaming, microwaving and frying to determine the effects of different vitamins. |  |
| | Discuss the potential social impacts of deficiencies of vitamins, for example Nyctalopia (night blindness), osteoporosis, pellagra, spina bifida, anaemia, rickets, scurvy and the effects on different populations.<br><br>Examine the way caffeine (phytates and oxalates) inhibits calcium and the impacts of increasing caffeine consumption. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| Imbalance of nutrient intake is likely to cause diet related disorders. Diet related health disorders<br>• the consequences of over nutrition;<br>  • Obesity<br>  • Cardiovascular disease<br>  • Type 2 Diabetes<br>  • Hypertension: sodium and potassium relationship<br><br>• the consequences of under nutrition<br>  • Constipation/diverticulitis<br>  • Anaemia: iron, B12, folate:<br>  • Osteoporosis: Vit D, calcium:<br>  • Rickets:Vit D<br>  • Scurvy : Vit C<br>  • Spina bifida: folate<br><br>• the role of diet and lifestyle in the prevention, control or reversal of such disorders. | Explore different examples of deficiencies of minerals, including osteoporosis and anaemia in different populations.<br><br>In groups investigate a diet related health disorder using the key headings below<br>• Definition<br>• Risk Factors/Causes:<br>• Nutritional, lifestyle, genetic<br>• Signs/Symptoms<br>• Strategies to manage and improve through nutrition and lifestyle<br><br>In groups, explore ways to modify recipe/diet for any of the diet related disorders and justify changes. |  |
| | Compare the nutritional benefits of different popular diets.<br><br>Making of a health biscuit for food drops in times of famine (assess for nutrient value) |  |
| | Using articles explore contemporary developments in relation to diet related disorders such as the rise in scurvy, increase in bowel cancer amongst young people, or increase in Vitamin D deficiencies<br><br>Discuss the benefits and ethical considerations associated with low calorie sweeteners and cardiovascular disease. |  |
| Nutrition through the life cycle<br>- changes to the specific nutritional needs and energy requirements for the different stages of the life cycle | In groups using a blank table differentiate the nutritional needs across the life span of an individual. Using scenarios analyse the diet and lifestyle of individuals or group. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| - factors that determine an individual's physiological need for nutrients (age, gender, body size and activity level) | Investigate the food and beverage consumption over 24 hours and analyse its nutritional content for a specific individual. Suggest and justify appropriate changes, where required. |  |
| | Investigate the applications and limitations of genetic analysis on nutritional health. |  |

## Topic 2: Health promotion and emerging trends

Methods of health promotion and emerging trends in Nutrition are continually. Pressures and stakeholders such as government bodies and social media influence food choices. Students evaluate factors influencing food choices, including labelling of foods and its implications for consumer health. Along with considering and interpreting endorsed nutritional educational programs and tool, students analyse and evaluate data related to scenarios and case studies apply this data to current situations.

Students:

- understand the labelling of foods and its implications for health
- consider and interpret endorsed nutritional educational programs and tools
- evaluate factors influencing food choices
- analyse and evaluate data, scenarios or case studies

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| In Australia, the sale of food is regulated and the consumers are protected, by government policy regulation.<br><br>• the role of FSANZ in regulation of food production and consumer safety<br>• the process of food contamination from food borne illnesses: listeria, E.coli and salmonella and its prevention<br>• FSANZ- additives including emulsifiers, antioxidants, artificial colours and sweeteners<br>• FSANZ- mandatory fortification ( specifics- folate, thiamine, iodine, vitamin D ) | Compare different foods using their nutritional informational panel.<br><br>Using nutritional informational panels calculate the energy value and percentage of nutrient groups of various foods.<br><br>Use food labels to compare and analyse the nutritional value of the same food products from different manufacturers.<br><br>Predict what the benefits of compulsory and improved nutritional labelling will be for consumers, society, and the health sector<br><br>Use data or articles to show and discuss food borne illnesses. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| • Mandatory food labelling requirements<br>• nutritional value per 100 grams<br>• nutritional composition of food using nutrition tables or programs | Select 3 foods and identify possible situations where the food could be contaminated by listeria, E.coli and salmonella<br><br>Act as local health official and interpret information presented to determine the food and pathogen most likely for a mock food poisoning case. |  |
| | Investigate if the branding of milk alternative as milk is valid?<br><br>Evaluate the claims about superfoods |  |
| Diagnostic tools assist individuals and health professionals in evaluating health and diet.<br>• body mass index (BMI)<br>• the limitations, advantages and disadvantages of using Body Mass Index (BMI) to one of the following; waist-to-hip ratio, waist circumference, weight for height tables, blood analysis | Calculate your BMI and compare it with the Australian Government Department of Health BMI chart for adults<br><br>Discuss the usefulness of using diagnostic tools to assist in evaluating an individual's health and diet.<br><br>Investigate the validity of an individual interpretation of the information in the absence of a qualified practitioner.<br><br>Evaluate the health of individuals or a diet using diagnostic tools.<br><br>Review the BMI of AFL footballers to evaluate it as a diagnostic tool. |  |
| | Using a group of individuals use diagnostic tools to assess and compare their health<br>• BMI<br>• Waist to hip ratio<br>• Waist circumference and<br>• Weight for height tables |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| Educational aids are available to help improve individuals dietary patterns and health<br><br>• importance of government dietary guidelines such as the Australian Dietary Guidelines and the Australian Guide to Healthy eating<br>• social marketing campaigns and programs about adopting healthy nutrition behaviour<br>• food models (e.g. Canadian model compared to the Australian Guide to Healthy Eating or the Aboriginal and Torres Strait Islander Guide to Healthy Eating) | Using the Australian Dietary Guidelines, evaluate diets to analyse and make recommendations<br><br>Evaluate the effectiveness of the Australian Dietary guidelines in promoting healthy food choices and reducing the risk of diet-related disorders.<br><br>Compare social marketing campaigns in the effectiveness in improving the health status of communities. |  |
| | Conduct surveys to determine the breakfast intake of students and compare to the Australian Dietary Guidelines for adolescents. |  |
| | Explore how the dietary guideline have been (could be) modified in the light of new nutritional understanding and evidence |  |
| Food sociology is understanding factors impacting on food selection by individuals.<br>• physiological factors of appetite, hunger and satiety can affect the health of individual<br>• sensory reactions to food effect food selection<br>• psychological influences effect food selection.<br>• social influences effect food selection<br>• food regulation, marketing and advertising including social media and celebrity endorsements | Compile a list of the factors that influence people's food choices under the headings of internal and external factors. Consider which factors may lead to poor food choice resulting in compromised health status.<br><br>Visit Regency TAFE ,Uni SA or Waite campus and experience their sensory analysis laboratory<br><br>Compare individual food choices of vegan, vegetarian and non- vegetarian consumers and explain their values, belief for their food choice<br><br>Discuss how advertising impacts on food selection. |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| • food affordability and food availability impacts on the nutritional status of individuals | Conduct food sensory-analysis test on foods and assess foods for preference by individuals<br><br>Compare the appearance, flavour and taste of different versions of the same food product e.g. full fat cheese compared to lite cheese OR full cream milk to skim or UHT milk |  |
| | Investigate the nutritional value of traditional Aboriginal foods, how these contribute to a healthy diet and how this knowledge contributes to the global understandings of nutrition |  |

## Topic 3: Sustainable food systems

Students explore new food innovations and food systems. This includes investigating consumer demands, environmental changes, supply, novel foods, consumption rates, research and development. This enables students to look critically at food innovations and production and the ethical and sustainable impacts of these. Students understand the impact of the food system on the environment, explore contemporary developments in the food system, and the implications of food wastage and contamination on sustainability.

Students:

- understand the different components of the food system
- understand the impact of the food system on the environment
- explore contemporary developments in the food system
- understand the implications of food wastage on sustainability
- analyse and evaluate data or scenarios

.

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| The food system involves the stages of production, processing, distribution, consumption and research and development. Each stage impacts of the nutritional quality and accessibility of the food product<br><br>Production;<br>• the impact of food production on the environment and health of individuals in relation to: soil quality, land availability, water quality/ availability, biodiversity, nutritional issues | Using data, compare organic foods with industrial foods for nutritional and chemical residue<br><br>Investigate one of the following food production trends; specialisation, mechanisation, the rise in chemical use, consolidation, and market concentration.<br><br>Compare industrial food production examples of high level protein food sources e.g. chickens raised for meat, laying hens, pigs and beef cattle, soy bean production, legumes, chick peas |  |
| | Compare wild caught seafood to Aquaculture |  |
| | Investigate ways in which reducing meat consumption could contribute to environment sustainability |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| Processing<br>• food processing techniques enable consumer convenience and safety<br>• food processing techniques: freezing, canning or pasteurisation<br>• food packaging techniques/ medium: canning, plastic paper, glass<br>• packaging materials may affect the nutritional impact or shelf life of food and an environmental impact<br>• manufacture driven by profit impacts consumer demands | Students work in each groups to collaboratively investigate and report on an aspect of processing food;<br>• Preservation and food safety<br>• Variety and convenience<br>• Nutritional value<br><br>Students research pros and cons of two food processing techniques, such as preservation (freezing, canning), pasteurisation and/or fortification |  |
| | Conduct an experiment to measure microbe development on specific foods and conditions |  |
| | Discuss the potential impact of 3D printing of food and the opportunities and limitations it provides for future food production |  |
| Distribution and Consumption<br>• distribution and availability may influence consumer food choice and consumption<br>• the implication of food miles to accommodate food availability in local, regional, national and global needs<br>• changing food choices or following food trends could promote healthier diets | Discuss the carbon footprint on a food product sold (unprocessed or processed)<br><br>Research reasons for food to be transported long distances. Ie geographical availability, season ability, population density<br><br>Using data from the most recent 'Australian Health Survey: Consumption of food groups and the Australian Dietary Guidelines' from the ABS website, discuss possible implications for Australians following the typical Australian diet. |  |
| Research and Development<br>• are pinnacle to nutritional health<br>• new food innovations are the necessity of consumer demands or environmental impact<br><br>. | Research novel food descriptors by FSANZ and discuss the impact for the future |  |
| | Create a healthy alternative to an existing food product |  |

| Nutritional Understanding | Possible Contexts | |
|---|---|---|
| • Applied research in scientific or technological fields facilitate future product development<br>• new food products including GMO and entomophagy | Investigate the health issues associated with micro-plastics in food |  |
| Within all food systems the principles of sustainability, waste management and protection of food supplies need to be addressed.<br><br>• food waste<br>• strategies to reduce food waste at the local and global level | Using data identify how much food is wasted in landfill, and its impact on methane gas production<br><br>Investigate ways of reducing food waste, considering before harvest, after harvest, processing, supermarkets, restaurants, retail and consumption. |  |
| | Compare two waste reduction programs and evaluate their effectiveness |  |
| | Investigate how food trends can cause environmental damage<br><br>Investigate ways that specific diets and lifestyle practices could reduce the volume of food waste |  |

# ASSESSMENT SCOPE AND REQUIREMENTS

All Stage 2 subjects have a school assessment component and an external assessment component.

## EVIDENCE OF LEARNING

The following assessment types enable students to demonstrate their learning in Stage 2 Nutrition.

*School assessment (70%)*

Assessment Type 1: Investigation Folio- (40%) including:

- one case study
- one practical investigation
- one Science as a Human Endeavour (SHE) investigation

Assessment Type 2: Skills and Applications Task (20%)

- two skills application tasks

*External assessment (30%)*

Assessment Type 3: Examination - using case study (30%).

Students provide evidence of their learning through six assessments, including the external assessment component. Students complete:

- one case study
- one practical investigation
- one investigation with a focus on science as a human endeavor
- two skills and application tasks
- one examination – case study

## ASSESSMENT DESIGN CRITERIA

The assessment design criteria are based on the learning requirements and are used by:

- teachers to clarify for the student what they need to learn
- teachers and assessors to design opportunities for students to provide evidence of their learning at the highest possible level of achievement

The assessment design criteria consist of specific features that:

- students should demonstrate in their learning

- teachers and assessors look for as evidence that students have met the learning requirement

For this subject the assessment design criteria are:

- Knowledge and Application
- Investigation, Analysis and Evaluation

The specific features of these criteria are described below.

The set of assessments, as a whole, must give students opportunities to demonstrate each of the specific features by the completion of study of the subject.

## Knowledge and Application

The specific features are as follows:

KU1 demonstration of knowledge and understanding of nutritional concepts

KU2 application of nutritional concepts in familiar and unfamiliar contexts

KU3 exploration and understanding of the relationship between nutritional science and society

KU4 communication of nutritional concepts and nutritional literacy

## Investigation, Analysis and Evaluation

The specific features are as follows:

IAE1 design or conduct investigations using appropriate methodologies

IAE2 obtain, record, and display findings of investigations, using appropriate conventions and formats

IAE3 analysis and interpretation of data and /or information to justify conclusions

IAE4 evaluate methodologies and/ or research processes and the effect on data



# SCHOOL ASSESSMENT

each topic must be assessed though at least one assessment task

## Assessment Type 1: Investigation Folio (40%)

Students complete three tasks

- one case study
- one practical investigation
- one investigation with a focus on science as a human endeavor

## Case Studies

Students conduct a case study in which they analyse and/or evaluate nutritional data from a patient/client case study. This could be set by the teacher or individually planned.

Students may, for example, analyse and evaluate the following data sets:

- Personal history
  - General information about the subject including age, gender, ethnicity, economic, psychological, religious preference
- Medical/Health history
  - patient and family medical/health history, allergies or intolerances
- Anthropometrics
  - Height, weight, BMI, BMR
- Food/Nutrition Related Intake
  - For example, Intake of food and beverages over 24hrs with specificity of size/quantity and brands
- Knowledge, beliefs and Attitudes
  - Related to food and health
- Physical Activity History
- Secondary diagnoses
  - Any other medical issues

A case study may also include representation of data such as nutrients, and comparisons of findings to analyses and evaluate.

Students may demonstrate their critical thinking by: -

- analysing specific nutrients, macronutrients and or micronutrients
- representing, analysing, and interpreting data
- evaluating procedures and considering their impact on results
- drawing conclusions
- communicating knowledge and understanding of concepts
- comparing nutrient intake to the 5 food groups
- identifying undernutrition or over-nutrition disorders that the individual may be at risk of based on their findings
- evaluating by modifying the person's 24hr recall to include suitable servings from each of the food groups to meet their nutritional needs
- links to the AGHE and Australian Dietary guidelines
- make recommendation with justification for future healthier options

The case study should be a maximum of 1000 words if written, or a maximum of 6 minutes for an oral presentation, or the equivalent in multimodal form.

This report could take the form of, for example:

- an article for a scientific publication
- report
- video
- an oral or multimodal scientific presentation

## Practical Investigations

As students design and safely carry out investigations, they demonstrate their science inquiry skills by:

- designing or conducting an appropriate method for investigation
- formulating a hypothesis
- using appropriate equipment, apparatus, and techniques
- identifying variables
- collecting, representing, analysing, and interpreting data
- evaluating procedures and considering their impact on results
- drawing conclusions
- communicating knowledge and understanding of concepts

Practical investigations can be conducted individually or collaboratively. For each investigation, students present an individual report.

A practical report may include:

- introduction with relevant nutritional concepts
- hypothesis
- variables (independent, dependent, controlled) for an experiment
- materials/apparatus (table or image)
- the method that was implemented (flow chart, table or image)
- identification and management of safety and/or ethical risks
- results, including table(s) and/or graph(s)
- analysis of results, including identifying trends and linking results to concepts
- evaluation of procedures and their effect on data, and identifying sources of uncertainty
- conclusion, with justification

The report should be a maximum of 1500 words if written, or a maximum of 10 minutes for an oral presentation, or the equivalent in multimodal form.

Only the following sections of the report are included in the word count:

- introduction
- analysis of results
- evaluation of procedures
- conclusion and justification

Suggested formats for presentation of a practical investigation report include:

- a written report
- an oral presentation
- a multimodal product.

## Science as a Human Endeavour Investigation

Students investigate a contemporary example of how science interacts with society. This may focus on one or more of the key concepts of science as a human endeavour described on pages 10 and 11, and may draw on a context suggested in the topics or relate to a new context.

Students select and explore a recent discovery, innovation, issue, or advance linked to one of the topics in Stage 2 Nutrition. They analyse and synthesise information from different sources to explain the science relevant to the focus of their investigation, show its connections to science as a human endeavour, and develop a conclusion.

Possible starting points for the investigation could include, for example:

- the announcement of a discovery in the field of nutritional science
- an expert's point of view on a controversial innovation
- a TED talk based on a nutritional development
- an article from a scientific publication (e.g. *Cosmos, Nutridate*)
- public concern about an issue that has environmental, social, economic, or political implications
- changes in government funding for nutrition-related purposes, e.g. for scientific research into biotechnology, conservation planning, hormone use in food production, biosecurity, water quality, disease control, health
- innovative directions in research

Based on their investigation, students prepare a scientific report, which must include the use of scientific terminology and:

- an introduction to identify the focus of the investigation and the key concept(s) of science as a human endeavour that it links to
- relevant nutritional concepts or background
- an explanation of how the focus of the investigation illustrates the interaction between science and society, including a discussion of the potential impact of the focus of the investigation, e.g. further development, effect on quality of life, environmental implications, economic impact, intrinsic interest
- a conclusion
- citations and referencing

The report should be a maximum of 1000 words if written, or a maximum of 6 minutes for an oral presentation, or the equivalent in multimodal form.

This report could take the form of, for example:

- an article for a scientific publication
- an oral or multimodal scientific presentation

For this assessment type, students provide evidence of their learning primarily in relation to the following assessment design criteria:

- Knowledge and Application
- Investigation, Analysis and Evaluation

## Assessment Type 2: Skills and Application Task (30%)

Students complete two skills and application task (s). The total word count should be up to a maximum of 2000 words or the equivalent I oral or multimodal form.

Skills and applications tasks allow students to provide evidence of their learning in tasks that may:

- be applied, analytical, and/or interpretative
- pose problems in new and familiar contexts
- involve individual or collaborative assessments, depending on task design

A skills and applications task may involve, for example:

- solving problems
- designing an investigation to test a hypothesis or investigable question
- considering different scenarios in which to apply knowledge and understanding
- graphing, tabulating, and/or analysing data
- evaluating procedures and identifying their limitations
- formulating and justifying conclusions
- representing information diagrammatically or graphically
- using nutritional terms, conventions, and notations

The skills and applications task should be designed to enable students to apply their science inquiry skills, demonstrate knowledge and understanding of key nutritional concepts and learning.

Problems and scenarios should be set in a relevant context, which may be practical, social, or environmental.

Skills and applications tasks may include, for example:

- developing simulations
- practical and/or graphical skills
- a multimodal product
- an oral presentation
- participation in a debate
- an extended response
- responses to short-answer questions
- a response to science in the media.

For this assessment type, students provide evidence of their learning primarily in relation to the following assessment design criteria:

- Knowledge and Application
- Investigation, Analysis and Evaluation

# EXTERNAL ASSESSMENT

## Assessment Type 3: Examination (30%)

Students undertake one 130 minute examination

Stage 2 science enquiry skills and nutritional understanding will be assessed from the following concepts:

- Principles of Nutrition, Physiology and Health
- Health Promotion and Emerging Trends.

Questions:

- Will include case studies/ or scenarios
- Application of knowledge and skills to different contexts
- Analysis and interpretation of data or information

The following specific features of the assessment design criteria for this subject may be assessed in the examination

- Knowledge and Application – KA1, KA2 & KA4
- Investigation, Analysis and Evaluation- IAE3

# PERFORMANCE STANDARDS

The performance standards describe five levels of achievement, A to E.

Each level of achievement describes the knowledge, skills, and understanding that teachers and assessors refer to in deciding how well students have demonstrated their learning on the basis of the evidence provided.

During the teaching and learning program the teacher gives students feedback on their learning, with reference to the performance standards.

The student's school assessment and external assessment are combined for a final result, which is reported as a grade between A+ and E–.

## Performance Standards for Stage 2 Nutrition

| | Knowledge and Understanding | Investigation, Analysis and Evaluation |
|---|---|---|
| **A** | Demonstrates deep and broad knowledge and understanding of a range of nutritional concepts<br>Highly effective application of nutritional concepts in familiar and unfamiliar contexts<br>Critically explores and understands the relationship between nutritional science and society<br>Coherent and clear communication of nutritional concepts and nutritional literacy | Logical and detailed planning of investigations using appropriate methodologies<br>Obtain, record and display findings of investigations, using appropriate conventions and formats accurately and highly effectively<br>Systematically analyses and interprets data and /or information to justify logical conclusions<br>Critically and logically evaluates methodologies and/ or research processes and the effect on data |
| **B** | Demonstrates some depth and breadth of knowledge and understanding to a range of nutritional concepts<br>Mostly effective application of nutritional concepts in familiar and unfamiliar contexts<br>Logically explores and understands the relationship between nutritional science and society.<br>Mostly coherent and clear communication of nutritional concepts and nutritional literacy | Well considered planning of investigations using appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats mostly accurately and effectively<br>Analysis and interpretation of data and /or information to justify reasonable conclusions<br>Logically evaluates methodologies and/ or research processes and the effect on data |
| **C** | Demonstrates knowledge and understanding of a general range of nutritional concepts<br>Generally effective application of nutritional concepts in familiar and unfamiliar contexts<br>Explores and understands aspects of the relationship between nutritional science and society<br>Generally coherent and clear communication of nutritional concepts and nutritional literacy | Considered planning of investigations using appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats, with some errors but generally accurately and effectively<br>Interpretation of data and /or information to justify generally appropriate conclusions<br>Evaluates methodologies and/ or research processes and some of the effect on data |

| | Knowledge and Understanding | Investigation, Analysis and Evaluation |
|---|---|---|
| **D** | Demonstrates some basic knowledge and partial understanding of nutritional concepts<br>Application of some nutritional concepts in familiar contexts<br>Partially explores and recognises aspects of the relationship between nutritional science and society<br>Some clear communication of nutritional concepts and nutritional literacy | Basic planning of investigations using some appropriate methodologies<br>Obtain, record, and display findings of investigations, using appropriate conventions and formats inconsistently, with occasional accuracy and effectiveness<br>Describes data and /or information to formulate basic conclusions<br>Attempts to evaluate methodologies and/ or research processes and suggest an effect on data |
| **E** | Demonstrates limited recognition and awareness of nutritional concepts<br>Attempted application of nutritional concepts in contexts<br>Attempts to explore and identify an aspect of the relationship between nutritional science<br>Attempted communication of nutritional concepts and nutritional literacy | Attempts an outline of a plan for an investigations<br>Attempts to record and represent some data, with limited accuracy or effectiveness<br>Attempts to describe data and /or information and formulates a simple conclusions<br>Acknowledges that methodologies and/ or research processes effect data |

## ASSESSMENT INTEGRITY

The SACE Assuring Assessment Integrity Policy outlines the principles and processes that teachers and assessors follow to assure the integrity of student assessments. This policy is available on the SACE website (www.sace.sa.edu.au) as part of the SACE Policy Framework.

The SACE Board uses a range of quality assurance processes so that the grades awarded for student achievement, in both the school assessment and the external assessment, are applied consistently and fairly against the performance standards for a subject, and are comparable across all schools.

Information and guidelines on quality assurance in assessment at Stage 2 are available on the SACE website (www.sace.sa.edu.au).

# SUPPORT MATERIALS

## SUBJECT-SPECIFIC ADVICE

Online support materials are provided for each subject and updated regularly on the SACE website (www.sace.sa.edu.au). Examples of support materials are sample learning and assessment plans, annotated assessment tasks, annotated student responses, and recommended resource materials.

## ADVICE ON ETHICAL STUDY AND RESEARCH

Advice for students and teachers on ethical study and research practices is available in the guidelines on the ethical conduct of research in the SACE, which are on the SACE website (www.sace.sa.edu.au).