



## Mathematics Essential Course Outline Unit 3 2016: Semester 1

*Text References: E&S (Ellery and Strickland Mathematics Essential Units 3 and 4)*

Term & Weeks	Key Teaching Points (Content)	Objectives	Text References	Assessments
Term 1 Weeks 1 & 2	Introduction to course: book, assessments, classroom procedures etc. <b>Algebra Review</b>		Ellery & Strickland Ex1.1, 1.2	
Feb 1	<b>Linear measure</b> Practical applications of <b>perimeter</b> of polygons and circles and composites of familiar shapes. Use of the mathematical thinking process to solve problems involving perimeter. <b>Practical applications of area</b> of parallelograms, trapeziums, circles and semi-circles. The area of composite figures using decomposition into familiar shapes. Surface area of cubes, rectangular and triangular prisms, spheres and cylinders. Use of the mathematical thinking process to solve problems involving area and surface area.	3.1.1  3.1.2–3.1.5	Ex 2.1, 2.2  Ex 2.3 - 2.5	
3-4 Feb 15	<b>Volume and capacity</b> Practical applications of volume and capacity of cylinders, pyramids and spheres. The relationship between cubic centimetres and millilitres, cubic metres and kilolitres. The use of the mathematical thinking process to solve problems involving volume and capacity.	3.1.6–3.1.7	E&S: Ex 3.1 – 3.3	Practical Application 1 – Reticulation project
4-5 Feb 22	<b>Shapes, plans and models</b> Scale drawings, diagrams, plans and elevation views from practical situations to estimate and compare quantities, materials and costs. Construct scale drawings. Sketch elevation views of different models.	3.2.1–3.2.11	E&S: Ex 4.1 – 4.4	
	<b>Revise for Test</b>		E&S: Review Exercise 1 Pg 70	



Term & Weeks	Key Teaching Points (Content)	Objectives	Text References	Assessments
6-7 Mar 7	<b>Right-angled triangles</b> Apply Pythagoras' Theorem and trigonometric ratios to solve problems in practical, two-dimensional views.	3.2.12–3.2.16	Ex 5.1 – 5.5	Test 1 – Area, volume, scale, trigonometry
8 Mar 21	<b>Cartesian plane</b> <ul style="list-style-type: none"> <li>Interpret and plot points on a two-dimensional Cartesian plane.</li> <li>Generate tables and graph co-ordinates for linear functions from practical situations.</li> <li>Interpret, use and draw graphs from practical situations, including travel graphs, time series and conversion graphs.</li> <li>Describe trends in time series data.</li> </ul>	3.3.1–3.3.6	E&S: Ex 6.1 – 6.5	
9 Mar 28	<b>Using graphs in practical situations</b> Describe, determine and use the features of linear functions from practical situations; rate of change, vertical intercept, point of intersection, 'break-even' point.	3.3.7–3.3.10	E&S: Ex	Practical Application 2: In class: ramps
10 April 4	<b>Data collection</b> Investigate the conducting of a census or survey, with reference to the target population.	3.4.1–3.4.11	E&S: Ex 7.1 – 7.3	
<b>Term 1 : Ends Friday 8 April 2016</b>				
Term 2 1-2 Wed Apr 27	<b>Data collection</b> Investigate methods of sampling. Interpret results from surveys, including those in the media.	3.4.1–3.4.11	E&S: Ex 7.1 – 7.3	Statistical Investigation 1: Bivariate data; body ratios
3-4 May 9	<b>Bivariate scatterplots</b> Patterns and features of bivariate data, including dependent and independent variables and their association. Trend lines by eye, relationships between variables and predictions by interpolation and extrapolation.	3.4.12–3.4.19	E&S: Ex 7.4	Week 4: Externally set task
5 Mon May 23	Revision of Unit 3		E&S: Review Exercise Pg 159	Test 2 – Linear functions, Data



Term & Weeks	Key Teaching Points (Content)	Objectives	Text References	Assessments
6 Mon May 30	Workplace Learning			

### Mathematics Essential Course Outline Unit 4 : Semester 2 2016

*Text References: MAWA (Essential Mathematics Units 1 and 2); E&S (Ellery and Strickland Mathematics Essential Units 1 and 2); WATP (WATP Classwork for Essential Mathematics Units 1 and 2)*

Term & Weeks	Key Teaching Points (Content)	Objectives	Text References	Assessments
Term 2 Wk 7-9 Jun 6	<b>Probability and simulations</b> Language of probability and numerical expressions using fractions, decimals, ratios and percentages. Simulations using technology. The law of large numbers and the relationship of relative frequency to probability.	4.1.1–4.1.6	E&S: Ex 8.1-	Statistical Investigation 2: Probability simulation
Wk 9-10 Jun 20	<b>Simple probabilities in practical situations</b> <ul style="list-style-type: none"> <li>Experiments and sample spaces which represent practical situations.</li> <li>Applications of probability for decision making, predicting proportions and number or outcomes that are likely to occur.</li> </ul> <b>Term 2 ends 1 July 2015</b>	4.1.7–4.1.11	E&S: Ex 8.1-8.3	
<b>Term 3</b> Week 1 Tue Jul 19	<b>Simple probabilities in practical situations</b> Experiments and sample spaces which represent practical situations. Applications of probability for decision making, predicting proportions and number or outcomes that are likely to occur.		E&S: Ex 8.4-8.5	
Wk 2-3 Tue Jul 25	<b>Earth geometry</b> Methods of locating positions on the earth's surface given latitude and longitude; global positioning system, globe, atlas and digital technologies. Calculations of distance between two places on Earth on same longitude using arc length formula.	4.2.1–4.2.3	E&S: Ex 9.1-9.3	Test 3 - Probability



	Distance between two places on Earth using technology.			
4-5 Mon Aug 8	<b>Time</b> Link between longitude and time. Problems involving time zones in Australia and neighbouring nations, Greenwich Mean Time and International Date Line, time differences, travel involving time zone changes.	4.2.4–4.2.9	E&S: Ex 10.1-10.3	Practical Application 3: International travel itinerary
6 Aug 22	<b>Compounding relationships</b> Real-life, compounding situations expressed as a recurrence relationship; compound interest, population growth.	4.3.1–4.3.3	E&S: Ex 11.3	
7-8 Aug 29	<b>Compounding loans and investments</b> Future values and total interest, numerical and graphical comparison between simple interest and compound interest loans and investments. Effects of change of interest rate and number of compounding periods.	4.3.4–4.3.6	E&S: Ex 11.1-11.2	Practical Application 4: Investment / loan comparisons
9-10 Sept 12	<b>Reducing balance loans</b> Use of technology and recurrence relation to model reducing balance loans. Effect of interest rates and repayment amount when repaying a loan.	4.3.7–4.3.8	E&S: Ex 12.1-12.2	Test 4 – Problem solving – distances, time zones, loans