**Video transcript: WACE 2015-16 – Mathematics**

Year 11 students in 2015 and Year 11 and Year 12 students in 2016 will study the revised Western Australian Senior Secondary Curriculum for the first time.

The Western Australian Curriculum will include the Australian Curriculum courses which have been adopted and adapted to suit Western Australian needs and WACE courses which have been adapted to suit the revised structure.

There is increased rigour in the syllabuses. The changes are not about making school harder for students. They do raise the bar, though. Raising expectations means that we are supporting students to achieve at a higher standard.

For more information about the changes to the WACE starting in 2015 we recommend you watch the WACE 2015-16 overview video.

Courses in Mathematics build on the current WACE courses and courses developed for the Australian Curriculum.

Mathematics has six courses. The ATAR suite for Mathematics includes Mathematics Specialist, Mathematics Methods and Mathematics Applications. The General suite includes Mathematics Essential, Mathematics Foundation and Mathematics Preliminary.

Foundation courses are typically for students with severely limited English literacy and numeracy skills. Only students who have not demonstrated the minimum standard in the relevant component of the literacy and numeracy requirement may enrol in these courses.

Preliminary courses are for students who have identified special needs.

It is important to remember that students who have achieved the numeracy standard are not eligible to enrol in Mathematics Foundation and other List B Foundation courses. As well as this, students who achieve the minimum standard of numeracy in Semester 1 of Year 11 are not eligible to continue in the associated Foundation courses in Semester 2 of that year.

Information about the numeracy standard is available on the Authority website.

There is a syllabus for each year of each course that sets out the content to be covered in each unit. The Year 11 syllabus details Units 1 and 2. The Year 12 syllabus details Units 3 and 4.

Units 1 and 2 are typically studied as a pair. Units 3 and 4 must be studied as a pair.

The complexity of the syllabus content increases from Year 11 to Year 12. For this reason, a student cannot complete Year 12 units and then move to Year 11 units.

Typically, the Year 11 and 12 Western Australian syllabuses follow the same structure. They all begin with a rationale and aims that are followed by information about the organisation of the course. Unit information includes a unit description, learning outcomes and unit content.

The syllabuses include information about school based-assessment and grading, which is supported through grade descriptions. The grade descriptions have been modified from the current WACE courses. These are interim descriptions and will be refined during the early years of implementation.

The grade descriptions are included in an appendix of the syllabuses. Many courses also have a glossary that defines key words in the context of the course.

Consistent with the Australian Curriculum, the organisation section of the syllabuses includes reference to general capabilities and cross-curriculum priorities. The unit information, specifically the unit content, identifies the expected learning within each syllabus. Unless they are identified within the specified unit content, the general capabilities and cross-curriculum priorities are not assessed.

Some syllabus elements are course and year specific.

In general, the progression from Year 7–10 in the Year 11 syllabuses shows how the courses build on knowledge, understandings and skills.

The Year 11 and 12 ATAR course syllabuses adopted and adapted from the Australian Curriculum are organised around the course aims and unit learning outcomes.

The Year 12 ATAR courses contain the WACE examination design briefs.

The Year 11 and 12 ATAR course syllabuses based on the current Stage 2 and Stage 3 WACE courses are organised around the course outcomes.

Year 12 General courses, excluding Preliminary, include information about the externally set tasks, known as ESTs, which are part of the Authority’s moderation processes from 2016. There are sample externally set tasks on our website.

The suite of WACE Mathematics courses accommodates the wide range of skill levels and future study or training needs of students who wish to study senior school mathematics.

The ATAR Mathematics courses have been adapted from the Australian Curriculum Mathematics subjects to meet the needs of Western Australian students.

Mathematics Specialist provides opportunities to develop rigorous mathematical arguments and proofs, and to use mathematical models extensively. This course contains topics in functions and calculus that build on and deepen the ideas presented in Mathematics Methods, as well as demonstrate their application in many areas.

Mathematics Specialist also extends understanding and knowledge of statistics and introduces the topics of vectors, complex numbers and matrices. Mathematics Specialist is the only Mathematics course that should not be taken as a stand-alone course.

Mathematics Methods focuses on the use of calculus and statistical analysis. The study of calculus provides a basis for understanding rates of change in the physical world, and includes the use of functions, their derivatives and integrals, in modelling physical processes. The study of statistics develops students’ skills in describing and analysing phenomena that involve uncertainty and variation.

Mathematics Applications focuses on the use of mathematics to solve problems in contexts that involve financial modelling, geometric and trigonometric analysis, graphical and network analysis, and growth and decay in sequences. It also provides opportunities for students to develop systematic strategies based on the statistical investigation process for answering questions that involve analysing univariate and bivariate data, including time series data.

The General suite of Mathematics courses builds the capacity of students to use the mathematical thinking process in their daily lives.

Mathematics Essential focuses on solving problems in real contexts for a range of workplace, personal, further learning and community contexts. The course prepares students for post-school options of employment and further training.

Mathematics Foundation focuses on the development of functional numeracy skills to meet the Western Australian Certificate of Education standard of numeracy. The course prepares students for post-school options of employment and further training.

Mathematics Preliminary focuses on functional numeracy, and the practical use of money and time, as well as dealing with space and measurement embedded in familiar and meaningful contexts. The course has been scoped in terms of difficulty over the four units. It is not expected that all students will cover all four units over four semesters. Teachers may choose a sequence of from one to four units over Years 11 and 12 to suit a student’s program.

The Mathematics ATAR course syllabuses present three topics, rather than strands, in each unit. This means there are six topics to be covered each year.

The course content for Mathematics Specialist is similar to the existing WACE Mathematics: Specialist course except for combinatorics and geometry proofs in Unit 1 and statistical inference in Unit 4 that are new to the Specialist course.

Mathematics Methods takes content that was previously delivered in Mathematics 3AB and 3CD and the Mathematics: Specialist course. This content is now organised into topics, rather than strands.

Interval estimates for proportions is the only topic that is new. This follows Western Australia adopting the senior secondary Australian Curriculum courses with minimal change.

Mathematics Methods differs from the previous mathematics course units in that the calculus of trigonometric functions is included where previously the calculus of trigonometric functions was part of the Mathematics: Specialist units.

Much of the content in Mathematics Application was previously delivered in Mathematics Stage 2CD and 3AB. This course has a greater focus on financial mathematics, the statistical investigation process and on the language of graphs in networks material, than was evident in our previous 2CD/3AB maths units.

The Mathematics General courses also use topics, rather than strands, in each unit.

The Mathematics Essential course has been adapted from the Australian Curriculum Essential Mathematics subject.

The course includes an emphasis on using the mathematical thinking and statistical investigation processes to solve problems from everyday life.

Content in Mathematics Essential is arranged in topics and is predominately aligned with the current Mathematics units 1C through to 2B.

Mathematics Essential has four topics in Units 1, 2 and 3 and three in Unit 4.

Mathematics Foundation is a new course specifically developed for those students who have not met the required numeracy standard.

Mathematics Foundation develops similar skills to some of those in the current Mathematics units Preliminary B through to 1C, but the focus is more on using functional numeracy and the mathematical thinking process to solve problems across a range of contexts, including personal, community and workplace/employment.

In Mathematics Preliminary, the teaching content is organised into 11 topics which are scoped developmentally over the four units.

A course unit is completed when a grade is assigned.

This means a student must have had the opportunity to complete the structured education program and the assessment program for the course unit, unless the school accepts there are exceptional and justifiable circumstances.

The assessment program is summarised in the assessment table.

The assessment tables for Year 12 now show fixed assessment weightings rather than having a weighting range.

You will also notice that examinations are now specified as a separate assessment type.

Mathematics Specialist, Methods and Applications have a common assessment table.

There are now three assessment types:

* examinations which are worth 40 per cent,
* response which is worth 40 per cent, and
* investigations which are worth 20 per cent.

In the Mathematics Essential assessment table, a combination of practical applications using the mathematical thinking process and statistical investigation process replaces the previous investigation assessment type.

The response assessment type is fixed at 50 per cent and the combination of practical applications and statistical investigation process is 50 per cent.

Assessment in Mathematics Foundation consists of two types: response and practical applications for which students use the mathematical thinking process, and an externally set task in Year 12.

Schools report on individual students’ progress in Preliminary courses as either completed or not completed.

Assessment tasks provide opportunities for students to demonstrate progress towards unit outcomes and individual learning goals.

Teachers make decisions about a student’s readiness to progress to the next level of proficiency on their learning pathway using a range of specifically designed assessment tools such as observation rubrics and oral and/or written tasks.

Students demonstrate progress towards unit outcomes independently or with support. The type of support and level of independent learning will vary according to individual student needs and the specific requirements of the assessment task.

Students enrolled in Year 12 ATAR courses are required to sit the WACE examination. When sitting an external examination, it is critical that students make a genuine attempt.

The changes to the examination design briefs for the Mathematics ATAR courses – Specialist, Methods and Applications – are very minor. Section 1 (calculator free) changes from 33.3 per cent to 35 per cent and section 2 (calculator assumed) changes from 66.6 to 65 per cent.

Additionally, the number of marks to be awarded in each section has been removed.

Students who enrol in General courses, except Preliminary, will need to complete an externally set task to complete a course.

Students must make a genuine attempt in these external assessments to satisfy the course completion requirements.

The ESTs will be written assessments. The Authority will inform schools during Term 3 of the preceding year of the section or sections of the syllabus content on which an EST will be based.

The ESTs will be worth 15 per cent of a student’s final mark.

More information about ESTs is available on the Authority website.

Syllabuses will be reviewed typically on a five-year cycle, according to learning area. The schedule of review will be published later this year.

The Australian Government announced a review of the Australian Curriculum in January 2014. The report on the review is due to be completed by 31 July 2014. Any changes that the Australian and Western Australian Governments may endorse as a result of the review will be considered in the Western Australian syllabuses as part of our syllabus review cycle.

A range of support materials for teachers can be found on the Authority’s website.

We encourage teachers to participate in briefings and discussions and to register for the Authority’s eCircular to keep up to date.